

Thimblertown Development Brief Non Statutory Guidance

Consultation Draft June 2021

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1. Introduction

Why do we need this guidance?

This guidance has been produced to support the OP2 Thimblerow allocation in the Perth and Kinross Local Development Plan 2 (LDP2) .

The purpose of this non-statutory brief is to outline the planning guidance and the criteria and interests to be taken into account in preparing a planning application.

Opportunities exist for a major mixed-use development at Thimblerow. There are a variety options that could be supported within the context of the LDP2.

Experience suggests that the market has been reluctant to test the waters and invest in the type of high amenity residential environment which could create strong market demand for city centre living. The focus is on delivering an attractive lifestyle and moving beyond the usual developers' approach and formats. This approach could lift residential values and demand within the city centre. The Council seeks a high-quality exemplar scheme demonstrating the potential for city centre living in a low carbon development.

The Local Development Plan has the following site specific developer requirements for this allocation.

Ref	Location	Size	uses
Op2	Thimblerow	0.8ha	Residential (62 + homes), retail, leisure, car park
<p>Site-Specific Developer Requirements</p> <ul style="list-style-type: none"> • Design to create urban form and streetscape compatible with surrounding conservation area. • Buildings to be up to 3/4 stories high along Old High Street but could be up to five stories high along Caledonian Road. • Corner feature to be created at Old High Street/Caledonian Road. • Buildings to be hard to pavement edge on Old High Street • Flood Risk Assessment and Drainage Impact Assessment required which will define the developable area of the site and which ensures that (taking account of Flood Protection Scheme) no built development takes place on the functional flood plain. Areas protected by the Flood Protection Scheme should be subject to appropriate mitigation measures including water resistance, and water resilience measures and evacuation procedures. • Scheme to incorporate 200 spaces minimum public car parking. • Energy Statement is required investigating the potential for the provision of, and/or extension to, a heat network to serve the development. • Area of archaeological potential, investigation required. 			

1. Introduction

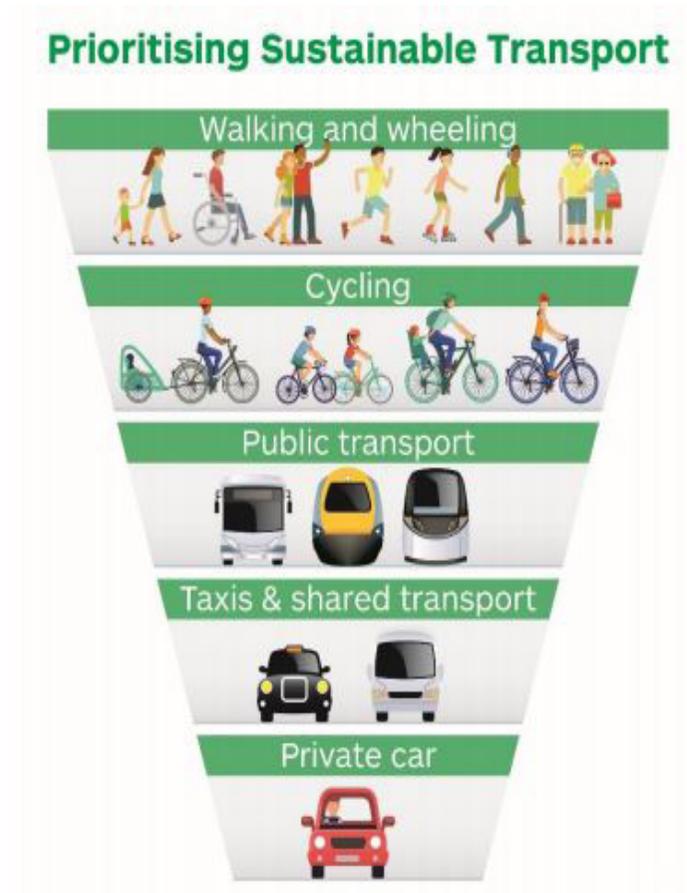
How does this brief differ from the LDP2 requirements?

Experience has demonstrated that the provision of a mixed-use development and a minimum of 200 public parking spaces as required by the LDP2 can only be achieved through the construction of a multi-story car park. It is recognised that the viability of this form of construction is not sustainable and the promotion of this site as a mixed-use development can only be achieved if the parking requirement is significantly reduced.

There has been a review of parking demand and provision within the city centre. The scope to reduce this requirement is based on the following:

- A Perth carparking analysis which indicates some capacity to reduce this public parking requirement
- Alternative solution/s which enhance accessibility through provision of measures to encourage sustainable transport options and modal shift

Figure from National Transport Strategy 2, Scottish Government which illustrates the hierarchy for prioritising sustainable transport

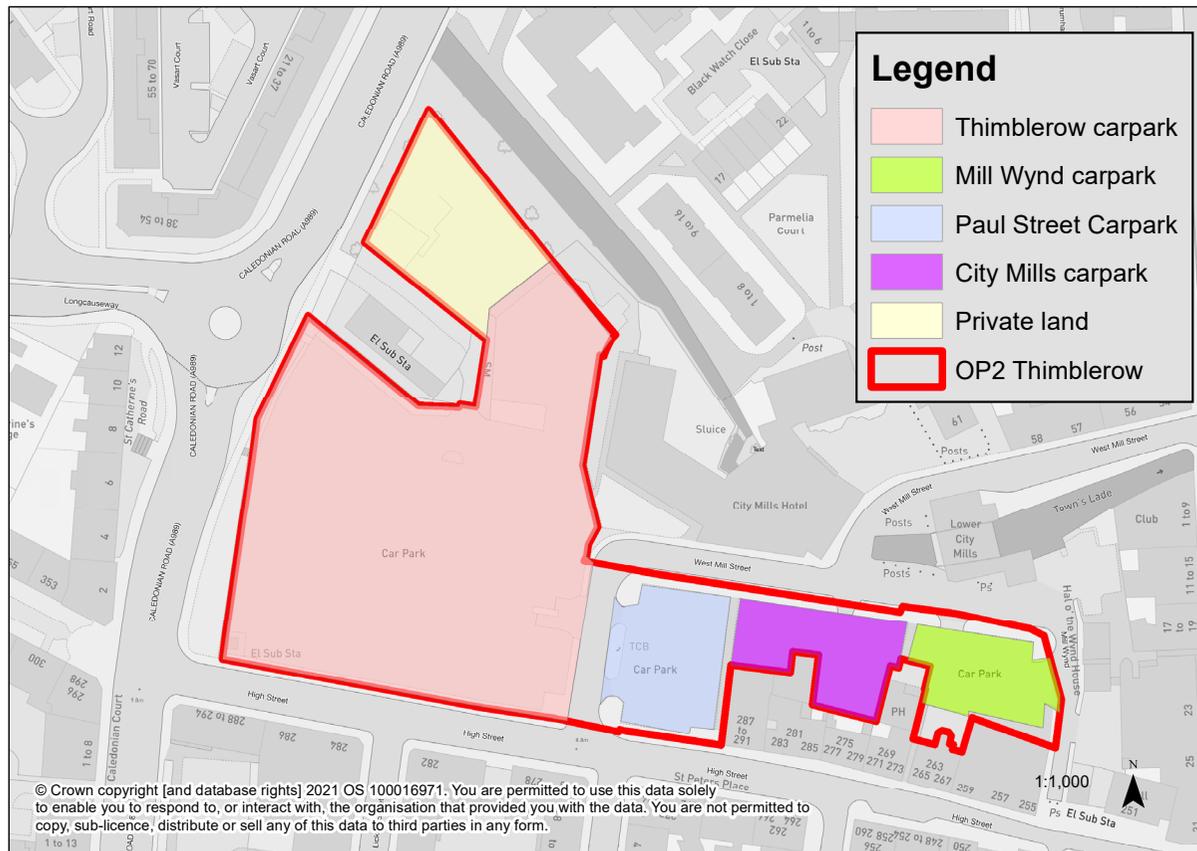


2. Context and Analysis

Site description

The site is principally owned by the Council but there is privately owned land north of the electricity substation. The core of the site is the Thimblerow and Paul Street surface car parks. Behind old High Street properties there is also a private carpark for City Mills and a further small Council carpark Mill Wynd. Together this forms the Local Development Plan OP2 Thimblerow allocation.

Site plan showing current uses and ownership

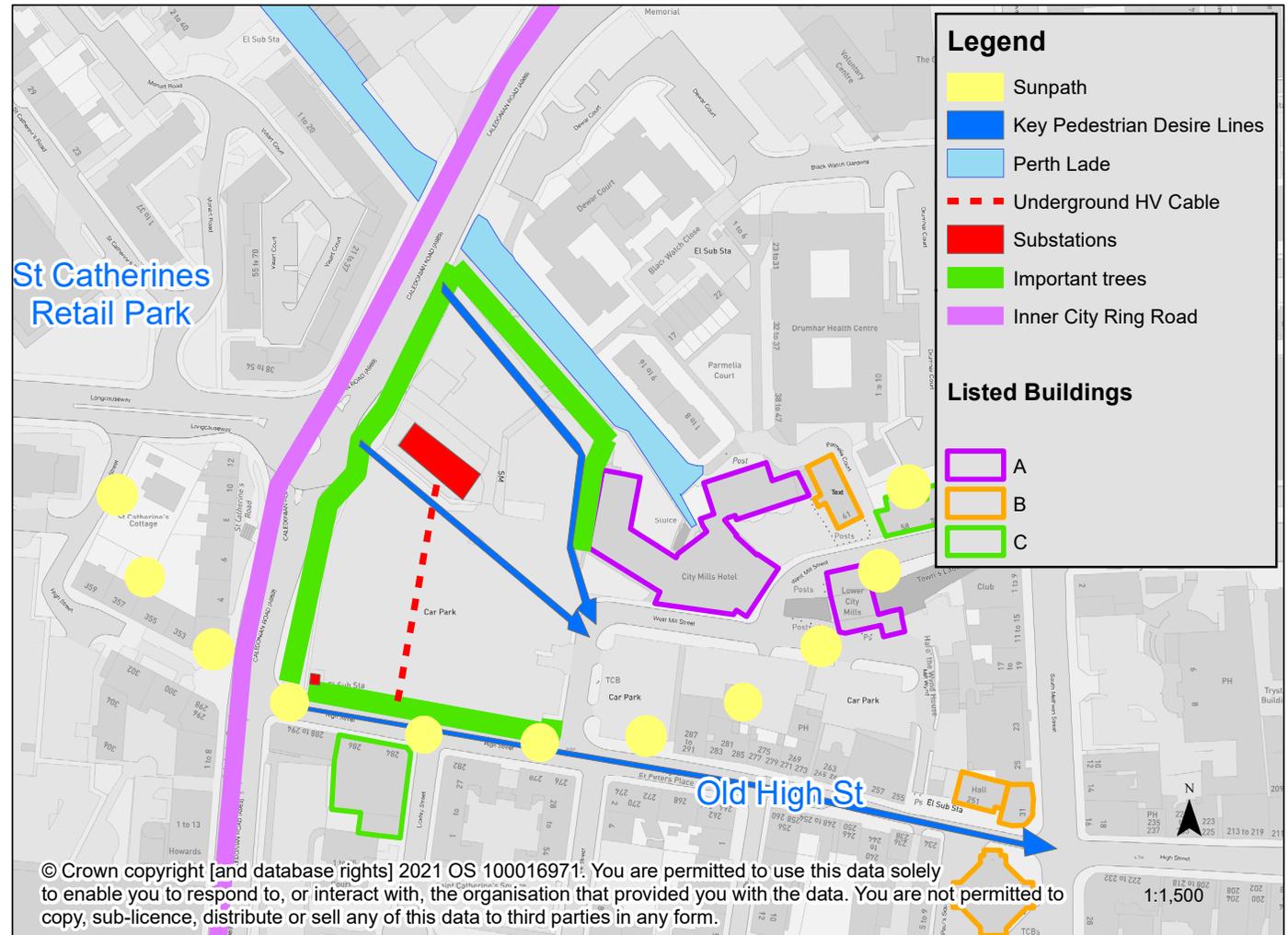


2. Context and Analysis

Analysis identifies the following as key elements which will inform the proposed development of the site:

- Edge of City Centre and adjacent to the inner city ring road
- Linkage between Old High St and St Catherine's retail park
- Conservation Area, and the City Mills
- Lade and its trees and ecology
- Key pedestrian and cyclist desire lines
- Sunpath
- SSE electricity substation and HV cables

Analysis map



2. Context and Analysis

Edge of City Centre and edge of inner city ring road location requires the design response to acknowledge the street hierarchy, the key nodes. This location also allows consideration of a low car proposal if sufficient measures to promote modal shift are proposed.

