



Cowlairs Urban Village
Design study

Employer: Glasgow City Council in partnership with the Scottish Environment Protection Agency (SEPA); Glasgow and Clyde Valley Green Network Partnership (G&CVGNP); Scottish Water; Scottish Natural Heritage; Forestry Commission (Scotland); South Lanarkshire Council, and Renfrewshire Council.

On behalf of: City Property (Glasgow) LLP

Agent: Collective Architecture
26 Gallowgate
Glasgow
G1 5AB

Prepared by:
Jude Barber
Director

In association with:
Peter Robinson
Associate Director, AECOM

Approved by:
John Grierson
MGSDP Client Manager

Status: Final issue

Date: January 2011



Cowlairs Urban Village. Hillside dwellings, Collective Architecture 2010.

Contents

Foreword

| | | | |
|---------|----|---------------------------------------|------|
| Chapter | 01 | Approach | p 7 |
| | 02 | Context | p 13 |
| | 03 | Constraints | p 25 |
| | 04 | Strategic drainage | p 35 |
| | 05 | Place-making | p 43 |
| | 06 | Cowlairs Urban Village - Case study 1 | p 53 |
| | 07 | Cowlairs Eco Village - Case study 2 | p 65 |
| | 08 | Next Steps | p 75 |
| | 09 | Appendix | p 87 |

Mission statement

Provide integrated solutions

Create a deliverable and innovative approach to surface water management for each site.

Provide a set of collaborative applications of spatial and water planning.

Provide a shift in perception

Promote a positive picture of living in and around water and its value for surface water management.

Provide a shift in perception of the purpose and process of urban design.

Inform best practice

Inform best practice delivery to the Project Board and set baseline standards for each site.

Promote biodiversity

Promote biodiversity and habitat networks and a more sustainable use of natural resources.

Improve population health

Improve population health by recognising the role the physical environment can play in addressing health issues.

Encourage economic development

Create infrastructure required to enable both future economic development and socially sustainable places.

Reinforce partnership working

Reinforce the existing partnership commitments to inclusive design and place-making.

Transform each site

Transform each site into an innovative, vibrant place to live through the delivery of a fully integrated and inclusive urban vision.

Foreword

Cowlairs Design Study offers City Property (Glasgow) LLP two urban case studies that both promote the value and benefits of sustainable community placemaking by providing a real opportunity for creating an outstanding human-centred legacy.

The project aims to improve quality of life by delivering the broadest range of environmentally based social benefits as part of a strategically planned and interconnected blue and green network. This celebrates natural approaches to managing the sources and pathways of surface water in the urban frame.

Attitudes and behaviours are ready to accept a business case for this small-scale but highly significant inner city regeneration project based upon the vision for implementing infrastructure comes first sustainable and fully serviced development plots.

The introduction of an inter-disciplinary urban framework promotes the re-establishment and connectivity of greenspace, and places emphasis on the importance of the garden as a thriving patch of local ecology that can fill the suburban space with visual variety.

Integrated urban design is directed through a detailed site analysis of the topography, geology, hydrology, building typologies, densities, and public realm. Risks and opportunities recognised limitations associated with the site's surface water carrying capacity, and proximity to a watercourse.

Understanding the challenges associated with the site development also extended to the analysis of key spatial and functional relationships with Keppoch Primary Campus, Possilpark Town Centre, and the canal.

Project Board



01 Approach

Infrastructure comes first

| | |
|--|------|
| Governance - description of project partners | p 09 |
| Policy and advice | p 11 |

“To maintain and improve the quality of the rivers, lochs, estuaries, coastal waters and groundwater areas. To focus on local actions highlighting the opportunities for partnership working to ensure that we all benefit from improvements in the water environment, which will contribute to the goals of the draft River Basin Management Plans that have been produced for both of Scotland’s River Basin Districts.”

Clyde Draft Area Management Plan, Extract, 2009 - 2010, SEPA and the Clyde Advisory Group.

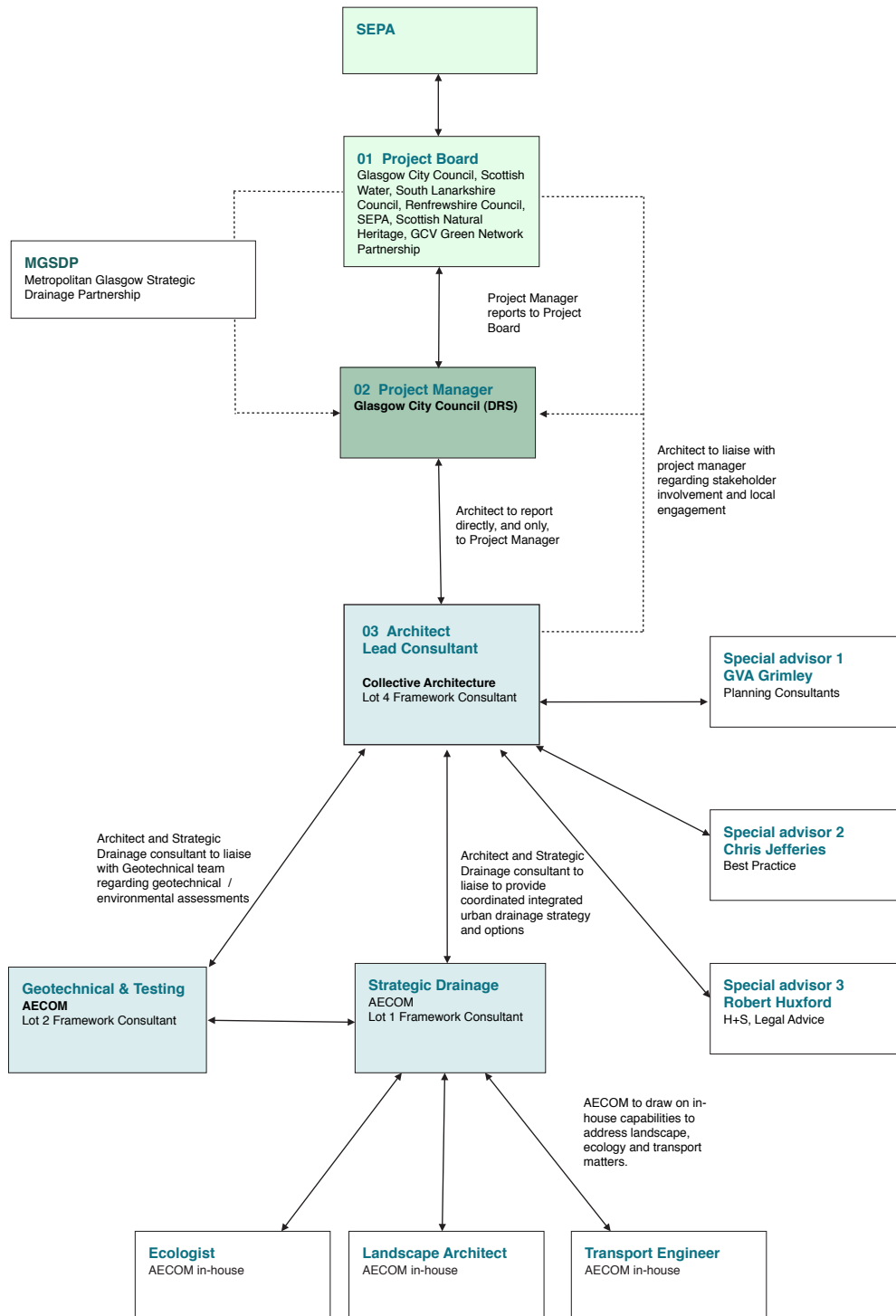
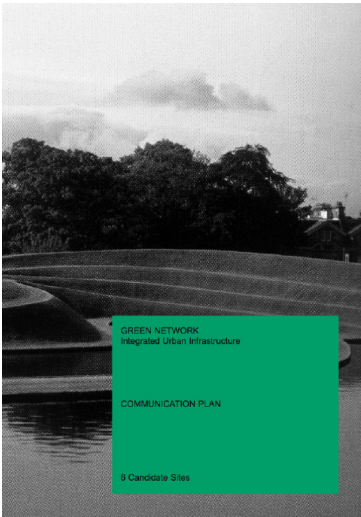


Fig 1.1 Stakeholder mapping. Collective Architecture, 2009.



Green Network, Integrated Urban Infrastructure, Communication Plan

The Communication Plan, approved by the Project Board, sets out the organisational project components, along with project team mapping specific to the delivery of outputs required by the commission.

Governance

The Integrated Urban Infrastructure project aims to demonstrate best practice in sustainable urban drainage and inclusive urban planning by developing a series of feasibility studies for six candidate sites across three regions in the western central belt of Scotland.

The project organisation, resource commitment, direction and decision making was managed by Glasgow City Council (The Employer).

Figure 1.1: Stakeholder mapping shows the organisational matrix for the project at three strategic levels:

01 Project board

The Project Board was chaired by the Scottish Environment Protection Agency's (SEPA) SuDS Co-ordinator, supported by a Board of Directors which included local authority representation. The Project Board formed the highest level of decision making and direction.

02 Project manager

Day-to day planning, risk monitoring, cost and staged control was handled by Glasgow City Council's Project Manager within the controlled project environment. The Project Manager reported directly to the Project Board.

03 Project team

Collective Architecture (Lead Consultant and Architect) managed the delivery of design services. Strategic drainage and geotechnical sub-consultancy services were provided by AECOM Limited. The Project Team also included a number of specialist advisors.

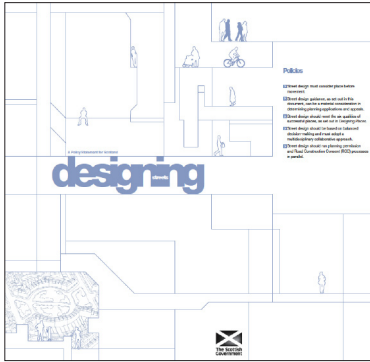




Greenspace Quality Guide
 The Greenspace Quality Guide has been prepared to assist those involved in greenspace planning to share and better understand best practice in developing a co-ordinated approach to greenspace provision based on a Greenspace Strategy.



Sewers for Scotland
 A design and construction guide for developers. Developed in conjunction with Sewers for Adoption, this provides a definitive guide for use by developers for the provision of sewerage. It details the procedures and provides guidance for the design and construction of such infrastructures.

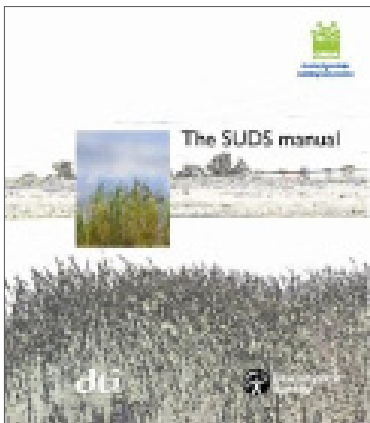


Designing Streets/Designing Places
 Designing Streets was implemented as a policy document by the Scottish Government in 2010, and aims to place people before the movement of motor vehicles, and represents a step change in established practices in street design.