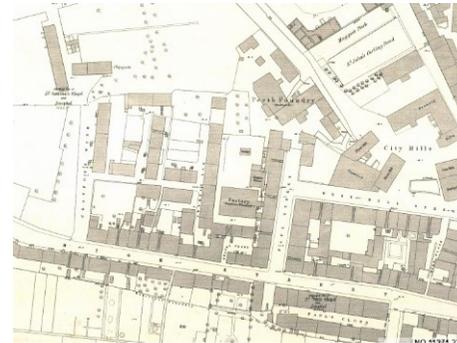
Linkage between Old High St and St Catherine's retail park which requires a connection of some active uses which generate significant footfall between the High Street and the retail park.

Design Streets, 2010, ground floor commercial and retail space emphasise street hierarchy and provides amenity and an active street edge



Within the Conservation Area and City Mills this part of the conservation area has historically been relatively densely developed. Historic mapping shows a continuous building line along Paul Street and along the High Street. It is important to bear in mind that many of these buildings are likely to have been smaller scale, reflecting the variety of uses in this part of Perth.

OS 1860¹



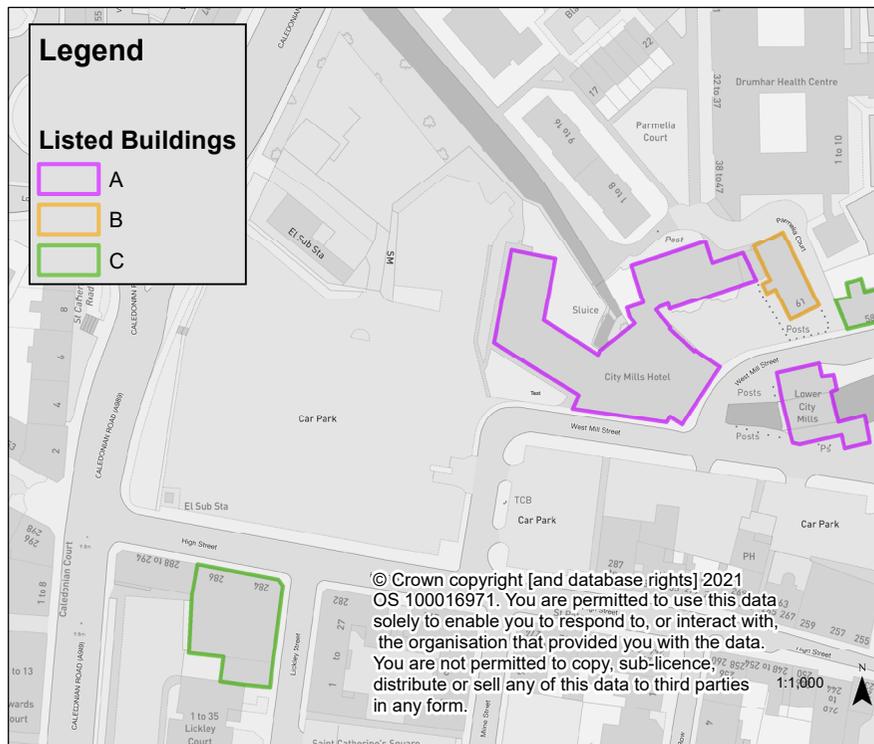
John Wood, 1823²



2. Context and Analysis

Adjacent listed buildings are shown on the map below, the former City Mills buildings are Category A listed and form an important grouping. Their relationship with the Lade is also significant. 284 and 286 High Street and 7 Lickley Street are Category C listed. These single storey buildings form an important early 20th Century group with the adjoining tenement.

Listed Buildings Map



The design response should be sensitive to the historic City Mills context and the setting of the listed buildings, and to the old High St. More flexibility is appropriate along Caledonian Road. The design response also needs to reflect the street hierarchy including Caledonian Road's being part of the Inner City ring road.

Lade and its trees and ecology is both a key opportunity and constraint for the design process. An ecological assessment and tree survey will be required to consider the appropriate approach and the extent of any developable area. If there is a development viability issue once you offset the impacts of potential development then this entire area may be best kept for wildlife purposes.

Key pedestrian and cyclist desire lines through the site are along the old High St, and from the roundabout, and from the Lade to Paul St/West Mills Street. There is a key node where the later two meet at Paul St/West Mills Street.

The sunpath should inform the design process to maximise solar gain. The layout of streets and/or the siting and design of buildings should maximise opportunities for solar heat gain, natural ventilation and daylighting throughout the year.

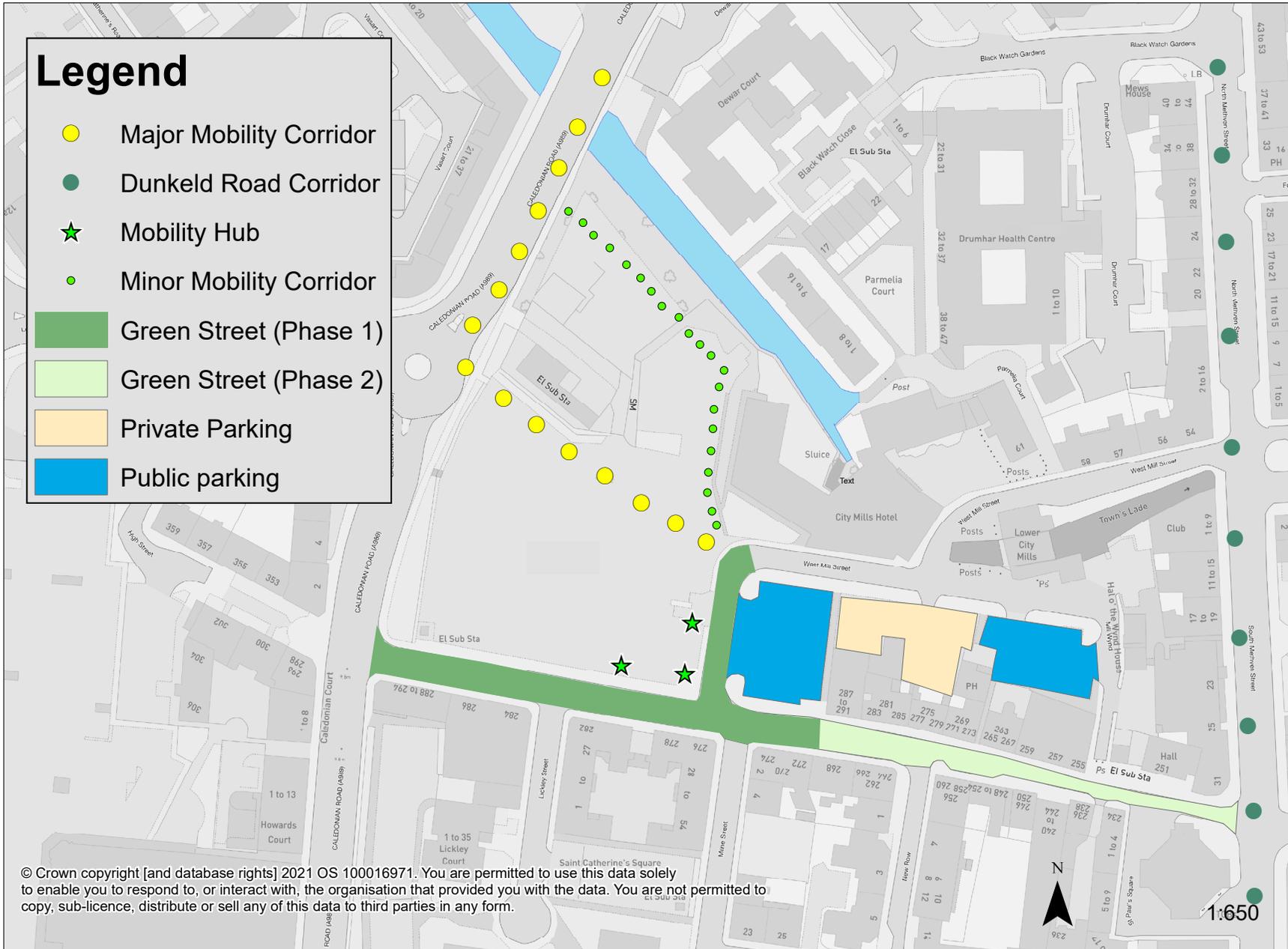
The SSE electricity substation and HV cables are a constraint which influences the layout of the site and the substation needs careful consideration and landscaping treatment to mitigate impact on amenity.

3. Overall Vision

The Council's vision is to:

- Provide a showcase for low carbon living
- Retain appropriate short stay car parking for shoppers (retaining Mill Wynd and Paul St car parks)
- Improve accessibility to city centre with a shift in emphasis from cars to people
- Propose alternative solutions which address accessibility through provision of measures to encourage sustainable transport options
- Improve the public realm and create more space for people post-pandemic, as well as encourage a greener, accessible and more pedestrianised version of the city
- Respect its historic setting, providing a high-quality development within the Conservation Area
- Enhance the linkages between the retail park and the city centre, providing some active commercial and community uses
- Promote a quality city centre living experience which includes some private and/or communal open space for residents
- Protect and enhance Lade biodiversity and other important trees

4. Low Carbon Vision



4. Low Carbon Vision

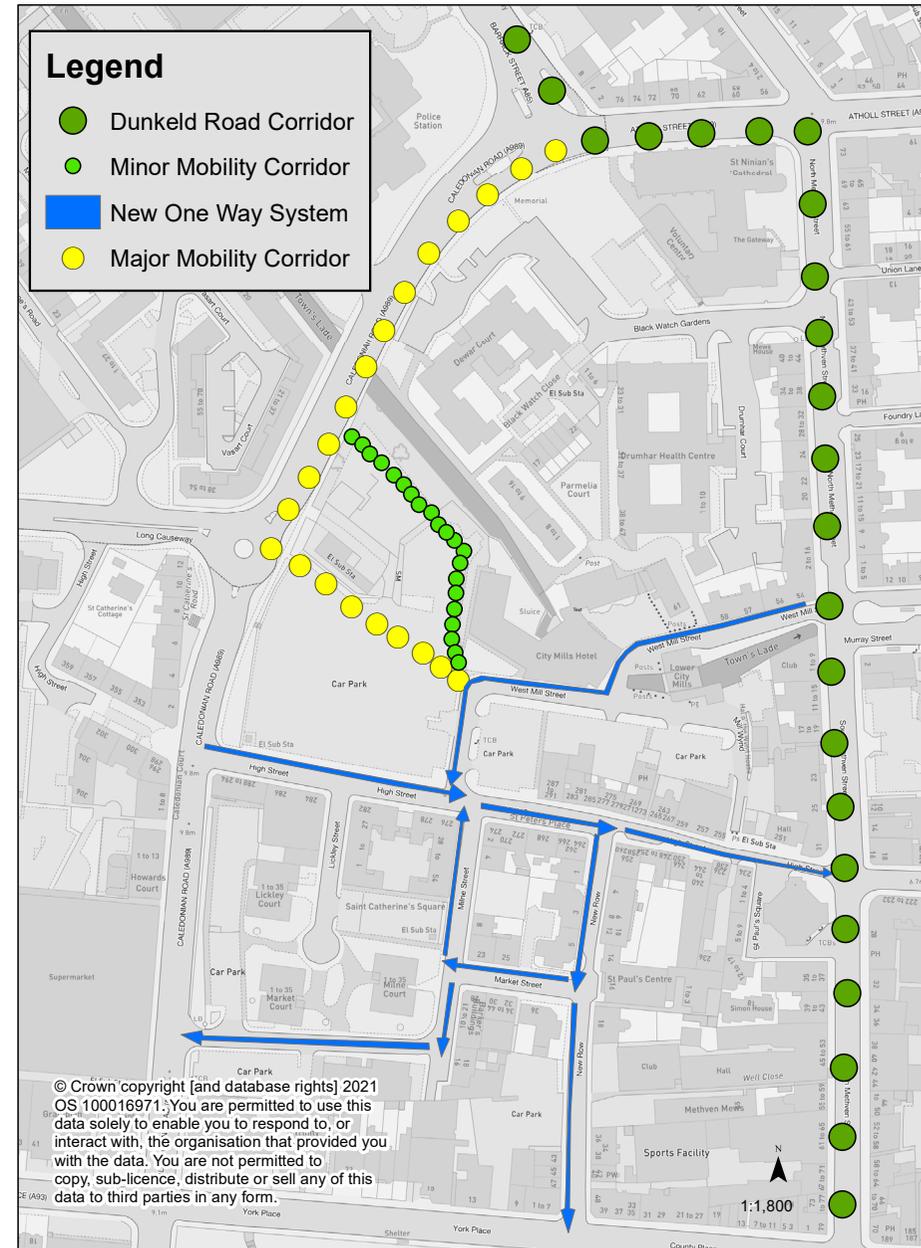
Improve accessibility to city centre with a shift in emphasis from cars to people. Provide for key pedestrian/cyclist desire lines along Lade, and from the roundabout to Paul St/West Mill St.

The Perth Cycle Network Masterplan outlines a framework for investment, identifying cycle corridors to better link the city centre to its surrounding communities. The first of these the Dunkeld Road Corridor (DRC) has secured funding. There is requirement to tie in with this Council project. Extending the DRC with a mobility corridor connection into Thimblerow alongside provision of a mobility hub with cycle parking, changing and showering facilities would help encourage modal shift. Thimblerow is a highly desirable location for a mobility hub with easy onward access to prime shopping/office areas, and to Mill Street bus stances.

Investment in additional sustainable modes beyond the linkage to the DRC and the provision of a mobility hub should be based on quantified trips generated by the development and the proposed reduction of the public and residential car parking with appropriate mode share targets and measures identified for the development that help achieve the agreed objectives.

Whilst reducing the 200 public car parking space requirement from LDP2 we are seeking to retain appropriate short stay car parking provision. We require provision of publicly available disabled parking and a limited retention of parking to service the local businesses of the old High Street and Lower City Mills. This requires engagement with local public/business engagement to ensure the retained Paul Street and Mill Wynd car parks are best managed to support their needs.

A new one way system is proposed to allow for benefits of the green street set out in the Amenity Vision and its Detailed Guidance.



4. Low Carbon for City Guidance

Vision for City: Improve accessibility to city centre with emphasis shift from cars to people

The Perth Cycle Network Masterplan is a strategic Council project which will improve accessibility. The Perth Cycle Network Masterplan outlines a framework for investment, identifying cycle corridors to better link the city centre to its surrounding communities. The first of these the Dunkeld Road Corridor (DRC) has secured funding and will enhance this connection for the communities of Balhousie, Muirton, North Muirton, Tulloch, and Bertha Park.

Definite interventions

Extending the DRC with a mobility corridor connection into Thimblerow alongside provision of a mobility hub with cycle parking, changing and showering facilities should help encourage modal shift. Thimblerow is a highly desirable location for a mobility hub with easy onward access to prime shopping/office areas, and to Mill Street bus stances.

Potential Additional Objectives (and interventions)

Investment in additional sustainable modes beyond the linkage to the DRC and the provision of a mobility hub should be based on quantified trips generated by the development and the proposed reduction of the public and residential car parking with appropriate mode share targets and measures identified for the development that help achieve the agreed objectives. These mode share targets, along with the quantified trips generated, will then inform what is required to deliver this.

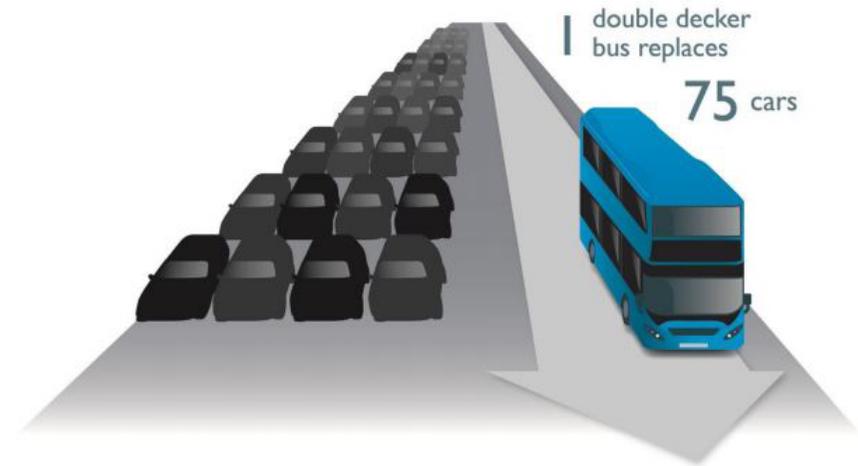
The Scottish Government has committed to achieving a 20% reduction of vehicle kms by 2030 and the council are also committed to achieving ambitious climate change, carbon reduction and air quality targets. To achieve these outcomes the Council will set high level objectives for modal shift, reflecting on the degree to which the proposal seeks to reduce the 200 space public parking requirement from LDP2, and reduce the residential car parking standards from the maximum standard identified. Based on these details the Council will identify the number of trips that need to be accommodated on sustainable transport and how this will be achieved will need to be demonstrated through the Transport Assessment and associated travel plan.

4. Low Carbon for City Guidance

Potential Additional Objectives (and interventions)

- Reduce congestion on the road network by improving sustainable mode share and contribute towards the national target of a 20% reduction of vehicle kms by 2030
- o Capture and maintain low car ownership level within the central core of the City (potentially including car club provision)
- o Limited onsite parking (public and private residential)
- o Investment in infrastructure supporting sustainable modes
- Seek to improve area in relation to existing Air Quality Management Area
- o Ultra low and zero emission vehicles support/infrastructure
- Improve integration with and between sustainable transport modes
- Maximise potential of other investment by linking the development to strategic sustainable transport corridors and key transport interchanges.
- o High quality routes to public transport services
- o Improvements to Public Transport information/facilities at key stops

Figure from National Transport Strategy 2, Scottish Government which illustrates the importance of public transport to modal shift



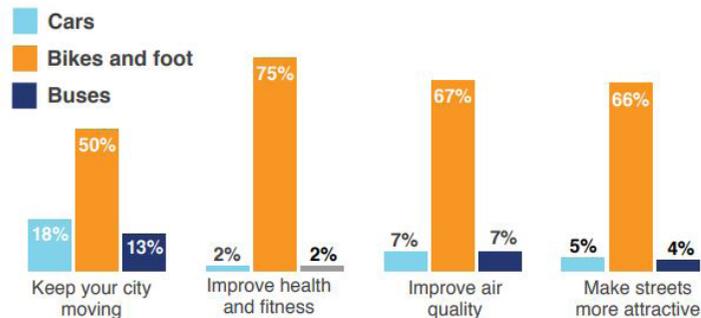
4. Low Carbon for City Guidance

Why do we need more focus on pedestrians and accessibility?

Active travel is healthy, accessible and inclusive and improvements to Perth City centre should focus on active travel as 28% of households in Perth have no access to a car.¹ Whilst within Perth City centre 45% have no access to a car.² Also the public seeks this change, with 69% of residents desiring more investment in cycling in Perth.³

Bike Life Perth, Sustrans 2018

People prioritise investment in space for bikes and foot



69%

of residents would like to see more investment in cycling in Perth



1 Sustrans 2018, Bike Life Perth
 2 Census Data 2011, KS & QS tables 2011 (NRS)
 3 Sustrans 2018, Bike Life Perth

People are making fewer shopping trips. This trend is associated with a switch from short shopping trips on foot to longer less frequent car trips. People walking and cycling visit high streets more often and spend more money there compared to people in cars.¹ Reflecting this and underpinning the Scottish Government's Town Centre Toolkit is the priority given to pedestrian footfall as the 'lifeblood of town centre businesses'. Redistributing our priorities and spending in this way addresses both public and business health.

Investing in better streets and spaces for walking can provide a competitive return compared to other transport projects; walking and cycling projects can increase retail sales by 30% or more.² There is a significant return from this investment, '13:1 is the average 'benefit cost ratio for walking and cycling projects'.³ Also cycle parking delivers 5 times the retail spend per square metre than the same area of car parking.⁴

Raje and Saffrey, 2016



1 Living Streets, 2018, The Pedestrian Pound
 2 Living Streets, 2018, The Pedestrian Pound
 3 Department for Transport 2015
 4 Raje and Saffrey, 2016

4. Low Carbon for City Guidance

Approach: Retain appropriate short stay car parking for shoppers, and reduce/remove car parking for commuters and propose suitable measures to meet the Council's modal shift objectives.

Requirement: Reduce the 200 public car parking space requirement from LDP2 and retain appropriate short stay car parking provision. Require provision of publicly available disabled parking and a limited retention of parking to service the local businesses of the old High Street and Lower City Mills. This will require further assessment and engagement with local businesses. As a minimum this will require the retention of Mill Wynd and Paul St car parks (or equivalent 52 spaces), alongside connection to the Dunkeld Road Corridor (DRC) and provision of a mobility hub to help achieve the Council's modal shift objectives. Investment in additional sustainable modes beyond the linkage to the DRC and the provision of a mobility hub should be based on quantified trips generated by the development and the proposed reduction of the public and residential car parking with appropriate mode share targets and measures identified for the development that help achieve the agreed objectives.