Read in conjunction with Designing Streets, Designing Places marks the Scottish Executive's determination to raise standards of urban and rural development.



Scottish Planning Policy
 Scottish Planning Policy (SPP) is the statement of the Scottish Government's policy on nationally important land use planning matters. This places Planning in the wider context of Scottish Government's aims and clarifies the Government's expectations of the system and planning services.

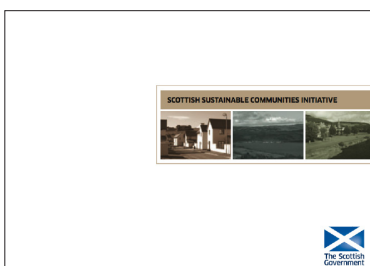


The SuDS Manual
 This guidance provides best practice guidance on the planning, design, construction, operation and maintenance of Sustainable Drainage Systems (SuDS) to facilitate their effective implementation within developments.

The guidance supersedes previous general guidance on SuDS and addresses landscaping, biodiversity issues, public perception and community integration as well as water quality treatment and sustainable flood risk management.

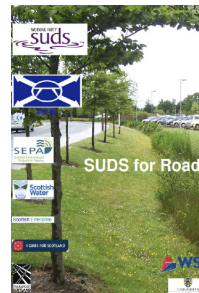


Equally Well
 This Scottish Government and National Health Service briefing focuses on socio-economic inequalities that exist within Scottish communities and how they affect population health. Examples include access to education, labour markets, health, housing and environmental quality.

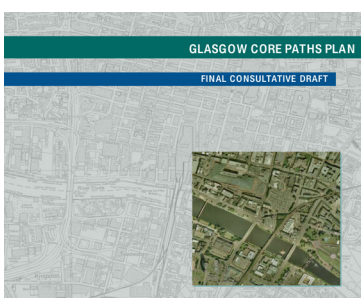


Scottish Sustainable Communities Initiative
 The Scottish Sustainable Communities Initiative aims to bring innovation into our settlements and promote exemplars of how communities could live in future.

It aims to inspire Local Authorities, landowners and developers to play their part and contribute to the future sustainable growth of Scotland.



SUDS for Roads
 SuDs for Roads is intended to further advance our knowledge of the interaction between roads and drainage within an urban context where roads are now multifunctional. The purpose of the document is to guide the reader through the design of roads incorporating SuDs.



Core Paths Plan
 The Land Reform (Scotland) Act 2003 requires Scottish local authorities to draw up a plan for a system of paths, known as Core Paths, sufficient for the purpose of giving the public reasonable access throughout their area. The Glasgow plan will link into and support the wider network of other paths that already exist around the city.



Ruchill Keppoch
New Neighbourhood
Local Development Strategy

“The Local Development Strategy (LDS) seeks to establish a framework for development and regeneration which will enhance the quality of life in the Ruchill Keppoch New Neighbourhood Initiative (RKNNI) area for existing and new residents and increase the attractiveness of the area as a location for people to invest in.”

Policy and advice

The design study has taken cognisance of key Scottish Government and Local Government policy documents. Those of particular relevance are noted overleaf.

National level

The National Planning Framework 2 (NPF2) sets out a strategy for Scotland’s development to 2030, with a central purpose of promoting economic growth. It also places the Central Scotland Green Network as a national priority, as promoted by Glasgow and Clyde Valley Green Network Partnership and the Integrated Urban Infrastructure Board. In 2006 the Scottish Government published People and Places: Regeneration Policy Statement, which aimed at transforming places in order that they might realise their full social and economic potential.

Regional level

The Glasgow and Clyde Valley Structure Plan 2006 sets out the long term development strategy for Glasgow and the Clyde Valley.

Local level

Glasgow City Council has a series of guidance documents outlining aspirations for the site to meet Scottish Government policy.

Key documents include Ruchill Keppoch New Neighbourhood Local Development Strategy, The Core Paths Plan, Forth and Clyde Canal Local Development Strategy.

The Ruchill Keppoch New Neighbourhood Local Development Strategy (2003) recommendation for the design study area outlines that the following issues should be addressed:

- Population and Housing Choice;
- Access to Employment and Services;
- Development of Vacant Land;
- Transport Issues;
- Improvements to the Town Centre; and
- The integration of development with the Forth and Clyde Canal.



02 Context

Understanding the site

| | |
|--------------------|------|
| Site context | p 15 |
| Planning context | p 17 |
| Historical context | p 19 |
| Site description | p 21 |

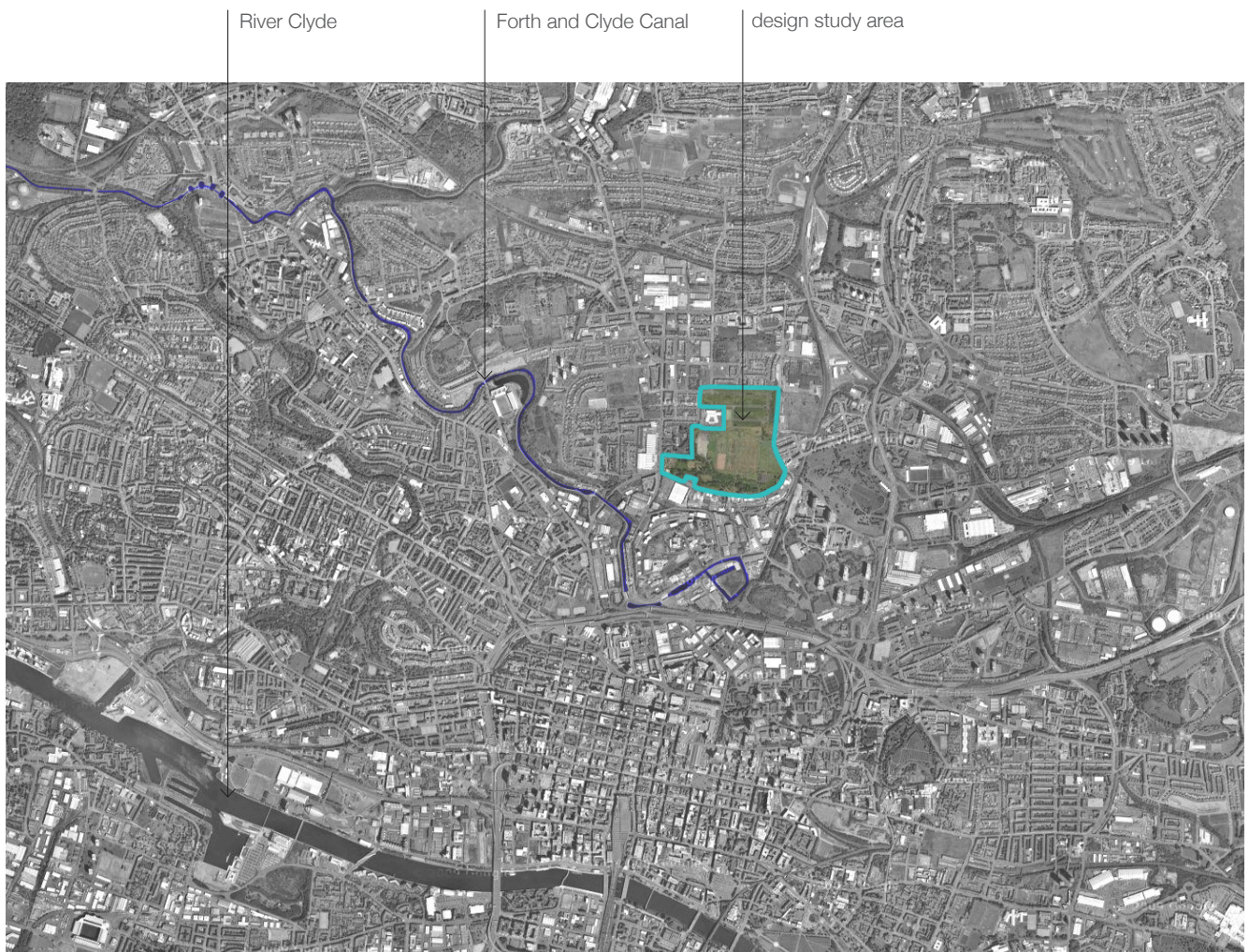
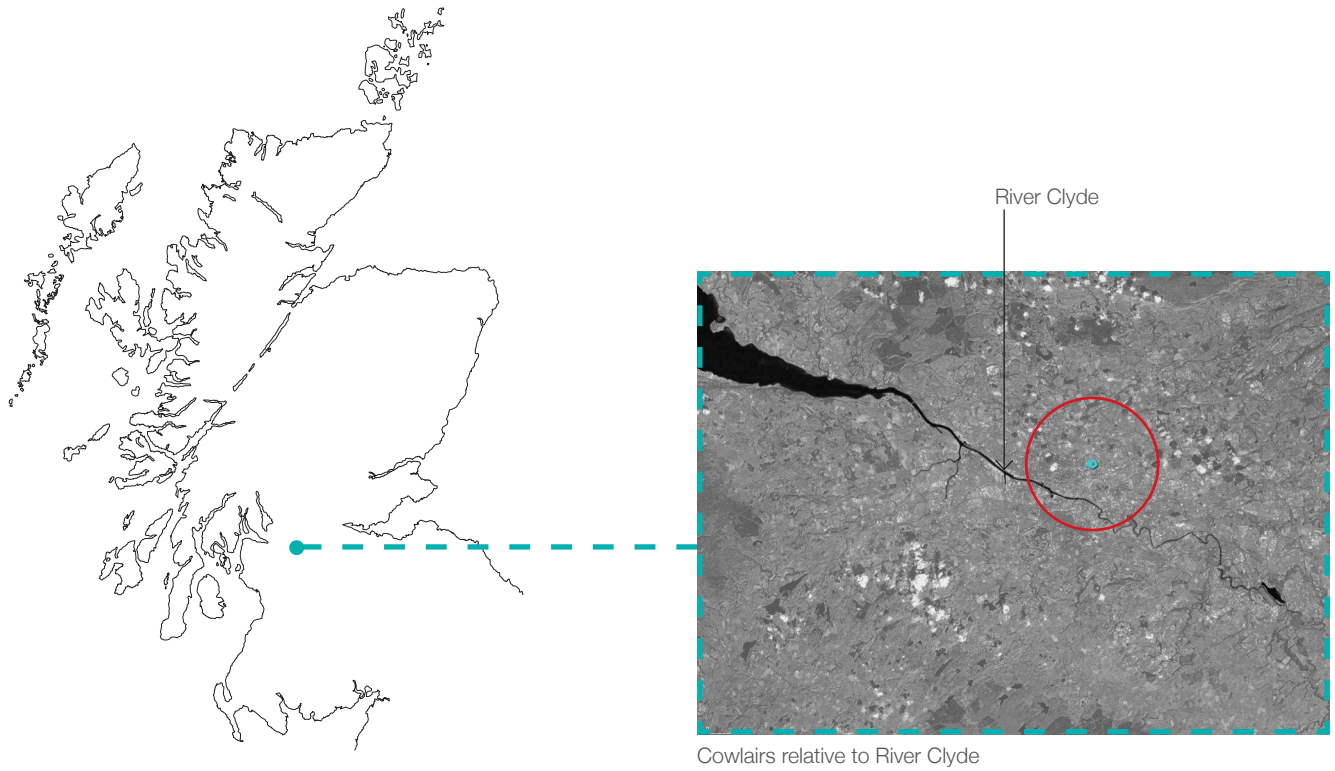


Fig 2.1 Comparative mapping. Town Centre and design study area. Collective Architecture 2010. Not to scale.