Additional guidance: There will be a requirement to establish length of stay for these spaces, again further assessment and consultation will be required, however shorter stay limits of less than 4 hours should be considered to limit/mitigate commuter use and maximise turnover to aid local business. In terms of the Electric Vehicle (EV) requirements for the public car parking, there is requirement for provision of two semi-rapid chargers (22Kw) and two rapid chargers (50Kw). All to a design & specification to an adoptable standard.

Requirement: Provision of onsite mobility corridors which respect pedestrian and cycle desire line connections from the roundabout and along the Lade to West Mill St and provide major mobility corridor connections to Perth Cycle Masterplan Network DRC.

Additional guidance: The required specification of the minor mobility corridor route is 3m wide and to adoptable standard with provision of landscaping and planting but please refer to the Amenity guidance as this may be relaxed depending on ecological and tree survey recommendations. The required specification of the major mobility corridor route is 4m wide to adoptable standard with provision of landscaping and planting.

Requirement: Provision of a mobility hub and locate this at the junction of High Street and Paul Street for good visibility and accessibility.

Additional guidance: Mobility hub specification: This facility should provide parking, showers, lockers, changing facilities, accessories pump, bike repair station - a simple facility incorporating a pump, cycle tools and other useful equipment, and seating. Proximity to Mill Street bus stances means High St /Paul Street junction is the best location. It also ensures a good profile/visibility for the facility and addresses safety and vandalism concerns. Key aspects to be considered in developing the mobility hub proposal will be ensuring appropriate placemaking, signage, accessibility, safety, furniture, weather protection, information, services, and considering the car interface and bike interface. This facility should be scaled proportionate to accommodate existing (displaced) demand from the reduction in public parking and development led demand.

4. Low Carbon for City Guidance

Delivery of requirements:

Infrastructure	Who Delivers	Funding Opportunities	Who maintains facilities
Dunkeld Road Corridor	Council	Sustrans Scotland Community Links PLUS funding secured alongside Council budget funding	Council
Mobility corridors within site	Developer	Developer	Council
Mobility corridor connection from DRC to site	Developer	Developer	Council
Phase 1 Green St (see amenity section for details)	Developer	Developer	Council
Phase 2 Green St (see amenity section for details)	Council	Nature Scot, Sustrans, Council	Council
New One Way System	Developer	Developer	Council
Mobility hub	Developer	Developer	Community/The Council/ Third party
EV infrastructure for public parking spaces	Developer	Developer	Council
EV infrastructure for residential parking spaces	Developer	Developer	Developer/homeowner
Possible Communal/District heating scheme	Developer/ The Council/ Esco	LCITP funding and District Heating Loan Fund (both Scottish Government)	Developer/ The Council/ Esco

4. Low Carbon for Residents Guidance

Vision for Residents: Good accessibility to city centre facilities, to transport sharing options, and to sustainable heating

Why are we seeking low car development?

This location has easy access to city centre facilities and excellent public transport links. This means that the people living here will not necessarily need or expect to have access to their own car. This site should be developed as high density development with a high proportion of smaller units. Parking areas should not be over generous as this would be an inefficient use of land. Reducing parking allows for greater opportunity for communal private garden space and allows for more homes.

It is considered this is the right location and type of development so we would prefer to see car parking spaces reduced to a very low level but to do this requires sufficient measures to facilitate the Council's modal shift objectives.

Approach: Lower car parking provision whilst encouraging reducing parking further if delivering this alongside sufficient measures to facilitate the Council's modal shift objectives.

Requirement: Reduced car parking provision (due to city centre location) of 1 per flat, 2 per other residential properties, and 0.25 per dwelling as visitor unallocated, further reduction is preferred subject to there being sufficient measures to facilitate the Council's modal shift objectives.

Additional Guidance: Investment in additional sustainable modes beyond the linkage to the DRC and the provision of a mobility hub should be based on quantified trips generated by the development and the proposed reduction of the public and residential car parking with appropriate mode share targets and measures identified for the development that help achieve the agreed objectives.

Regardless of vehicle parking levels proposed there is a requirement to provide safe, secure and sheltered cycle parking within communal areas of flatted development for residents and visitors at national roads development guide standards, of 1 secure covered space per dwelling residents and 0.25 for visitors, none if garage or secure area is provided within curtilage of dwelling. If seeking to lower vehicle parking these standards would need to be enhanced. Shared facilities should be secure, overlooked, convenient and sheltered to be suitable and available for use by both owners and visitors.

If car club provision is proposed to meet the Council's modal shift objectives a legal agreement would be required to set up and/or promote a Car Club, and the developer should ensure that the club is up and running from the very beginning of the occupation of the development. For every 17 spaces reduced the Council would require provision of 1 car club space to be subsidised for at least 2 years. It should be offered to prospective members on favourable terms. A common requirement is free initial membership for residents with two years driving credit. The developer should expect to contribute to the costs of setting up and promoting the club, as well as any traffic orders and works that might be necessary. Any car club provision should be EV and have access to adequate charger provision.

4. Low Carbon for Residents Guidance

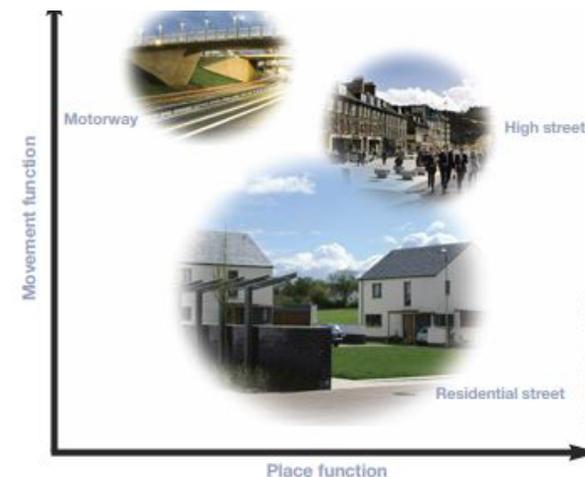
If replacement of over 17 car spaces is anticipated this automatically triggers requirement for a second vehicle. There is need for a vehicle, lining and signing located on a nearby street rather than within the court (so that it is available to members of the public as well).

Requirement: The preferred option if feasible should be underground carpark provision, but where/if not possible locate residents parking to limit car access within the site and provide spaces within a parking court with access suitably controlled.

Additional Guidance: Underground parking is preferred subject to structural engineer and highways engineer consideration and in this circumstance the maximum car parking levels are more likely to prove acceptable. Undercroft parking along Caledonian Road accessed from the internal court could be appropriate subject to appropriate design. If underground is not proposed then secure residential parking is required. As indicated later within the Amenity Vision for Residents shared surface access is proposed. One vehicular lane is appropriate and service vehicles will not be expected to pass each other. The primary focus in this high place space is on amenity. However a swept path analysis needs to show that no complicated manoeuvres are required and emergency vehicles need to be able to get to within 45 m of all points within a dwelling.

For any townhouse with frontage private parking, passive provision for future installation of home chargers should be provided. In terms of communal private car park provision, 10% of parking provision should be provided with slow chargers (7Kw) with the preference of use given to residential EV owners. If there are proposed to be car club spaces this EV provision is required in addition to the 10%.

Extract from the *Designing Streets*, Scottish Government, 2010 this shows the relative importance of particular streets/roads in terms of place and movement functions and informs subsequent design choices.



4. Low Carbon for Residents Guidance

Vision for low/zero carbon affordable heating solutions

Why are we pursuing a low/zero carbon affordable heating scheme?

As part of the Council's efforts to support a transition to net zero, how we heat new buildings will play a significant role in driving down carbon emissions. The Scottish Government has set ambitious targets in relation to the construction of new domestic and non-domestic buildings and their associated heating systems, moving away from conventional systems such as gas and instead delivering low and zero carbon heating alternatives such as heat pumps and heat networks. The Scottish Government's current plans include a New Build Heat Standard for all new buildings to deploy zero direct emissions from 2024 onwards. Heat networks (which can be either communal or district in scale) can be an energy efficient way to deliver low carbon heat. Heat networks can help us meet National and Local net zero objectives and deliver national and local targets for heat decarbonisation. Delivering heat to buildings through low/zero carbon sources can also provide a securer supply of energy in the longer term as there are uncertainties around the future supply of fossil fuel heat sources.

The Thimblerow site is ideally placed in the city centre to potentially deliver a communal or district heating scheme. With a high density development and potentially incorporating a mix of buildings in the surrounding area (including buildings as part of Perth and Kinross Council (PKC) estate, other public sector institutions e.g. housing associations, and other key anchor loads) the site could be suitable to deliver a district heating scheme using low/zero carbon heating sources in the longer term.

To assist in the preparation of an energy statement for the site, the Council has undertaken a desk-top study to consider initial feasibility for a heat network in this location.

This study has considered:

- location/proximity/prevalence of anchor loads,
- location/proximity of heat demand density and linear heat density
- location/proximity of PKC/public sector buildings including existing communal heat networks (control of influence)
- other development opportunities (LDP2 sites/sites with planning permission)
- other key policy drivers and funding opportunities (e.g. tackling households in fuel poverty)
- energy sources – heat pumps (Ground Source Heat Pump, and Water Source Heat Pump) and their viability within surrounding greenspaces

4. Low Carbon for Residents Guidance

The outputs of this analysis have demonstrated that there is potential feasibility for a district heating network in the city centre incorporating the Thimblelow development as part of a wider scheme. As part of this analysis, initial discussions have taken place with colleagues in the Council to identify where there are planned heating upgrade programmes which could feasibly become part of a wider network as a specified heat demand. Whilst funding and timescales are currently uncertain these discussions have identified potential opportunities in the city centre encompassing a range of public sector buildings. Further analysis using detailed modelling should test out possible scenarios/phasing for delivering a district heating scheme in this location.

This initial assessment work should help inform the preparation of an Energy Statement for the site reflecting on the outputs of this initial analysis as well as detailed consideration of the design/layout of the proposed development at Thimblelow.