Site context

Cowlairs is located north of Glasgow City Centre. The area has a long association with the North British Locomotive Company. It is currently home to a diesel maintenance depot at Eastfield and a signalling centre at Cowlairs, which controls trains from Glasgow Queen Street High Level Station.

Figure 2.1: Comparative mapping shows the relationship between the city and the design study area. The site is largely undeveloped and covers an area of approximately 30 hectares. It is bounded by Keppochhill Road to the south and Carlisle Street to the east. The western site boundary is formed by various residential and non-residential developments lying adjacent to Saracen Street.
















In comparison to the surrounding areas, the topography is very high, with the elevation varying from 81m to 53m across the design study area. There are no watercourses located on the site, however the Forth and Clyde Canal runs close to the south west of the site.

Historically the surrounding area was generally industrial with coal and ironstone mining and metal working being the primary industries.

There is a strong transport network to the western edge of the site with good pedestrian links and reasonable public transport connections. The remainder of the site boundary is classed as “below base accessibility” within City Plan 2.



Fig. 2.2 Aerial photograph of design study area.

- Key**
-  Core Shopping Area
 -  New Vehicular Links
 -  New Pedestrian Links
 -  Formal Public Space or Square
 -  Home Zone / Green Route
 -  New Vehicular Route
 -  Ruchill Hosp
 -  New Housing
 -  New formal Public Space
 -  Mixed Use
 -  Community Uses and School
 -  Housing existing/ under construction
 -  Ind/Business Areas
 -  Existing Park or Rec Space
 -  Ruchill Golf Course

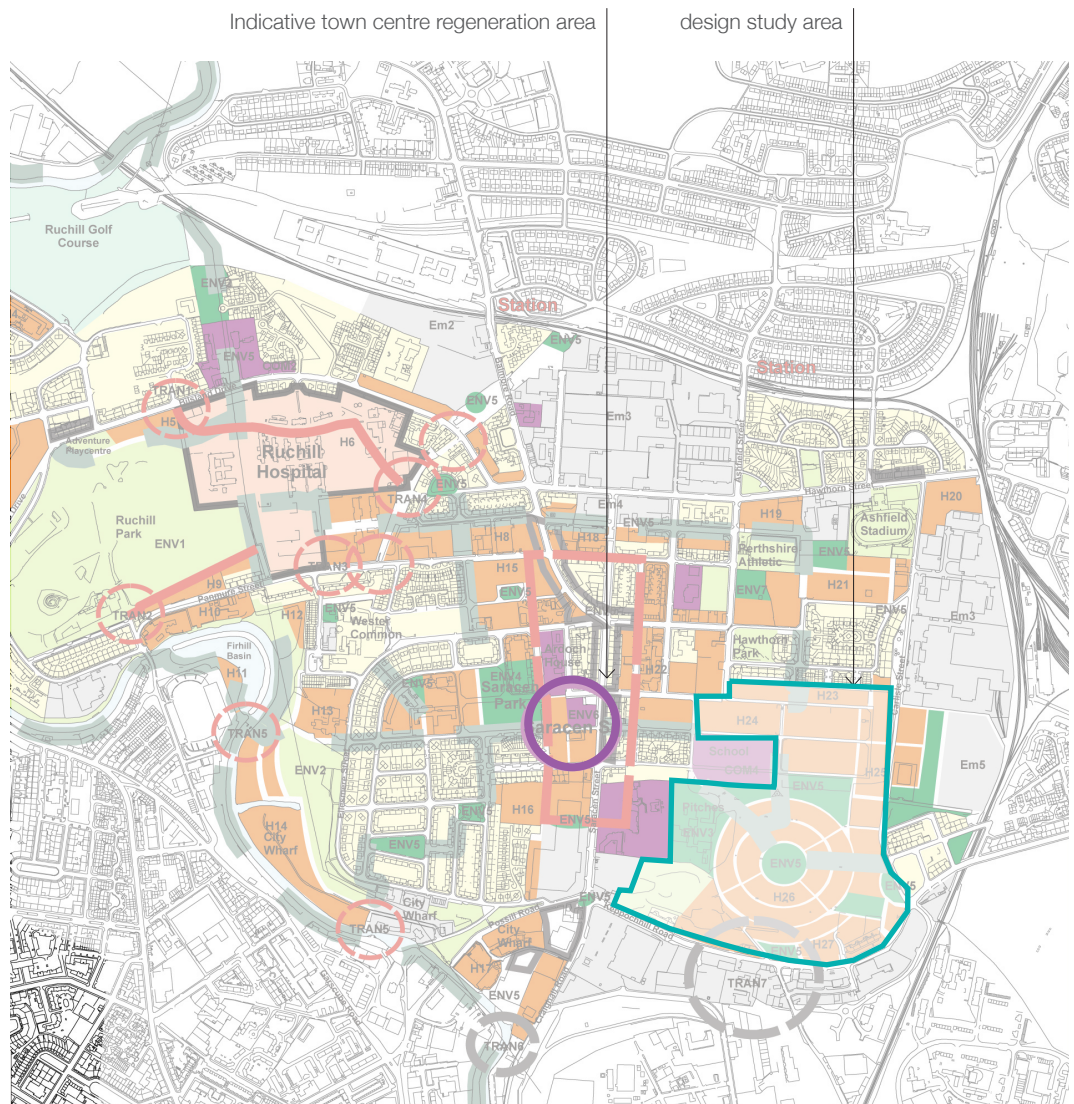


Fig 2.3 Map extract, Ruchill/Keppoch New Neighbourhood Urban Design Framework. Glasgow City Council 2010. Not to scale.

Planning context

The Cowlairs study area sits within the boundary of The Ruchill Keppoch New Neighbourhood Local Development Strategy (2005). The Local Development Strategy is in the early stage of re-appraisal and may include installation of infrastructure prior to future development.

Figure 2.3: Map extract identifies the study area as one of four key sites identified within the Local Development Strategy. Other key sites include Saracen Street/Stonyhurst Street, Hugo Street/Shuna Street and Ruchill Hospital.

The Local Development Strategy promotes the concept of well-being and healthy living achieved through integrated urban solutions to green network planning, water management, and movement planning. The strategy sets out the following aspirations for the Ruchill Keppoch area:

- The area will remain a mixed inner city district;
- The regeneration of the area will see the development of large amounts of new housing, particularly private sector housing;
- The wider regeneration ambitions include plans to improve Possilpark Town Centre (Saracen Street);
- The provision of improved transport links to adjacent areas including a more extensive, and appropriate greenspace and footpath network, and
- Promoting the provision of new and improved community, shopping and education facilities within the New Neighbourhood area.

The new spatial structure for Ruchill Keppoch will therefore be determined by the inter-related aspects of land use and function, infrastructure (particularly drainage, transport and greenspace networks), and housing type and density.

The City Plan's Strategy for People includes "The delivery of the brownfield housing programme, the promotion of New Neighbourhoods and Selective Greenfield land release for family housing". The City Plan also recognises that "The development of New Neighbourhoods, with significant numbers of houses for owner occupation, will increase the choice of house type and size, reverse localised population loss, tackle deprivation and encourage social inclusion in line with joint Structure Plan Targets".

Glasgow City Council
Ruchill Keppoch New Neighbourhood Local Development Strategy