Approach: Providing access to low/zero carbon affordable heating

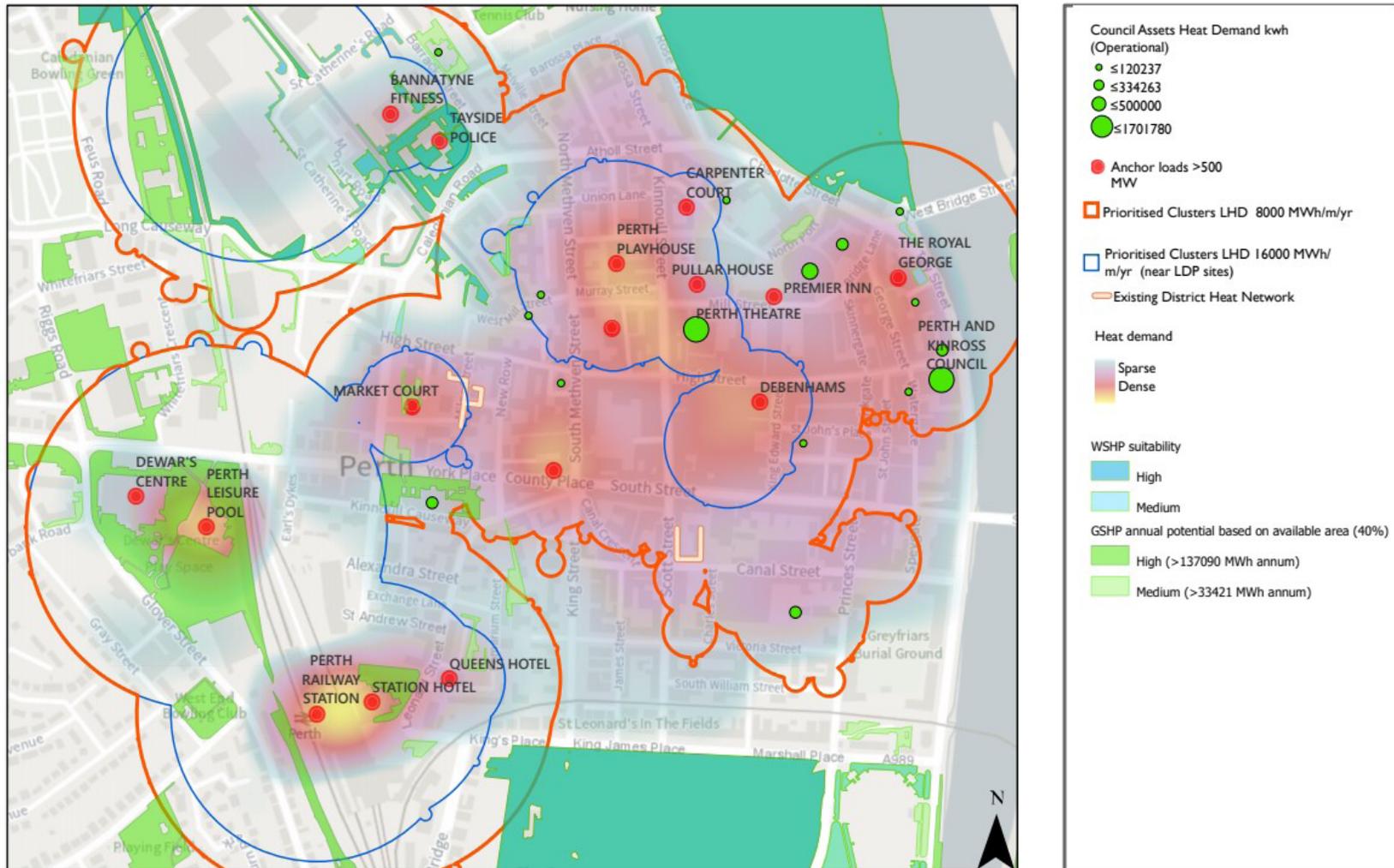
Requirement: Provision of low/zero carbon heating on site and detailed consideration through the preparation of an energy statement of the opportunity to bring forward a communal/district heating system.

Additional Guidance: As per the site requirements and in line with Policy 34 (Sustainable Heating) an energy statement is required to be prepared to consider the viability for a district heating network (communal/district) in this location. In line with Policy 32 (Low and Zero Carbon Generating Technologies) the development will be required to deliver carbon emission savings through the installation of low/zero carbon generating technologies which could be met through the development of a communal/district heating scheme. Alternatively if the development will achieve significant energy savings to a standard equivalent to Passive House or BREEAM Outstanding, the requirement to consider the provision of a heat network will not apply.

4. Low Carbon for Residents Guidance

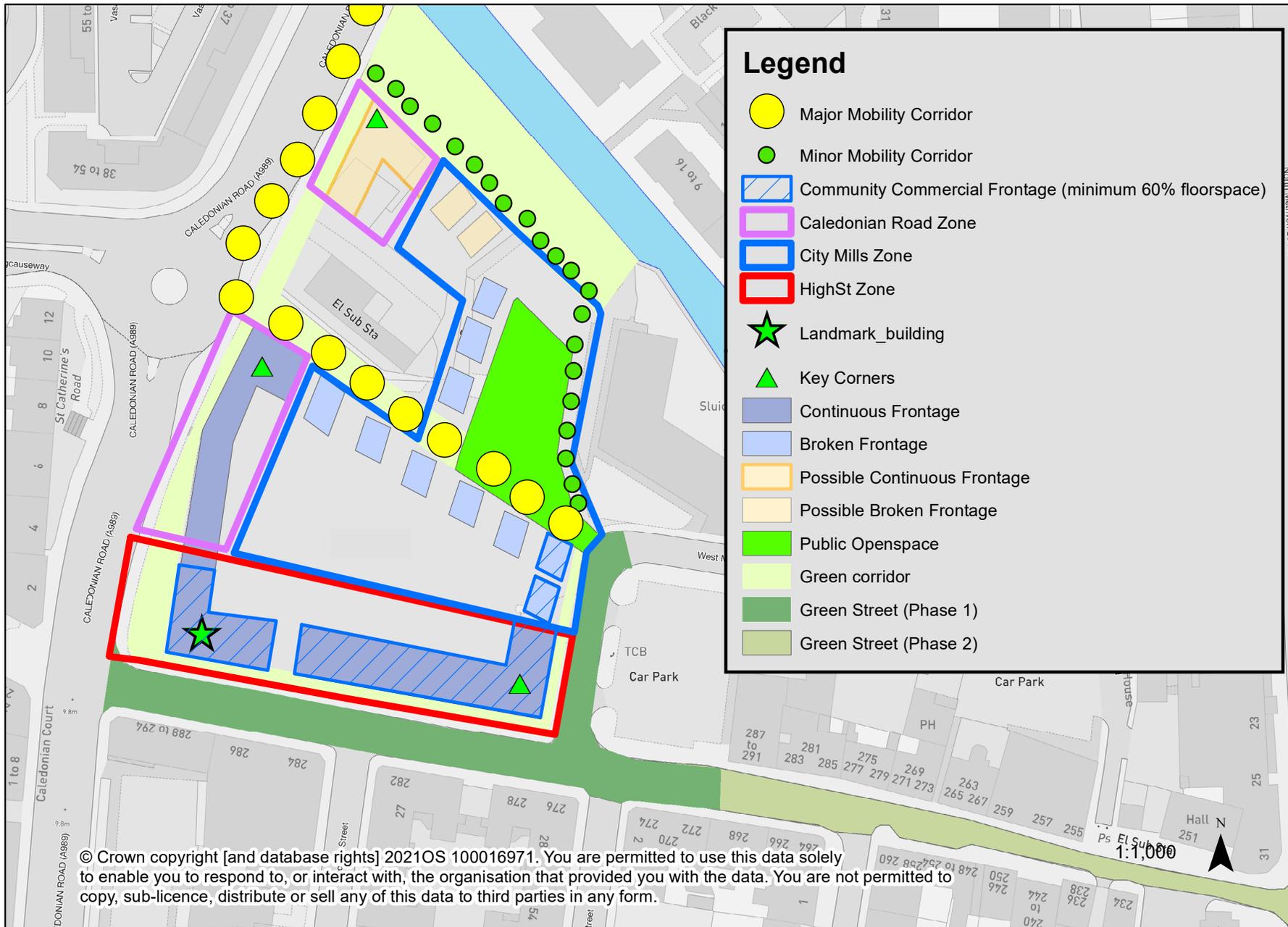
This graphic outlines a number of key factors when considering the opportunity for a heat network in the area surrounding, and including, the Thimblerow site. This includes: individual buildings which have an identified high heat demand (including PKC buildings), cluster analysis of buildings of high heat demand located close together, existing heat networks, and opportunities for ground and water source heat pump technologies using existing greenspaces and river sources.

Council Assets - Heat map & anchor loads (>500 MW)



Credits: GHIGs Greenspaces: boundaries derived from OS Mastermap Greenspace. Attributes derived from Scotland's Heat Map v.2 with additional attributes from GHIGs. See OS Terms and Conditions <https://www.ordnancesurvey.co.uk/business-government/licensing-agreements/public-sector-licences-contractors-end-users>. © Crown copyright and database right 2021. Ordnance Survey (OS Licence number 100024655). Incorporates data from PAF®, the copyright in which is owned by Royal Mail Group Plc. Contains OS data © Crown copyright and database right 2021. All rights reserved Scottish Government 2021. Ordnance Survey (OS Licence number 100024655). Crown copyright [and database rights] 2021 OS 100016971. You are permitted to use this data solely to enable you to respond to, or interact with the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form

5. Amenity Vision for City



5. Amenity Vision for City

Improve amenity of Caledonian Road and High St, respond to characteristics and opportunities of the site, and provide well defined public spaces and pedestrian/cyclist routes through the site.

Use of perimeter blocks is proposed where possible, for efficient use of land, and for enclosed private or communal gardens and parking courts. This provides direct, convenient, overlooked routes and good distinction between public and private spaces. It provides for movement along key desire lines and defends privacy of garden courtyard areas. Focal open space is identified at the junction of key pedestrian cycle routes. SUDS should be an integral, above ground, multi-functional component of the landscape design from its inception, with connections into the wider network identified. The vision shows the preferred layout for the Lade area should it form part of the developable area (subject to ecology/tree survey assessment).

Continuous flatted/townhouse frontage along principal streets of Caledonian Road, and the old High St is sought to provide enclosure to the public realm. Elsewhere we encourage broken frontage, and lesser height to reflect street hierarchy and character. Blocks should be designed to ensure building frontages principally face and overlook Caledonian Road and High Street, the mobility corridors and the public spaces. The continuous frontages require articulation to break up their mass and create visual interest. The junction of Old High Street and Caledonian Road should be a landmark/focal building. Elsewhere other key corners should provide interest through their detailing, and corners should address all aspects, ensuring no blank walls face onto public realm. At least 60% of the ground floorspace of the buildings fronting onto High Street and Paul Street should be active frontages (commercial or community uses) to achieve good amenity and encourage footfall.

The overall architectural style could be contemporary, and all materials should be robust and durable, a mix of materials is sought for diversity and to reflect different character zones. Proposals should respond to their character area, and local attributes/characteristics, and reinforce street hierarchy.

High St and Caledonian Road zones need to reinforce their urban identity, and be characterised by development which forms a continuous building frontage. The Caledonian Road zone should reflect the city centre ring road hierarchy and to provide enclosure buildings here are likely to be around five stories and no less than three. This zone has the most flexibility to do something very different from the local vernacular, whilst there is also significant flexibility on choice of materials. The High St zone should be 3-4 stories, a variation in height along it is desirable and an increase should highlight its key junction with Caledonian Road. The High St zone could pick up on the red sandstone tenemental character, potentially by using variation of reddish tone bricks. The City Mills zone should be maximum 3 stories and materials should reflect its natural stone colours. This zone could have a contemporary architectural style, but it is the most sensitive and requires the most reference to the local vernacular.

Provision of a new one way system allows sections of High Street/ Paul Street to form part of a Green Street (Phase 1) with pedestrian and cycle lane, landscaping and cycle storage shelters, and potentially outdoor seating space for businesses. This creates more space for people post-pandemic, as well as encouraging a greener, accessible, and more pedestrianised version of the city. Although this would have a modal shift benefit this is principally about creating a high amenity space, with greater space for pedestrian/cyclists, landscaping, potentially space for business/es, and greater separation of new homes from traffic.