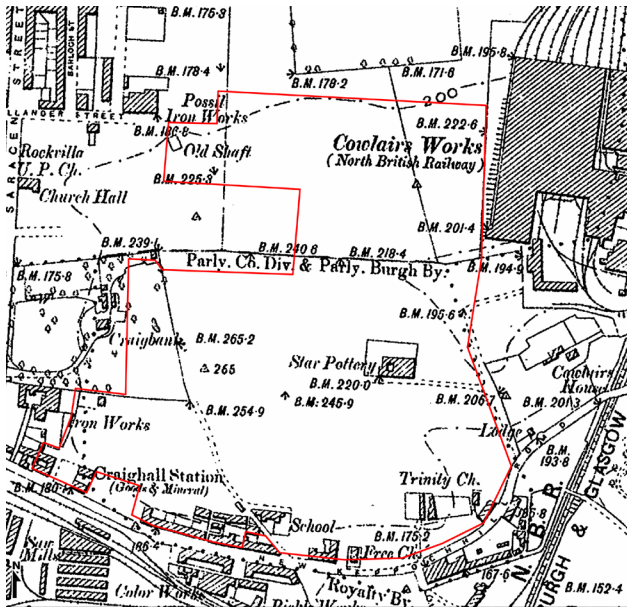


Fig 2.4 Historical OS Map Extract 1896

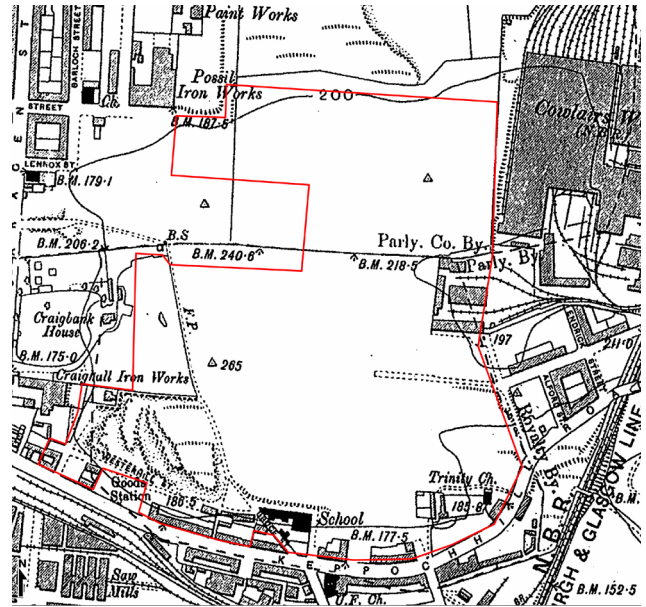


Fig 2.5 Historical OS Map Extract 1914

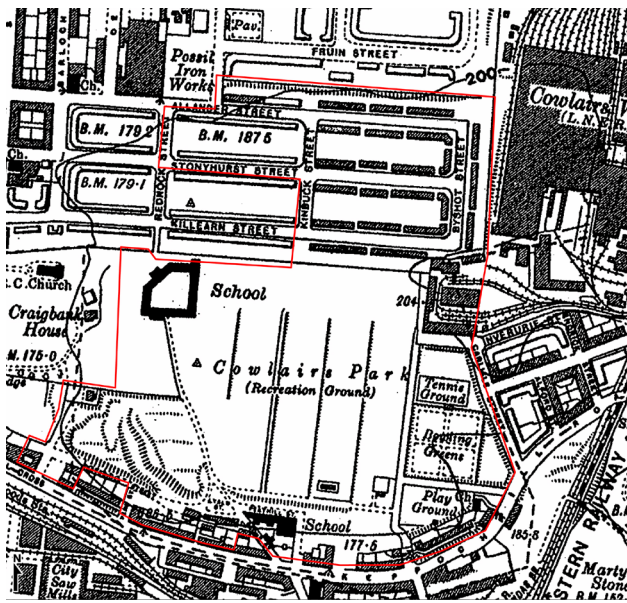


Fig 2.6 Historical OS Map Extract 1938

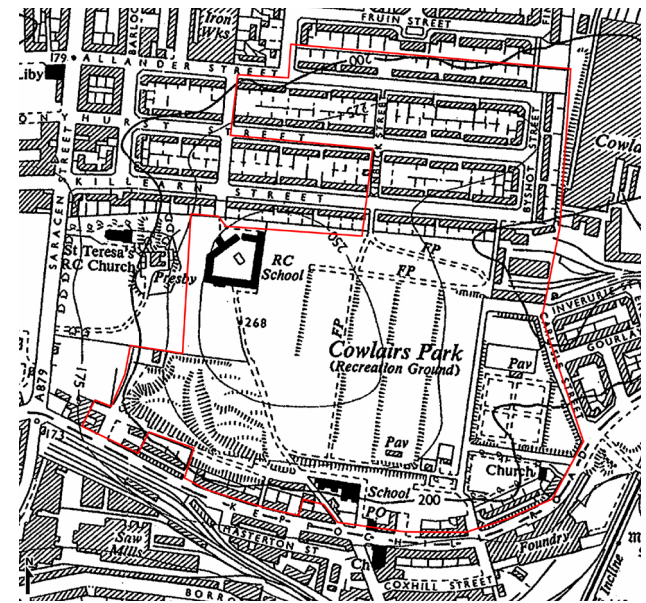
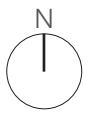


Fig 2.7 Historical OS Map Extract 1956





Aerial photograph 1948



Craighall Station 1898



21-23 Canal Street 1963

Historical context

Historically the majority of the Cowlairs site lay, as it is today, undeveloped whilst the surrounding area was generally industrial.

Figures 2.4-2.7: Historical map extracts dated 1896 to 1956 show the undeveloped design study area in relation to off-site industrial developments.

Significant to the site are:

- The Star Pottery located to the centre of the site;
- Trinity Church to the south east of the site;
- A small school to the south;
- Craighall Station (goods and mineral) to the south west;
- Possil Iron Works immediately off-site to the north west;
- Craighill Iron works immediately off-site to the west, and
- Cowlairs Works (North British Railway) immediately off-site to the north east.

Photographs from this period identify the site and surrounding environment as a bustling and industrious area of Glasgow.

Residential development occupies the northern half of the site from 1938 (Figures 2.6 and 2.7). The majority of the southern half is shown as “Cowlairs Park”. During the 1990s the development was demolished. Today, all that remains is the existing road infrastructure.

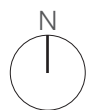


Fig 2.8 Site map as existing. Collective Architecture 2010. Not to scale.

Site description

The study area is located to the north of Glasgow City Centre and represents 30 hectares. The undulating topography of the vast open site is bounded by a fragmented urban fabric encompassing a variety of both long and restricted views.

Figure 2.8: Site map as existing indicates the northern boundary defined by a strong residential grid with restricted views looking onto the site. The town centre action plan area is within a short distance from the site on Saracen Street.

To the north east, the existing warehouses are confronted by a complete visual barrier in the form of a steep embankment.

The south edge of the site represents the industrial past of the surrounding area, overlooking what are largely industrial sites.

However, despite the restricted views to the periphery, the views within the site offer fantastic aspects of the surrounding city.

Keppoch Campus (Primary School) is located in the north-west corner of the site and is presently isolated from the urban grain.



Surrounding high rise housing development



Fig 2.9 View across site from existing Killearn Street

derelict road infrastructure



Keppoch Campus (multiplex school, 2004)



Existing low rise housing development



Existing high rise development

existing high rise development

undulating topography



Existing paths



Entrance to site, Saracen Street



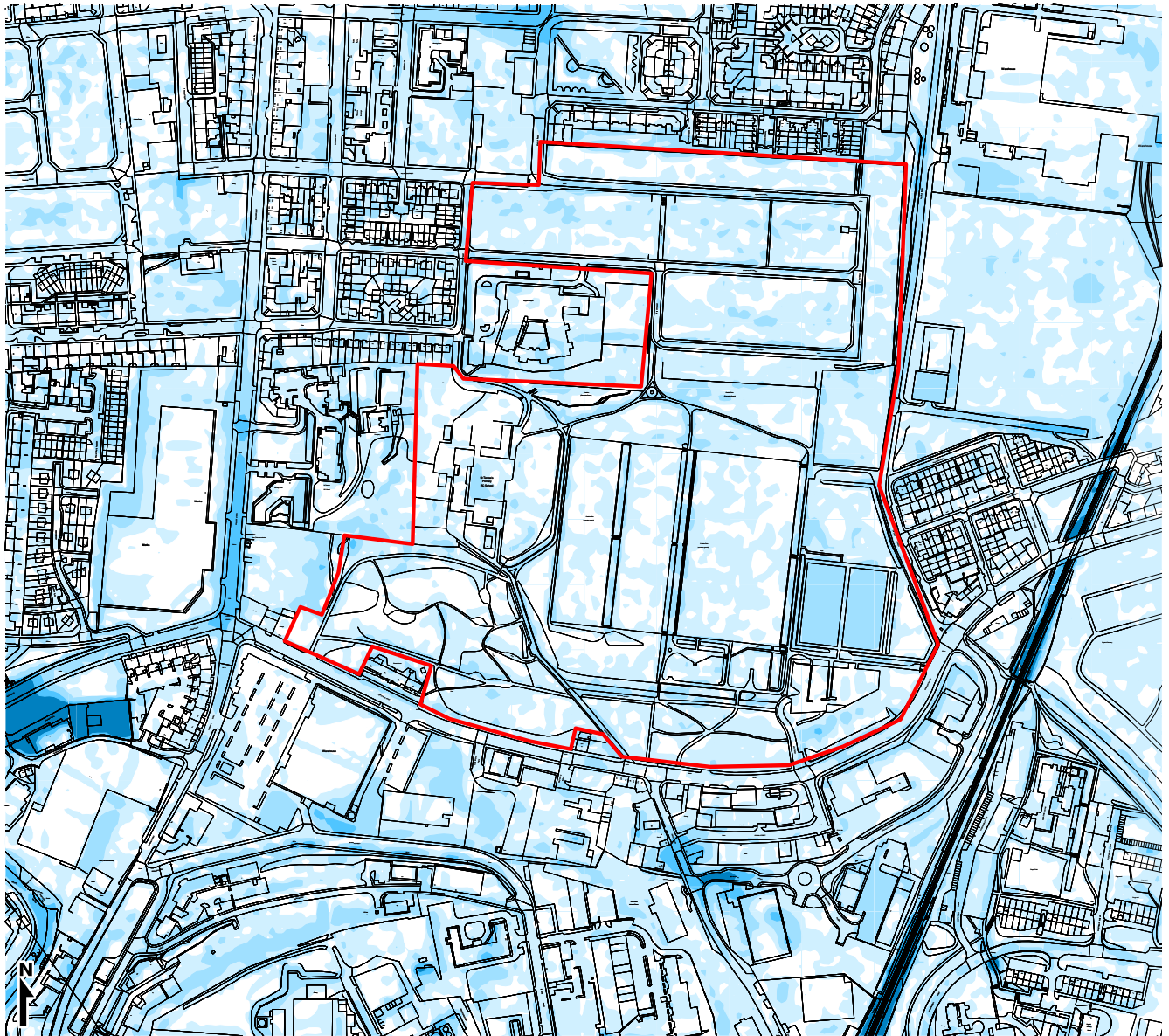
Varied topography



03 Constraints

Informing the approach

| | |
|---------------------------|------|
| Surface water connections | p 27 |
| Natural topography | p 29 |
| Access | p 31 |
| Site ownership | p 33 |
| Contamination | p 33 |



- 0.000 to 0.020 Pluvial flood depth (m)
- 0.020 to 0.100
- 0.100 to 0.500
- 0.500 to 1.000
- 1.000 to 6.817

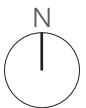


Fig. 3.1 Existing site, pluvial flooding. AECOM Ltd 2010. Not to scale.

Surface water modelling

Pluvial modelling of the catchment upstream of the branch of the Canal has been carried out to determine potential runoff that is likely to drain to the canal during extreme events. When the capacity of drainage systems is exceeded, overland runoff is generated; this will naturally drain to the canal. This modelling indicates that inflows to the canal will be of the order of ~ 4m³/s, which will drain along the canal to overflow structures.

Whilst the canal is likely to be subjected to the extreme flows, the change in drainage regime will have an impact on the canal system for more frequent, less extreme events, when under the existing situation; run off would be drained by the combined system.

The greatest effect on the Canal system can be assumed to be broadly during the events up to the 3.33% Annual Exceedance Probability (AEP) events and may have an impact on the general operation and use of the canal, by affecting navigation.

Within the development of the water management for the future site, options should be developed which consider the management of surface water, with attenuation provided to limit flows to the equivalent greenfield runoff rates and options with significantly lower rates.

Any potential for increased mitigation for higher attenuation during frequent events should be considered to minimise the effect on the Canal system.

Surface water connections

The site is part of the Dalmuir catchment area and is land locked without direct access to a watercourse. Notwithstanding this, the nearby Forth and Clyde Canal is a potential option.

The site has historically been served by a combined sewer for the area in the north where infrastructure remains. This incorporates roads, utilities and drainage. Due to the topography of the site, runoff will drain from the highest points in all directions, but predominantly to the east and south. To the north of the site, the Possil Burn historically drained the site and surrounding catchment, however, over time this has been culverted and become a combined sewer. There no longer exists a strategic surface water drainage system to the north. To the south of the site is situated the Glasgow branch of the Forth and Clyde Canal, which forms a substantial hydrological barrier in the catchment, with a number of hydraulic pathways, consisting of under bridges and utilities.

Recently, British Waterways have recognised that the canal systems may be utilised as a drainage asset to unlock development potential in land locked areas. It has been recognised that there is a limited understanding of the performance of the canal system during extreme rainfall events, however, British Waterway intend undertaking further modelling of the canal system to improve understanding of the potential future use in surface water management. Through consideration of the site, it is recognised that options for discharging surface water are limited to the existing combined system, (which is substantially constrained with existing deficiencies) or to utilise the canal system.