5. Amenity for City Guidance

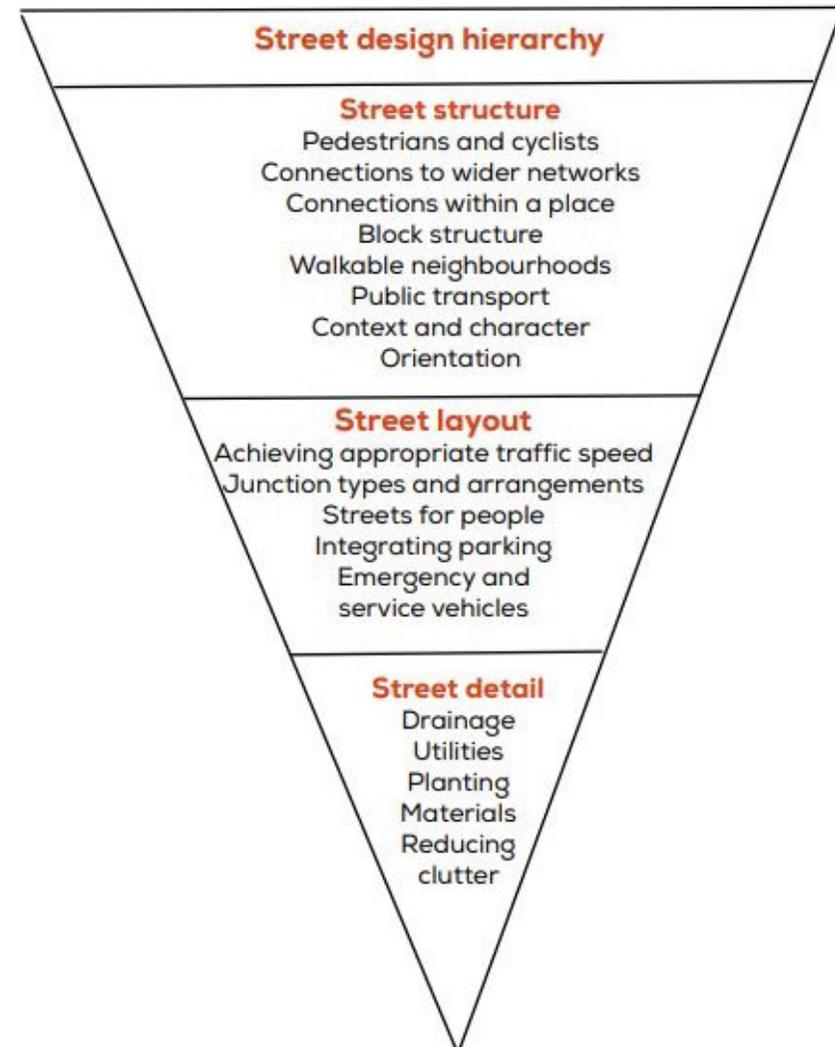
Vision for City: Improve amenity of Caledonian Road and High St, respond to characteristics and opportunities of the site, and provide well defined public spaces and pedestrian/cyclist routes through the site

Approach: Proposals should respond to their character area, and local attributes/characteristics, reinforce street hierarchy, and provide high amenity pedestrian/cyclist linkages along key desire routes from the roundabout and from the lade, to Paul Street/West Mills Street, and along the High St. Use of perimeter blocks is proposed where possible, as it makes efficient use of land, offers opportunities for enclosed private or communal gardens and parking courts, and provides direct, convenient, overlooked routes and good distinction between public and private spaces. The vision layout shows the preferred layout for land adjacent to the Lade should it form part of the developable area. The Lade area is subject to ecological and tree survey to consider whether it will be suitable for development.

Requirements: The layout should provide continuous flatted/ townhouse frontage along the principal streets of Caledonian Road and the old High St to provide enclosure to the public realm, and should encourage broken frontage, and lesser height elsewhere to reflect street hierarchy and character. Blocks should be designed to ensure building frontages principally face and overlook Caledonian Road and High Street, the mobility corridors and the public spaces.

Additional guidance: This layout helps reinforce the hierarchy of the principal streets and the character/function of these areas. Fronts should be orientated onto public frontages, and should be attractive and allow for passive surveillance.

Extract from the Designing Streets, Scottish Government, 2010 this shows how movement has informed the preferred layout and how it will inform subsequent design choices



5. Amenity for City Guidance

Requirements: It should also provide for focal open space at the junction of key pedestrian cycle routes and provide high amenity public realm including public artwork and street furniture.

Additional guidance: Consider the opportunity to integrate shelter and Sustainable Urban Drainage System (SUDS) features within this seating and relaxation space. The proposal should clearly identify the function and proposed maintenance arrangements for each open space area. Further guidance is provided in Open Space Provision for New Developments Supplementary guidance and Maintenance Options for Public Open Spaces in New Residential Developments Policy 2020 guidance. Although developers can opt for private arrangements for some areas, Council adoption of all Public Open Space within a development is preferred as it is a simpler process.

Requirements: Landscaping and planting should look to provide biodiversity benefits and plans should avoid tree loss by incorporating trees into design where possible. Where tree loss is unavoidable, mitigation in the form of compensatory planting will be required.

Additional guidance: Enhancement measures should be provided. Landscaping and planting should look to provide biodiversity benefits particularly for bats, birds and pollinators. Provision for swift nesting would be sought in buildings 2 storeys or more and additional swift tower provision is encouraged. Provision would also be required for bats, particularly along the edge with the lade. Any planning application will require to be supported by a tree report prepared in accordance with BS5837: 2012, Trees in Relation to Design, Demolition and Construction, which identifies trees within or adjacent to the application site, assesses their condition and categories, defines root protection areas and appropriate mitigation measures to secure their protection.

Proposed development will be required to accommodate existing trees on or adjacent to the site, taking into account the constraints of root protection areas for existing trees. Additional street tree planting is sought and supplementary street tree planting at the east end of the site adjacent to Paul Street is proposed.

Important trees along High St and Caledonian Road that will be protected



5. Amenity for City Guidance

Requirements: If after ecological survey some development proves suitable the Lade frontage should be set back from the footway and green corridor.

Additional Guidance: A proportionate Ecological Impact Assessment and tree survey are required to consider the value of the biodiversity in the woodland/shrubbed areas and to determine what additional survey work is required. This will inform the design, layout, mitigation and enhancement measures and may affect the developable area. Development of this area may prove unviable to pursue when buffer and minimum planting areas are established by the ecological survey and recommendations. If this is the case then this entire area may be best kept for wildlife purposes.

If there is potential it may be different than that shown on the indicative mapping. The indicative layout serves to communicate the principles for how we would wish buildings to relate to the street, and the Lade, and serves to identify the key corner, the street hierarchy and the character area guidance that could apply should some development prove suitable.

A balance will be found between placemaking/planning objectives at planning application stage. This planning balance will consider impact on biodiversity and whether this can be effectively mitigated, alongside considering:

- the exemplar nature of the proposal
- the compensatory planting proposed elsewhere within the development
- what contribution is proposed towards wider Lade Management Plan biodiversity actions
- its city centre development location and encouraging low carbon lifestyle
- potential for frontage onto Caledonian Road (streetscape/amenity benefits)
- ability to provide strong enclosure and a frontage onto Lade (for amenity and to improve feeling of safety for users of footway and the mobility corridor on either side of the Lade)
- and provision of a mobility corridor along the Lade

5. Amenity for City Guidance

Where/if development proves acceptable then there would be requirement to retain a green network corridor alongside the Lade and for a no net loss of overall Lade biodiversity. There would also be a need to establish the optimum set back/corridor depth and this should be supported by a Lade strategy/plan. Public rooms should face onto the Lade if suitable enclosure proves possible and the specification of the mobility corridor could be varied from the preferred 3m width depending on the outcome of the ecological assessment. The developer will be required to provide compensatory native planting for trees removed by virtue of their condition. The approach taken for the green corridor zone would consider appropriateness of species selection from both a biodiversity and residential amenity perspective.

Important trees along the Lade that will be protected



5. Amenity for City Guidance

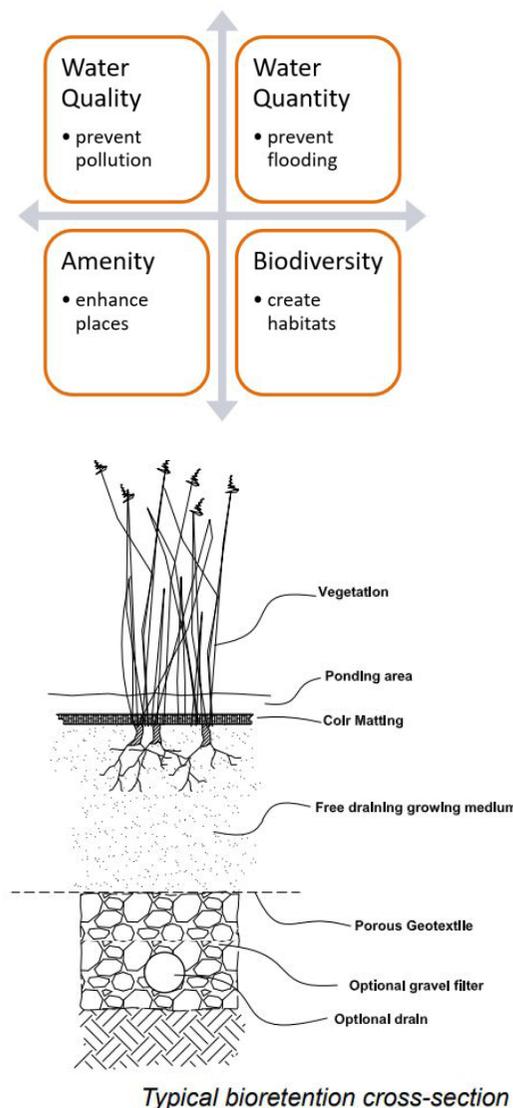
Requirement: Sustainable Urban Drainage Systems (SUDs) should be an integral, above ground, multi-functional component of the landscape design from its inception, with the connections into the wider network identified.

Additional Guidance: All greenspace should be designed to be multifunctional and part of the SUDs network. The aim is for above ground treatment (as close to the source as possible) and below ground will only be considered if there is a robust case as to why this is not possible.

Drainage and Flood Risk (surface water and river) infrastructure should consider grey to green approach and design in mitigation measures which also create an attractive environment. SUDS swales if designed for high density and channels, rills, bioretention areas and green roofs are encouraged. These features are considered as the most appropriate. A roof garden with green roof and courtyard garden including bioretention features to provide greenery could absorb rainwater while providing a valued private space for residents in a dense urban context. A roof garden could include green areas and bio retention pits. A bioretention garden or underground rainwater harvesting tank (if stored for reuse) could be included in the courtyard garden to take excess roof water, while the courtyard could be drained by a bioretention garden.

The surface water system should be designed so that should flooding occur during a 0.5% AP (200- year) flood event + 35% increase in peak rainfall intensity (to allow for future climate change), it should not encroach within 300mm of the lowest garden ground level or 600mm of property finished floor levels. Further guidance is provided in the Council's Flood Risk and Flood Risk Assessments Supplementary Guidance.

Extracts from Open Space Provision for New Developments Supplementary Guidance indicating design considerations for SuDS and showing a typical cross section of a bioretention feature



5. Amenity for City Guidance

Requirement: The continuous frontages require articulation to break up their mass and create visual interest. The junction of Old High Street and Caledonian Road will be a landmark/focal building. Elsewhere other key corners should provide interest through their detailing, and corners should address all aspects, ensuring no blank walls face onto public realm

Additional Guidance: There is opportunity for an architectural statement/landmark and use of height at the corner of Old High Street/Caledonian Road to highlight this key junction mirroring the other side of the street where height increases at the corner. For key corner buildings, they need to be designed to address all aspects facing the street. This can be done through windows, doors, angled elevations, raised pediments/gables.

Blank walls in the public realm should be avoided as they are visually unappealing and can cause problems with the lack of passive surveillance, and can become a focus of antisocial behaviour.

Photos of corner buildings nearby



5. Amenity for City Guidance

Requirement: At least 60% of the ground floorspace of the buildings fronting onto High Street and Paul Street should be active frontages (commercial or community uses).

Additional Guidance: To achieve good amenity and encourage footfall, there is a requirement for at least 60% of the ground floor floorspace of the buildings fronting onto High Street and Paul Street to be active frontages. This active frontage should provide approximately a 50/50 split mix of community and commercial uses. This should include a commercial/community unit at the junction of High St and Caledonian Road.

Requirement: The overall architectural style could be contemporary, and all materials should be robust and durable, a mix of materials is sought for diversity and to reflect different character zones.

Additional Guidance: A contemporary architectural style could provide consistency between the character zones. In terms of general advice for all zones, the Council seeks deep window and door reveals and generally a strong vertical emphasis. There also needs to be an appropriate individual response to the different character zones. The Council agrees with the Scottish Government's New Design in Historic Settings guidance that, 'in general we believe that new interventions in historic settings do not need to look 'old' in order to create a harmonious relationship with their surroundings. Some of the best recent examples are contemporary design responses.' However it also states that, 'A modern building which disregards its setting is very likely to be regarded as unsuccessful both now and in the future.' The City Mills zone is the most sensitive with regard to its historic setting and it needs to pick up cues.

Requirement: High St and Caledonian Road zones need to reinforce their urban identity, and be characterised by development which forms a continuous building frontage.

Additional Guidance: This approach helps reinforce the street hierarchy.

Requirement: The Caledonian Road zone should reflect the city centre ring road hierarchy and to provide enclosure buildings here are likely to be around five stories and no less than three. This zone has the most flexibility to do something very different from the local vernacular, whilst there is also significant flexibility on choice of materials.

Additional Guidance: The zone also requires landscaping attention to its boundaries with the electricity sub station and significant planting associated with the major mobility corridor.

Requirement: The High St zone should be 3 - 4 stories, a variation in height along it is desirable and an increase should highlight its key junction with Caledonian Road. The High St zone could pick up on the red sandstone tenemental character, potentially by using variation of reddish tone bricks.

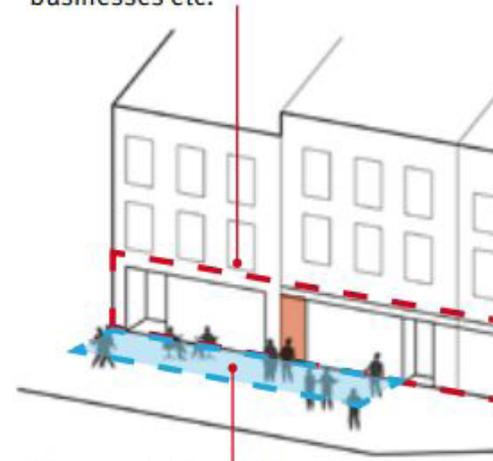
5. Amenity for City Guidance

Additional Guidance: The proposed Green Street involves change to a one way system combined with landscaping and pedestrian/cyclist lane requirements which should allow for greater privacy and amenity through increasing separation from vehicular traffic.

However a swept path analysis needs to show that no complicated manoeuvres are required. Utilising the reduction from 2 vehicle lanes to 1 there is scope to better separate vehicle traffic from the High St properties and improve amenity. The gained space from reducing a car lane should be used to increase pavement provision to 3m, providing landscaping, possibly cycle parking shelters for the mobility hub, and for improving the public realm with consideration given to including outdoor seating space for businesses. This is a bid to create more space for people post-pandemic, as well as encourage a greener, accessible and more pedestrianised version of the city. The developer should contact the Place Development Team to consider how they might integrate outdoor seating space for businesses within their proposal. The Council will look to the implementation of phase 2 Green street later but not as part of this proposal.

Extract from the Town Centre Toolkit, Scottish Government, 2013

Continuous frontage that allows visual links between inside and outside
– shops, cafes/restaurants, small businesses etc.



Pavement widened to allow comfortable use of pavement space for outdoor cafe/dining.

5. Amenity for City Guidance

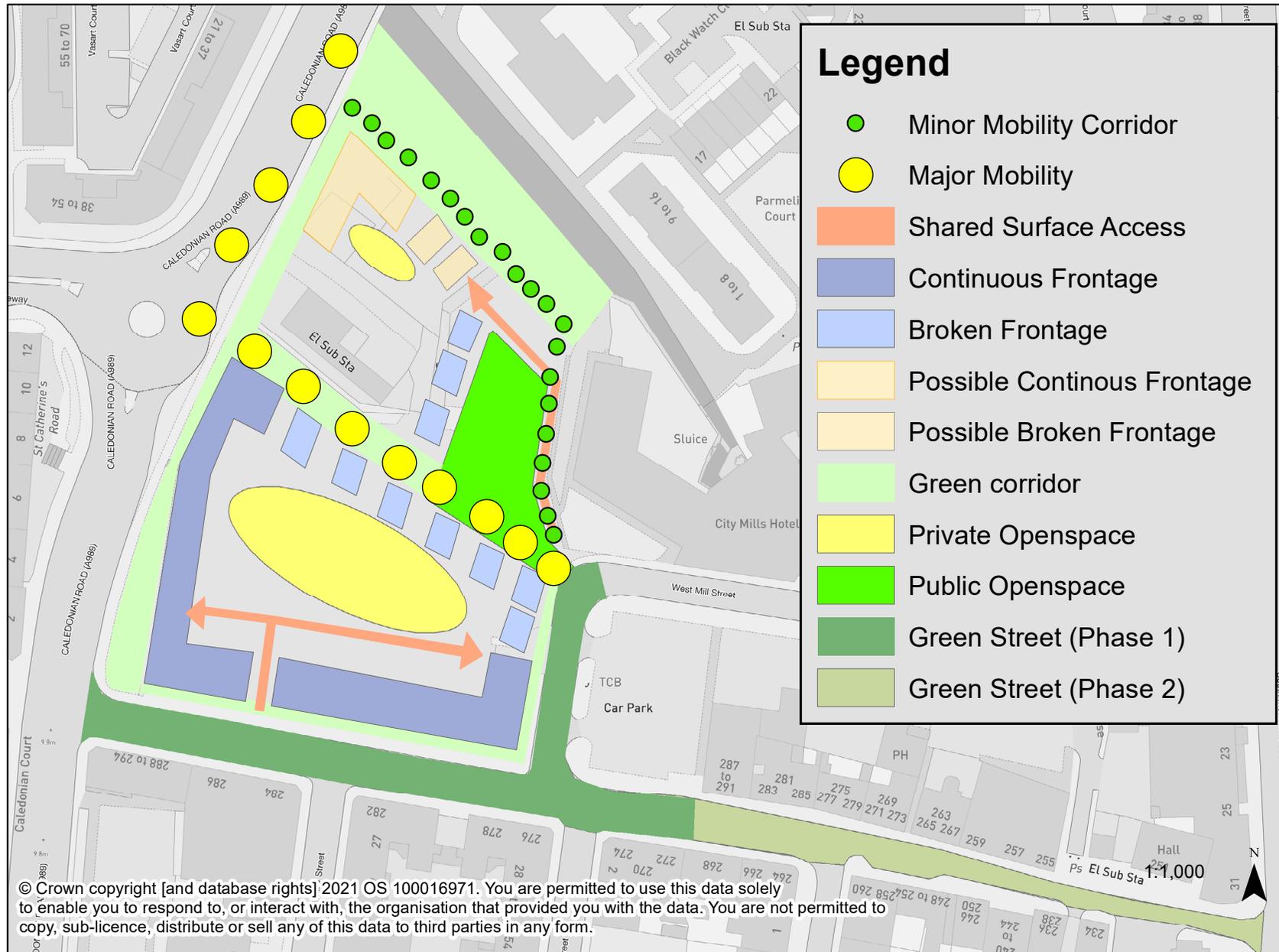
Requirement: In contrast the City Mills zone should be maximum 3 stories and materials should reflect its natural stone colours. This zone could have a contemporary architectural style, but it is the most sensitive and requires the most reference to the local vernacular.

Additional Guidance: The listed buildings of the City Mills provide a lot of amenity and whilst new development could be contemporary in overall style it needs to pick up cues from its environment. The City Mills are large buildings but the historic street pattern in this area was a finer urban grain with some smaller buildings and plots. A rich urban grain including broken frontages is sought. Variation in roof shapes and use of dormers is also a strong characteristic of the Lower City Mills Area. Also generally the facades of blocks/large buildings are of one material. Materials and colour in this zone should reflect the stone colours of the City Mills. This could partly be achieved by use of stone and/or brick. Surface materials need to achieve a high quality public realm, should have a small unit size, and reflect the palette of materials here.

Photos of the City Mills Area



5. Amenity Vision for Residents



5. Amenity Vision For Residents

Vision for Residents: Provide a high amenity residential environment

Approach: Limit the areas within the site which can be accessed by car to provide car free areas. Consider locating any parking in southern and eastern areas within courtyard to give car free space and garden space within sunniest less overshadowed areas. The overall scheme may provide a mix of private open space for some properties and communal space for others. Options for communal garden ground includes green roof/roof terrace within the block along High St, a roof terrace on south side of Caledonian Road, and/or internally within the block.

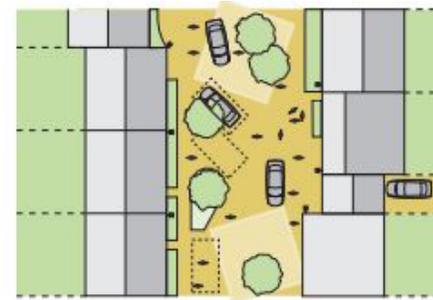
5. Amenity for Residents Guidance

Requirement: Consider locating any parking in southern and eastern areas within the courtyard to give car free space and garden space within sunniest less overshadowed areas.

Additional Guidance: The preferred solution is to reduce car parking provision as much as possible in line with low carbon lifestyle guidance with appropriate transport sharing options provided. However flexibility in parking levels as per Low Carbon Lifestyle guidance can be determined with view to marketability and if underground parking is not achievable then there will be a need for parking within the courtyard.