Cowlairs surface water issues are only part of a wider problem within the north catchment of the city. Surface water traditionally discharged to the combined system (run by Scottish Water) is discharged to the River Clyde at Dalmuir treatment works. This system can no longer cope with the volumes of surface water and discharge to other destinations are to be investigated. The design study project proports the view of discharge to the Forth and Clyde extension. However, wider discharge issues still remain and Glasgow City Council and key partners are considering a full scale masterplan study of the north Glasgow sub-catchment with a view to improving water solutions in the wider area.

Initial consultation with British Waterways has identified that the canal system may be utilised for a number of potential developments within land locked areas, and that the limits on discharge to the canal may be more constrained than allowing existing greenfield run off rates to discharge to the canal.

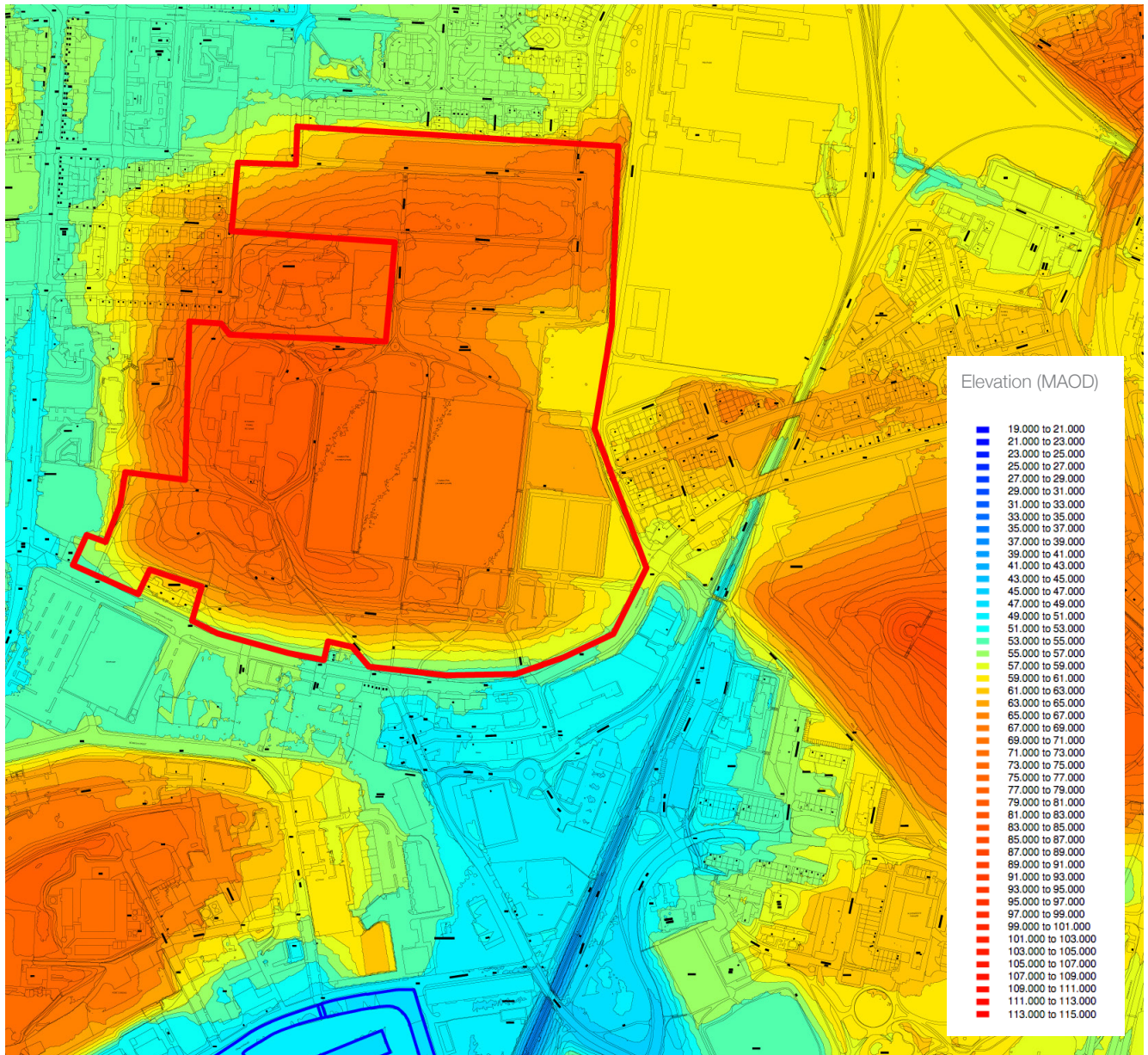


Fig. 3.2 Existing topography. AECOM Ltd 2010. Not to scale.



Existing road within design study area



Steep edge to residential neighbourhood



Former playing fields within Cowlairst Park

Natural topography

The site is characterised by steep embankments to its perimeter with large terraced areas to the centre, formerly playing fields within Cowlairst Park. Figure 3.2: Existing topography identifies specific levels, with orange representing high ground and blue low ground. The steep edges act as significant barriers between the study area and residential neighbourhoods. This situation has been further aggravated by the demolition of former council housing at Allander Street/Killearn Street, Carbeth Street/Sunnylaw Street and at Hugo Street, opening up large gaps in the urban fabric.

The natural site topography provides the following key issues:

- Any development along Keppochhill Road would have poor visual and physical connections to the rest of the site;
- Whilst views from adjacent areas are very limited there are likely to be extensive distant views of any new development which should be considered in the design process, and
- Long panoramic views from the higher ground are an attractive feature of the site and selected long views should be retained where possible.

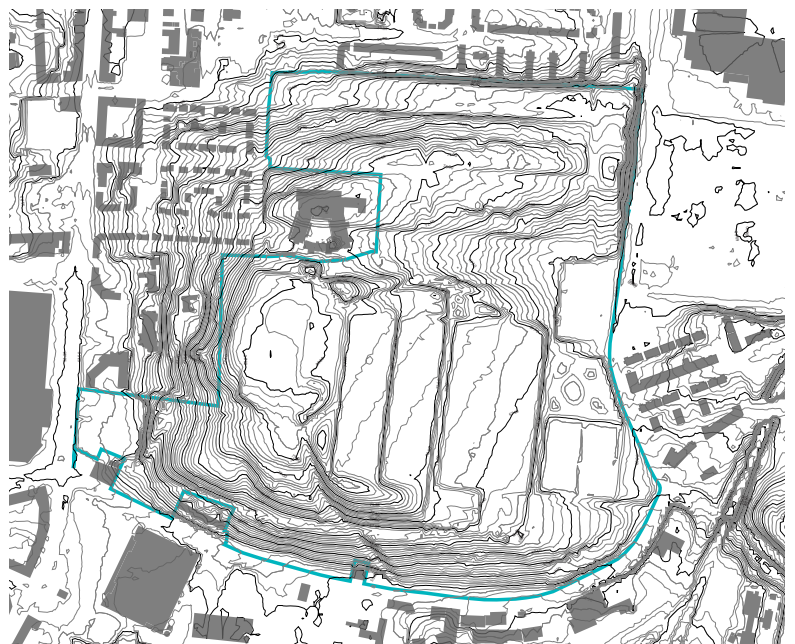


Fig. 3.3 Existing plan with contours. Collective Architecture 2010. Not to scale.

- - - Existing bus routes
 - - - Existing cycle routes
 - - - Aspirational links that could be core paths
 - - - Existing paths that could be core paths
- 400m walking distance - acceptable to bus stop
 - 800m walking distance - acceptable to train station

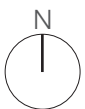
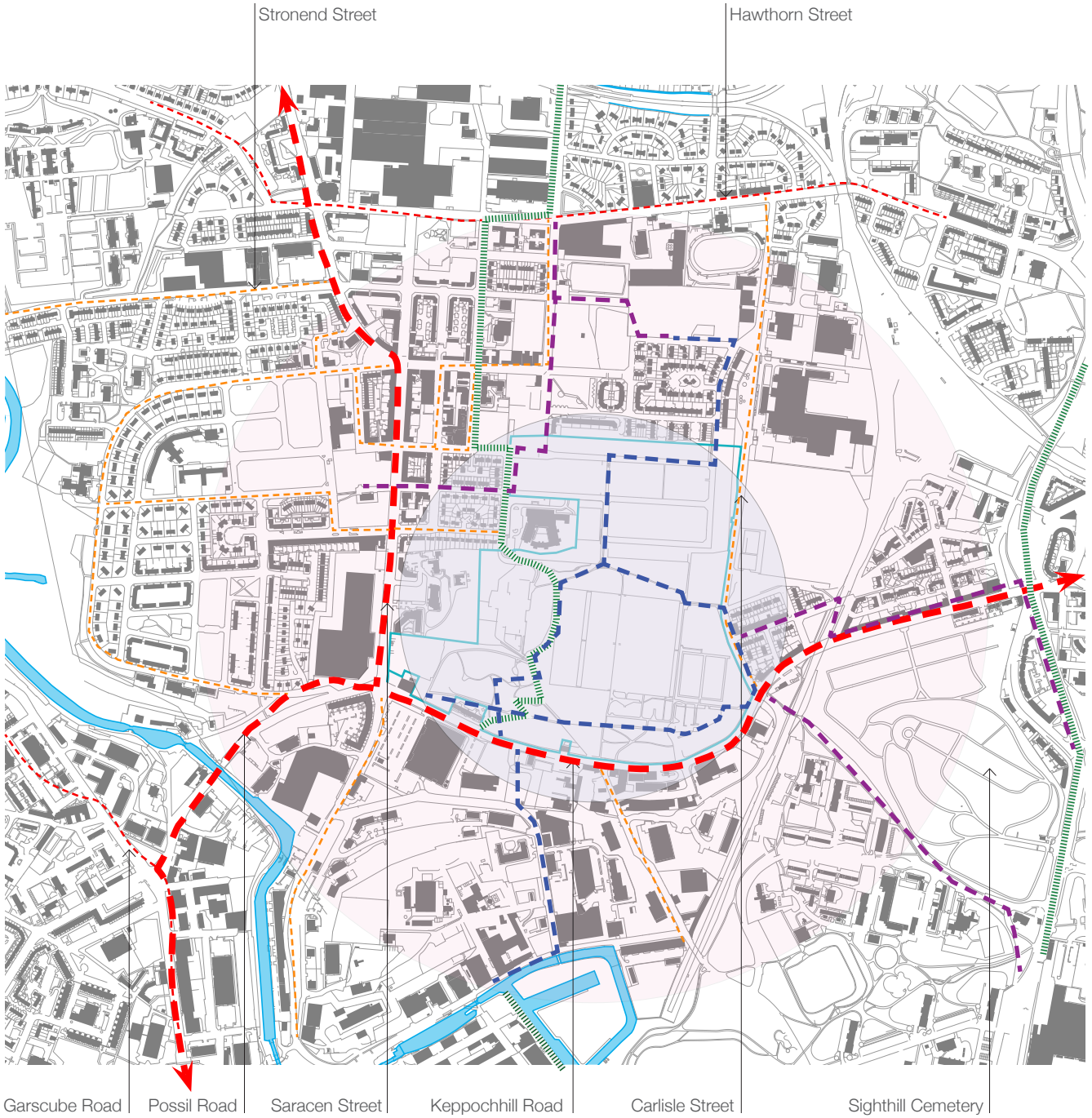


Figure 3.4 Access map, Collective Architecture, 2010. Not to scale.



Existing access from Keppochhill Road



Existing access from Carlisle Street



Bus stop to Keppochhill Road

Access

Limited existing connections and poor visual connections restrict access across the site. Stonyhurst Street has been stopped up at the Saracen Street junction and therefore provides for through pedestrian travel only. Allander Street and Killearn Street are open to both pedestrian and vehicular through travel.

Sections of Carlisle Street are in private ownership with some areas not built to “adoptable” standards.

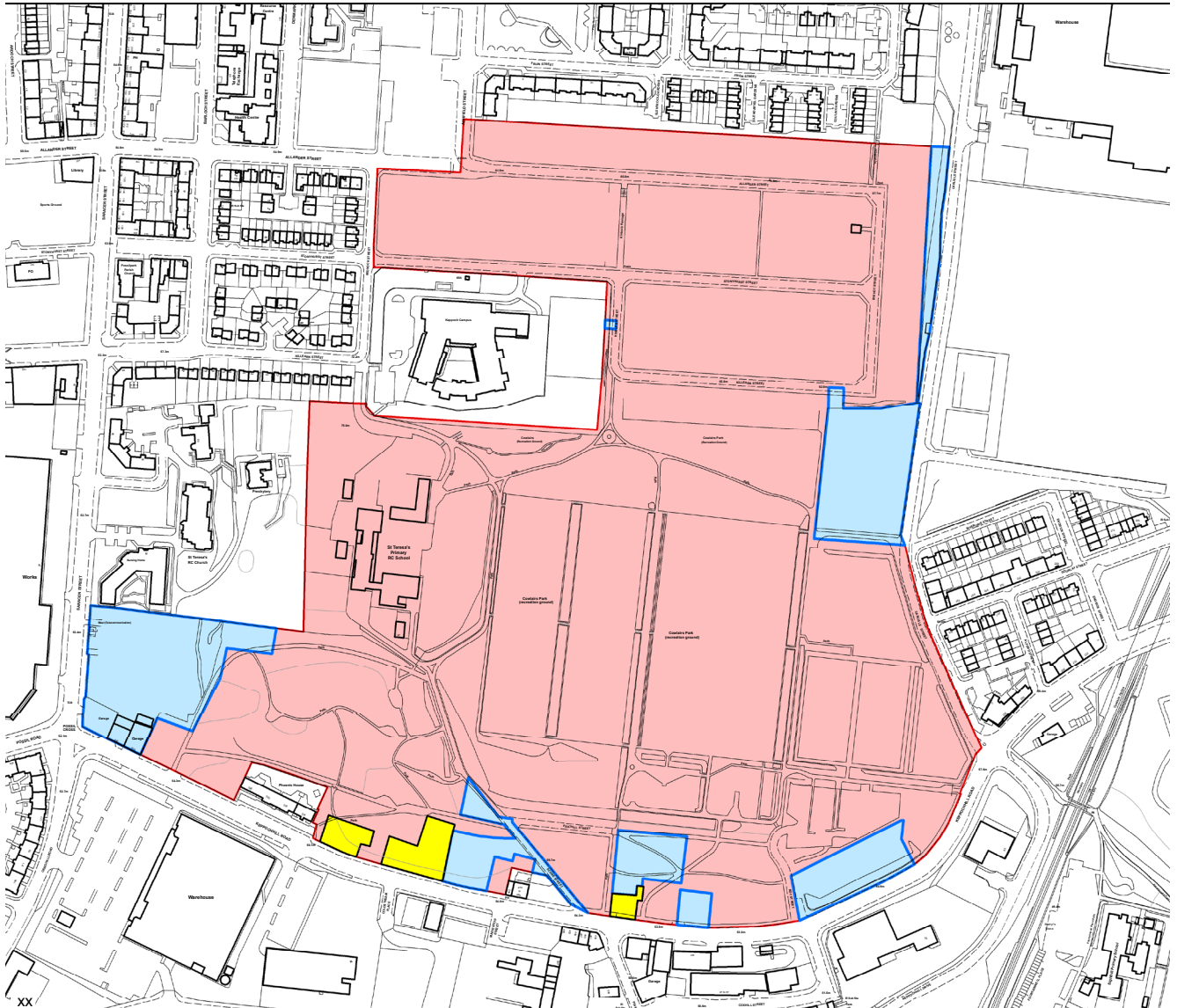
The only remaining vehicle access into the site is from Keppochhill Road to an existing redundant car park.

The area has historically experienced a relatively low car ownership ratio. Road closures were introduced in the 1980’s and 1990’s to prevent non-local traffic “rat-running” through the area. These road closures consequently make it difficult for vehicles to travel efficiently within the Possilpark and Hamiltonhill areas.

Figure 3.4: Access map indicates Glasgow City Council’s Core Path’s Strategy and highlights aspirational links that could connect across the site. Additional links might also be established across the site from Sighthill Cemetery through Cowlares Park to Saracen Street. Such connectivity would encourage people to walk to schools, shops and leisure facilities, which are all within 1600m of the site. Current, existing and aspirational pedestrian links (as per the Glasgow Core Paths Plan) will likely be removed/ upgraded/ replaced as and when the site is redeveloped.

Key points relating to access:

- Good pedestrian links exist from Keppochhill Road to Carlisle Street;
- West of the site has good public transport provision with more than 12 buses per hour within the catchment, and
- Natural topography may rule out vehicular access from Keppochhill Road.
- Access to the existing school from Saracen Street along either Ashfield Street or Allander Street should be retained.



KEY

- Glasgow City Council
- Glasgow City Council (Partial interest)
- Private ownership

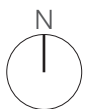


Fig. 3.5 Site ownership. Glasgow City Council 2010. Not to scale.

CONSTRAINTS

Site ownership

Figure 3.5 Site ownership indicates that the majority of the site is within Glasgow City Council ownership.

A number of sites within the design study area are within private ownership, most significantly the area to the south western corner and the square site to the eastern boundary. These privately owned areas should be considered in relation to future development opportunities for the overall site.

Contamination

Whilst Ruchill and Keppoch is known for its industrial past, the majority of the Cowlairs study area was undeveloped prior to the 1930s.

The Engineering Envirocheck Report (refer to Appendix A CD) indicates that the Craigbank Ironstone pit formally operated on site. However, due to the dip of the strata, it is unlikely that mining extended under the site. Sources of contaminants offsite include garage services, petrol filling stations, dry cleaners, printers and paint manufacturers. Ground stability hazards on site are noted to be very low or pose no identifiable hazard. Figure 3.6 Geotechnical and geoenvironmental hazards provides a summary of geotechnical and geoenvironmental aspects of the site.



Fig. 3.6 Geotechnical and geoenvironmental hazards. AECOM 2010. Not to scale.



04 Strategic drainage

Water management

| | |
|-----------------------|------|
| Water management | p 37 |
| Forth and Clyde Canal | p 37 |
| Drainage areas | p 39 |
| The water journey | p 41 |

"The Scottish Environment Protection Agency (SEPA), in partnership with Glasgow and Clyde Valley Green Network Partnership (GCVGNP), Glasgow City Council, Scottish Water, and Scottish Natural Heritage promotes the growing international recognition of our strength in developing a 21st Century City based on principles of quality design, smart growth and integrated urban infrastructure, creating sustainable places of character, distinction, and well-being."

Integrated Urban Infrastructure Project Board, 2009.

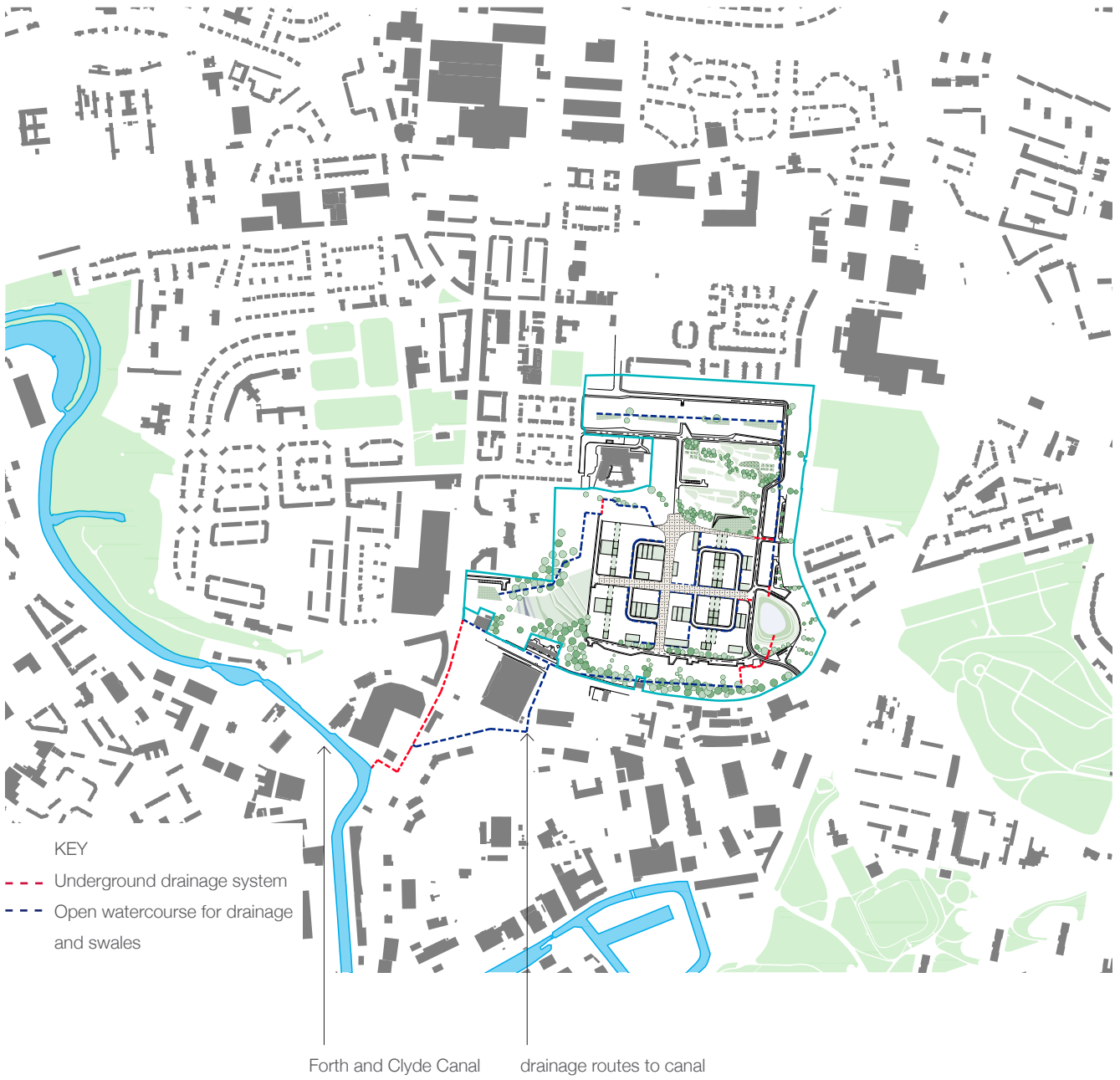


Fig 4.1 Site relative to the Forth and Clyde Canal. Collective Architecture/AECOM Ltd 2010. Not to scale.