Shared surfaces comprising of a road without footways where the carriageway is shared by pedestrian and vehicles are encouraged internally within the block. It is desirable that vehicle speed should not exceed 10 mph in Shared Surface Roads and the road layout should reflect this.

Extract from *Designing Streets*, 2010



Level surface – no delimitation between street user zones
User hierarchy favours pedestrians

Extract from the *Town Centre Toolkit*, Scottish Government, 2013

IN MOST CASES,
CYCLISTS AND
VEHICLES WILL
SHARE SPACE
AND THIS IS
OKAY IF DESIGN
SPEED IS LOW
AND JUNCTIONS
ARE DESIGNED
ACCORDINGLY

5. Amenity for Residents Guidance

Requirement: To reflect edge of city centre location, garden ground standards are reduced, but minimum standards here are at least 20 square metres of communal garden space or 5 square metres balcony per 2 bed+ or 1.5 metre by 1.5 metre for any 1 bed flatted unit, or at least 40 square metres garden space for a townhouse. The overall scheme may provide a mix of private open space for some properties and communal space for others. Options for communal garden ground include green roof/roof terrace within the block along High St, a roof terrace on south side of Caledonian Road, and/or internally within the block.

Additional Guidance: The minimum area for usable communal garden space is 50 square metres. For flatted development communal open space should be provided for the exclusive use of occupants of the development, and its location, size and shape need to enable it to be enjoyed by the occupants.

Permeability through the private courtyard areas would not be appropriate, and communal amenity space should:

- receive adequate sunlight
- be designed and managed to ensure privacy and be screened from parking and public areas
- be overlooked by habitable rooms to ensure safety and
- include seating, trees and planting, lighting, paving and footpaths, and possibly food growing opportunities

Alternative to or to reduce the overall communal provision requirements a balcony of 5 square metres balcony per 2 bed+, or 1.5 metre by 1.5 metre for any 1 bed flatted unit would also be acceptable as the outdoor amenity space provided for a flat. Balconies should be designed to provide some shelter and privacy from neighbouring properties either using screens or setting back within the facade.

Private outside space should not be located where it will be exposed to high levels of noise or air pollution. An active green roof for use as communal private open space would not be appropriate for the Caledonian road frontage but a roof terrace facing south could be appropriate here.

6. Planning Policies and Guidance

Requirement: Future proposals should consult these plans and guidance documents in full. The planning application process may identify other relevant policies, however the most relevant policies are listed below.

TAYplan Strategic Development Plan (2016-36)

Policy 1 – Location Priorities

Policy 2 - Shaping Better Quality Places

Policy 4 – Homes

Policy 5 – Town Centres First

Policy 6 – Developer Contributions

Perth and Kinross Local Development Plan 2019

Policy 1 – Placemaking

Policy 2 – Design Statements

Policy 3 – Perth City

Policy 4 – Perth City Transport and Active Travel

Policy 5 – Infrastructure Contributions

Policy 11 – Perth City Secondary Uses Area

Policy 15 – Public Access

Policy 20 – Affordable Housing

Policy 22 – Particular Needs Housing Accommodation

Policy 25 – Housing Mix

Policy 26 – Scheduled Monuments and Non-Designated Archaeology

Policy 27 – Listed Buildings

Policy 28 – Conservation Areas

Policy 31 – Other Historic Environment Assets

Policy 32 – Embedding Low and Zero Carbon Energy Technologies in new development

Policy 34 – Sustainable Heating and Cooling

Policy 38 – Environment and Conservation

Policy 41 – Biodiversity

Policy 42 – Green Infrastructure

Policy 52 – New Development and Flooding

Policy 53 – Water Environment and Drainage

Policy 55 – Nuisance from Artificial Light and Light Pollution

Policy 56 – Noise Pollution

Policy 57 – Air Quality Management Areas

Policy 58 – Contaminated Land and Unstable Land

Policy 60 – Transport Standards and Accessibility Requirements

6. Planning Policies and Guidance

Other National Policies and Guidance

National Roads Development Guide (2015)

Scottish Planning Policy 2014

National Planning Framework 3

Circular 4/1998 (Use of conditions)

Circular 3/2013 (Development Management)

Scottish Government Planning Advice Notes

Design Places (2001)

Designing Streets (2010)

Creating Places (2013)

Requirement: Further policy advice is principally contained within the low carbon and amenity guidance sections but additional guidance is provided as follows:

Digital Connectivity: Ensure that provision is made for digital infrastructure as an integral part of the development.

Air Quality: The development site is located within Perth's Air Quality Management Area (AQMA), which was designated in 2006 for the whole of Perth City. Development at the site could potentially lead to a deterioration in local air quality through a combination of altering the built form of the area, increasing vehicle emissions at the location, or possibly introducing flue emissions from a heating or energy plant. A detailed air quality assessment will be required by a qualified consultant. The developer needs to consider the height of proposed buildings and existing buildings to ensure that the proposal does not produce a canyon effect causing pollutants not to disperse adequately.

Archaeological Interest: Perth and Kinross Heritage trust have indicated that it is known that this site and its surroundings have rich archaeological potential. There will be a requirement to investigate, address and incorporate important features where possible as part of the design, or include educational information/waymarking if appropriate. As there is an element of public realm work in the scheme it is recommended to include some sort of interpretation discussing the historic features, the lade and mills and anything else of notable interest in the area.

6. Planning Policies and Guidance

Infrastructure Contributions and Affordable Housing: There are potential exemptions applicable particularly for viability and sustainability reasons. The site is in the Perth City Centre Zone. This means that proposals for fewer than 20 dwellings will not be required to contribute towards Primary Education or Transport Infrastructure. Where a proposal is for 20 or more dwellings, the contribution requirement will be assessed on a case-by-case basis. The site is in the catchment for Inch View Primary School. Education & Children's Services have no capacity concerns in this catchment area at this time. For Perth Transport Infrastructure, the site is in the Perth Core Area and the Developer Contributions and Affordable policy Supplementary Guidance sets out how the guidance is applicable, and what exemptions apply. With regard to affordable housing any proposals of 5+ residential units shall be assessed for affordable housing contributions at 25% of the total number of units proposed and off-site delivery or a commuted sum in lieu of delivery may be appropriate.

Waste: Communal bins storage should accommodate space for general waste bins and dry mixed recycling bins. Perth & Kinross Council have signed up to the Charter for Householder Recycling. This along with upcoming legislation could see changes to kerbside collection services, including making food waste collections from domestic properties mandatory. The developer should include appropriate provision to accommodate upcoming changes. The proposed Deposit Return Scheme for Scotland will look to capture beverage containers, however the developer should look to include a mini glass point within this development for glass not included in the scheme.

Consideration needs to be given to the location of the bin store(s) both in terms of servicing the bins and resident usage. It is usually preferable that bin storage areas are close to the entrance/exit of the properties so that residents need to pass when leaving the property and have minimal distance to carry waste. However consideration needs to be given to the location of the bin store both in terms of servicing the bins and resident usage.

Prior to submitting a planning application there is need to consult Waste Services to clarify the bin requirements and the optimum locations. There is also a need to maximise the use of recycled construction materials and use of locally sourced sustainable materials and minimise onsite waste levels.

Flood Risk: The foul and surface water drainage of the site will require detailed consideration and assessment, in consultation with Scottish Water, SEPA and the Council's Structure and Flood Team. Flood Risk Assessment and a Drainage Impact Assessment will be required defining the developable area of the site and ensuring that (taking account of Flood Protection Scheme) no built development takes place on the functional flood plain. Areas protected by the Flood Protection Scheme should be subject to appropriate mitigation measures including water resistance, and water resilience measures and evacuation procedures.

7. Next Steps

The Council will work with a selected developer to bring forward a planning application for a high-quality exemplar scheme demonstrating the potential for high amenity city centre living in a low carbon development. The first step will be public consultation and the submission of a Proposal of Application Notice.

This brief provides guidance on planning criteria and interests. The exact scale and mix of the development elements will be arrived at through the submission of a detailed planning application with associated background supporting information. The possibilities for development in and around this site will be further informed by environmental review/constraints with detailed input including:

- Traffic Impact / Transport Assessment
- Drainage Impact Assessment
- Schematic Drainage Layout
- Flood Risk Assessment
- Ground Conditions / Water Resources
- Utilities assessment to consider how to accommodate the diversion of existing utilities and/or existing service access rights
- Sustainability Assessment
- Tree Survey
- Noise Assessment

- Air Quality Assessment;
- Landscape and Visual Impact Assessment
- Cultural Heritage & Archaeology Statement
- Energy Statement to investigate the potential for the provision of, and/or extension to, a heat network to serve the development

The following documentation should accompany the submission of a planning application:

- Architect layout and elevational drawings (including street sections)
- Planning Statement, including a section on Economic Development
- Design & Access Statement
- Detailed landscape proposals
- Pre application Consultation Report, with some public consultation
- Construction Environment Management Plan
- Construction and Phasing
- Waste Management and Minimisation Plan
- Socio- Economic Impact
- An invasive non-native species control plan

7. Next Steps

Perth and Kinross Council Contacts

Development Management: DevelopmentManagement@pkc.gov.uk

Transport Planning: TransportPlanning@pkc.gov.uk

Community Greenspace: communitygreenspace@pkc.gov.uk

Environmental Health: EnvironmentalHealth@pkc.gov.uk

Biodiversity: Biodiversity@pkc.gov.uk

Structures & Flooding (surface water and drainage):
FloodingDevelopmentControl@pkc.gov.uk

Waste Services (waste/recycling provision):
CommunityWasteAdvisers@pkc.gov.uk

Housing (affordable housing provision): ASaum@pkc.gov.uk

Strategy and Policy: DevelopmentPlan@pkc.gov.uk

Developer Negotiations officer: TESDevelopmentContributions@pkc.gov.uk

Place Development Team: PlaceDevelopment@pkc.gov.uk

Conservation team: ConservationTeam@pkc.gov.uk

External Contacts

Scottish Environmental Protection Agency

Scottish Water

Transport Scotland

Historic Environment Scotland

Perth and Kinross Heritage Trust

Perth Civic Trust

NatureScot

TACtran

Architecture and Design Scotland

SSE (sub station)

Perth City Board

Perth Chamber of Commerce

Federation of Small Businesses

Health & Social Care Partnership

8. Good Practice Library

Here are some good examples and relevant references:

[Dunfermline the Linen Quarter](#)

An interesting case study on a not dissimilar site [Tibby's triangle](#)

Green Roofs - The best green roof case studies in Scotland include the schools in Falkirk and a university building in St Andrews. There is some proactive work happening in [Edinburgh](#) and [Meadowbank](#). There is also a green roof at Invergowrie Primary School.

[Swift towers](#)

[Swift guidance](#)

[Street trees for shade](#)

[SUDS and rain gardens](#), and green blue case studies, [London wall place](#) and [St Catharines college](#)

[Bird, bat and bee homes integrated into new buildings](#)

Sustainability recommendations - some good practice case studies, the design might not be appropriate for the Thimblerow site, but principles and solutions are applicable: a [carbon neutral laboratory](#) and [the student centre](#)

[Bike storage to complement the EV charging points](#)

How to Plan for Mobility Hubs: [A guide for Planners and Developers in Scotland COMO](#)

The [Perth Lade Green Corridor Management Plan](#), 2020-2025

Endnotes

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