Rainwater harvesting

Water management

Figure 4.1: Site relative to Forth and Clyde Canal indicates that the site is restricted with regards to surface water runoff and drainage routes into existing watercourses and river systems. The Forth and Clyde Canal is the nearest watercourse to the study area, separated by the urban grain.

The design study area lies within the north Glasgow sub-catchment, with no existing surface water systems or watercourses in close proximity. Historically the site will have drained to the Dalmeir wastewater network, however, due to incapacity of the system and sustainable objectives to reduce surface water in wastewater networks, this option is no longer suitable for the future development. The wider constraints are subject to a wider strategic study to determine future surface water provision within the catchment.

It is therefore proposed that the entire area be self-sustaining and contained with respect to surface water management. Increased plot to house ratios and large areas of open space will reduce water runoff and allow for slow conveyance.

On-site water runoff is used in a sustainable way and recycled, where possible, using water butts, rainwater harvesting and suchlike. This approach will reduce off-site runoff to minor events only.

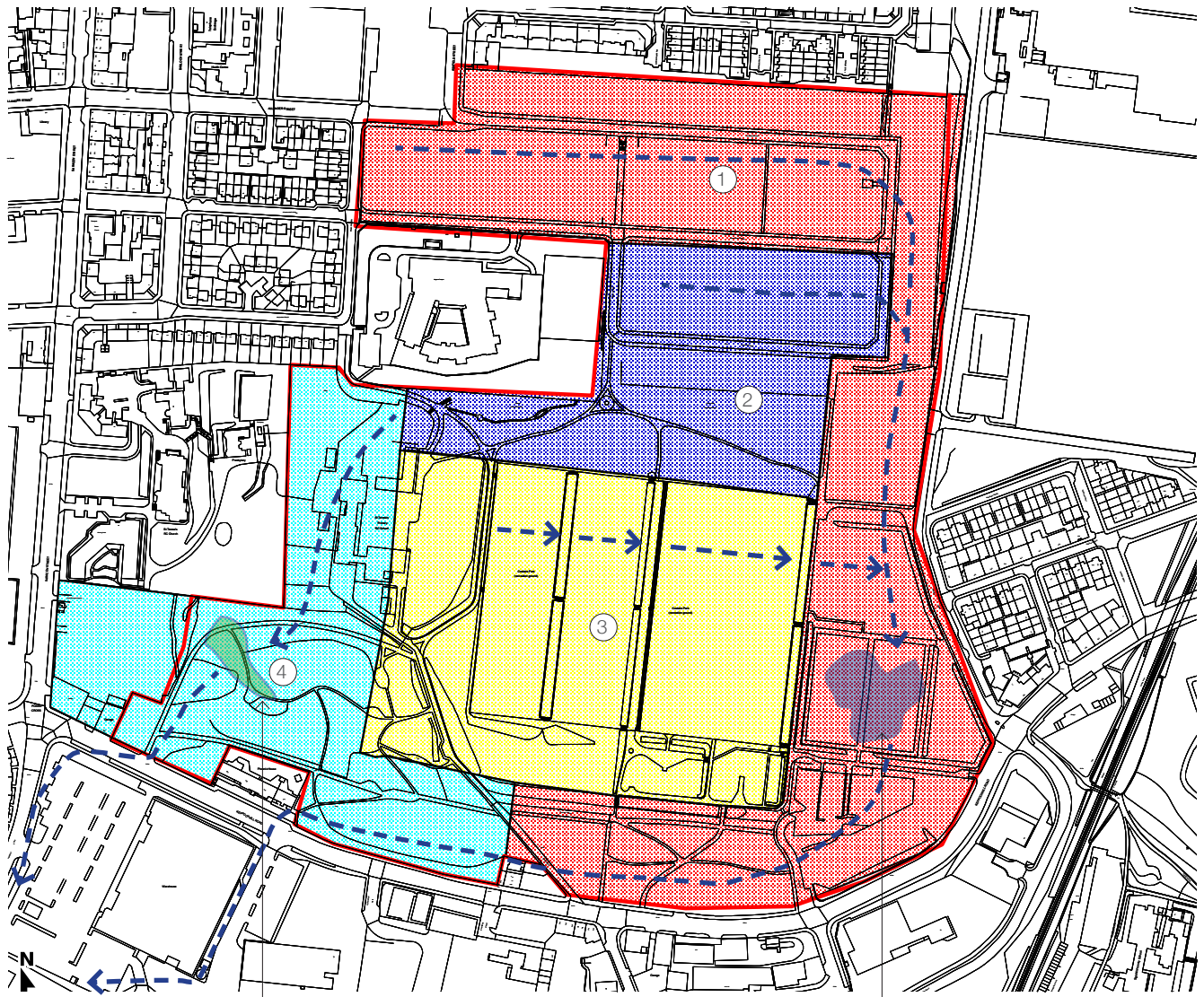


Forth and Clyde Canal, Firhill Basin

Forth and Clyde Canal

The Forth and Clyde Canal is the nearest watercourse to the study area. British Waterways are currently undertaking modelling of the Forth and Clyde canal, which is due for completion by the Autumn of 2010. The purpose of this is to assess the capacity of the canal to accept surface water runoff from surrounding development plots.

The available capacity of the canal is considered to be relatively small, due to low velocities and small freeboards within the canal system and a consequence of discharging surface water runoff into the canal, may lead to an increase in flood risk at certain locations. However, this capacity is currently being modelled by British Waterways and appropriate discharge rates will be determined for developments which can drain to the Canal.



detention basin (attenuation area)

wet pond

- Drainage area 1
- Drainage area 2
- Drainage area 3
- Drainage area 4



Fig 4.2 Drainage areas. AECOM Ltd 2010. Not to scale.

Design standards

The primary principles for future surface water drainage within the study area are as follows:

- Design for 0.5% Annual Exceedance Probability (AEP) event with climate change;
- Ensure surface water is kept and managed on the surface;
- Ensure no increased discharge into the Forth and Clyde Canal;
- Maximise potential for environmental benefit and enhancement;
- Ensure any in-curtilage spaces are retained as permeable surfaces to minimise runoff;
- Prevent an increase from the natural runoff from occurring by using soft landscaping and incorporating appropriate surface types, and
- Utilise porous paving, green roofs and water butts within the development.
- Consider generous plot to house ratios and large areas of open space to reduce water runoff and slow down conveyance of residual runoff.

Drainage areas

The design study has been developed in conjunction with the hydrological cycle to provide a holistic approach to the overall design.

Figure 4.2: Drainage areas indicates that the study area has been arranged into four strategic drainage areas. These relate to the existing topography, proposed building typology and associated water journey.

Drainage area 1

Contains the main attenuation area for the site in the form of a large wet pond to the low-lying south eastern edge.

Drainage area 2

Identifies land for normal residential development with the opportunity for large areas of landscaped greenspace and mixed use buildings.

Drainage area 3

Allows for individual house plots on existing terraces. Runoff for these areas will be fed into channels or swales running along the terraces.

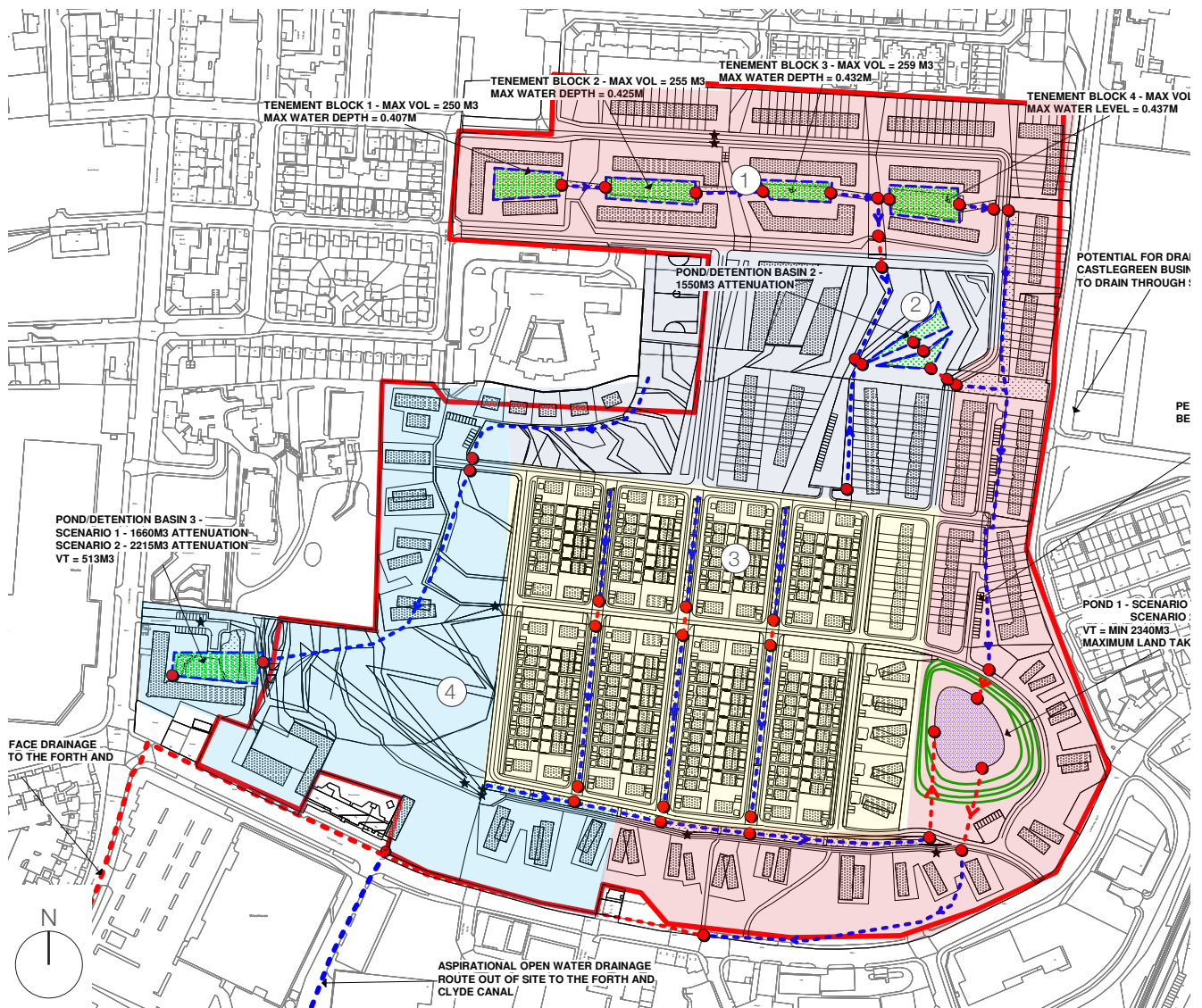
Drainage area 4

This is drained separately from the other areas due to the topographic constraints of the site to a separate detention basin to the south west of the site.

Rainfall at source will be captured in features such as permeable paving and green roofs. Where possible, landscaping should be kept permeable to maximise the potential to soak into the ground and reduce the need for larger attenuation areas.

Conveyance systems will transfer excess surface water runoff to retention areas. The conveyance systems consist of channels through which the water is conveyed and is also treated.

The main retention area is a wet pond to the east of the site and from there the water is proposed to be discharged to the Forth and Clyde Canal. Initially this will run through a piped conveyance system, but with longer term potential for open surface water courses through further redevelopment downstream.



KEY







-  Surface water flood plain/detention basin
-  Wet pond
-  Site boundary
-  Underground drainage system
-  Open watercourse for drainage/swales
-  Outlet and controls

Fig 4.3 The water journey through drainage areas. AECOM 2010. Not to scale.



Swales, Junction 4, M8, UK



Green Streets, Chicago, USA



Wetland, Dumfermline, Fife

The water journey

Figure 4.3 Water journey through drainage areas identifies the surface water management strategy as four distinct parts. These align with identified drainage areas, topography and building typologies.

Drainage area 1 - Urban edge

A large pond to the south east of the site is fed by not only drainage area 1 but areas 2 and 3. It provides attenuation and treatment before discharging via an open water course to the Forth and Clyde Canal. Conveyance is provided throughout area 1, the surface water runoff will be diverted to a small water channel that runs down the centre of the development blocks. Within each of the development blocks there is an area of grassland that can be used as a surface water floodplain. Within this area, community spaces are designed to flood during extreme conditions to create surface water flood plains, thereby holding back run off. These areas act to alleviate the requirements of site retention areas.

Drainage area 2 - Central landscape

This area contains mixed use buildings and terraced landscapes, hence the requirement for the treatment of water may be higher. For the purposes of this study the area will be taken as normal developed land. The potential requirement for runoff from any mixed use building may have to be drained to the foul sewer system.

Drainage area 3 - Terraced plots

It is proposed that this area be separated into individual plots for low density housing. It is recognised that it may be difficult to control the prevention and source control measures to be put in place, however these measures should be built into legal land purchase agreements and title deeds. Runoff from these plots will be fed into channels running along the top of the terraces or via swales. These will be kept half full on a day-to-day basis with the remaining half for storm water attenuation in the event of extreme rainfall. The swales/channels would then feed into the pond located in drainage area 1 and discharge to the Canal at the appropriate rates. Storage of water will be designed in accordance with Health and Safety legislation.

Drainage area 4 - Cowlairs Park and Hillside

Prevention and source control measures for this area are to be as per drainage area 3. However, this area is drained separately due to the topographic constraints of the site, to a detention basin to the south west of the site. Again, where possible, water should be kept on the surface in the form of swales and exceedance routes.



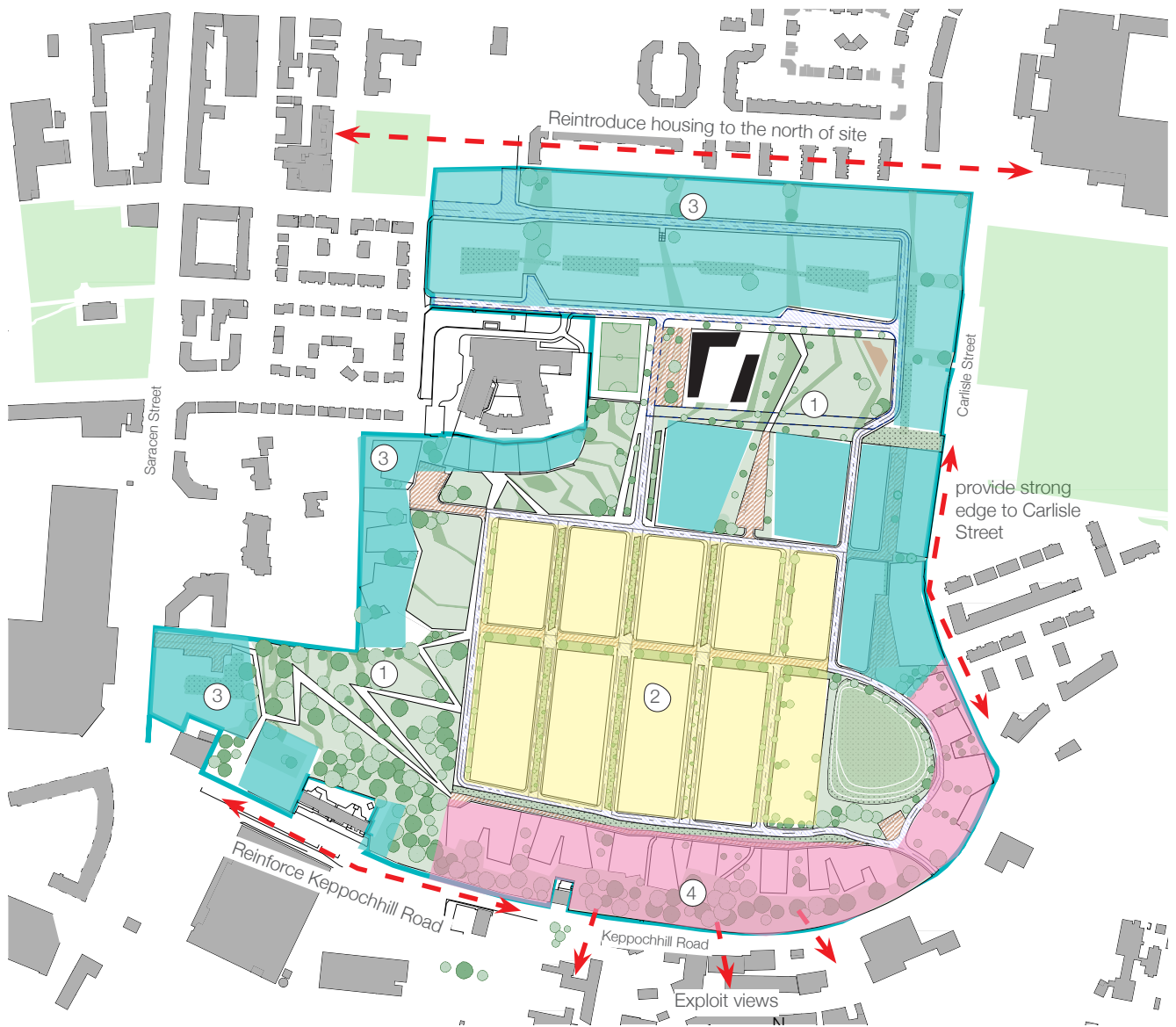
05 Place-making

Cowlairs Urban Village

| | |
|----------------------|------|
| Character areas | p 45 |
| Case studies 1 and 2 | p 47 |
| Access and parking | p 49 |
| Heating and power | p 49 |
| Habitat | p 51 |

'The (Ruchhill Keppoch New Neighbourhood) Local Development Strategy seeks to establish a framework for development and regeneration which will enhance the quality of life in the Ruchhill Keppoch New Neighbourhood Initiative (RKNNI) area for existing and new residents and increase the attractiveness of the area as a location to visit and in which to invest.'

Glasgow City Council,
Ruchhill Keppoch New Neighbourhood Local Development Strategy, 2005.



- 1 Green corridor
- 2 Low rise housing to existing terraced landscape
- 3 Terraced houses and tenements
- 4 Hillside dwellings
- 5 Mixed use Gateway building

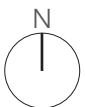
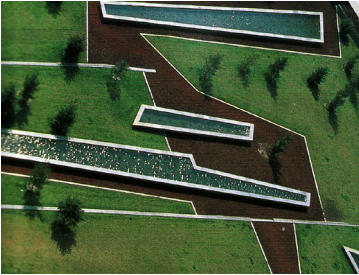


Fig 5.1 Cowlairs Urban Village character areas, Collective Architecture, 2010. Not to scale.



Interpolis gardens, Tilburg, Netherlands



La Hague, West 8, Netherlands



Terraced housing, Scotstoun, Glasgow



Hillside dwellings, Alvaro Siza, Portugal

Character areas

Figure 5.1: Cowlairs Urban Village Character Areas indicates four distinct areas with identifiable character. These takes into consideration the hydrological constraints, the site topography and proposed water journey.

The challenging topography is addressed via a series of building typologies that respond to their immediate landscape to form a series of clearly identifiable character areas.

Green corridor

A new gateway building is provided to the entrance into the site from Saracen Street. This is surrounded by large areas of open space and sculpted landscapes which form a green corridor connecting with existing path networks to surrounding areas. This space forms a local focus providing educational and social benefits.

Housing to stepped terraces

Low rise housing forms a tapestry of gardens within the existing terraced area of the site. These homes might vary in colour, style and character. It is anticipated that these properties will attract families or those seeking inner city garden space.

Defining the urban edge

Terraced housing and tenement blocks bound the site in response to the existing surrounding housing. The northern edge follows the existing street pattern with lower density terraces to the eastern edges. This housing is tightly formed with clearly defined terraced gardens and shared tenemental back courts.

Hillside dwellings

The hillside dwellings sit above steep embankments and enjoy fantastic views and southerly light. These properties might house sheltered accommodation or generous split level homes with south facing balconies overlooking the city.



Fig. 5.2 Case Study 1 - Cowlairs Urban Village. Collective Architecture 2010.



Fig. 5.3 Case Study 2 - Cowlairs Eco Village. Collective Architecture 2010.

Case studies 1 and 2

This design study takes the proposed character areas outlined on page 45 and has interpreted them into two case studies.

The case studies have developed to address the principle that infrastructure comes first whilst responding to varying housing markets and social demands. Both case studies adhere to the hydrological strategy outlined within Chapter 4 and the place-making principles within Chapter 5.

Figure 5.2: Case study 1 - Cowlairs Urban Village is based on the principle that surface water be retained on site and above ground as far as possible to create an inner city landscape of swales, sculpted shared open space and large retention areas including a wet pond. A new gateway building and associated terraced landscape sit to the centre of the site to form a green corridor between existing and new neighbourhoods.

Figure 5.3: Case study 2 - Cowlairs Eco Village is further based on the principle that surface water be retained on site as far as possible by the creation of self-build eco-plots. These form a tapestry of gardens within the existing terraces with land for growing and cultivation. A City farm and small holdings are located to the centre of the site.

Each case study provides a strong urban edge in the form of terraces and tenements to the north, east and western edges of the site and hillside dwellings to the south.

Case study 1 - Cowlairs Urban Village will be described in more detail within Chapter 06.

Case study 2 - Cowlairs Eco Village will be described in more detail within Chapter 07.

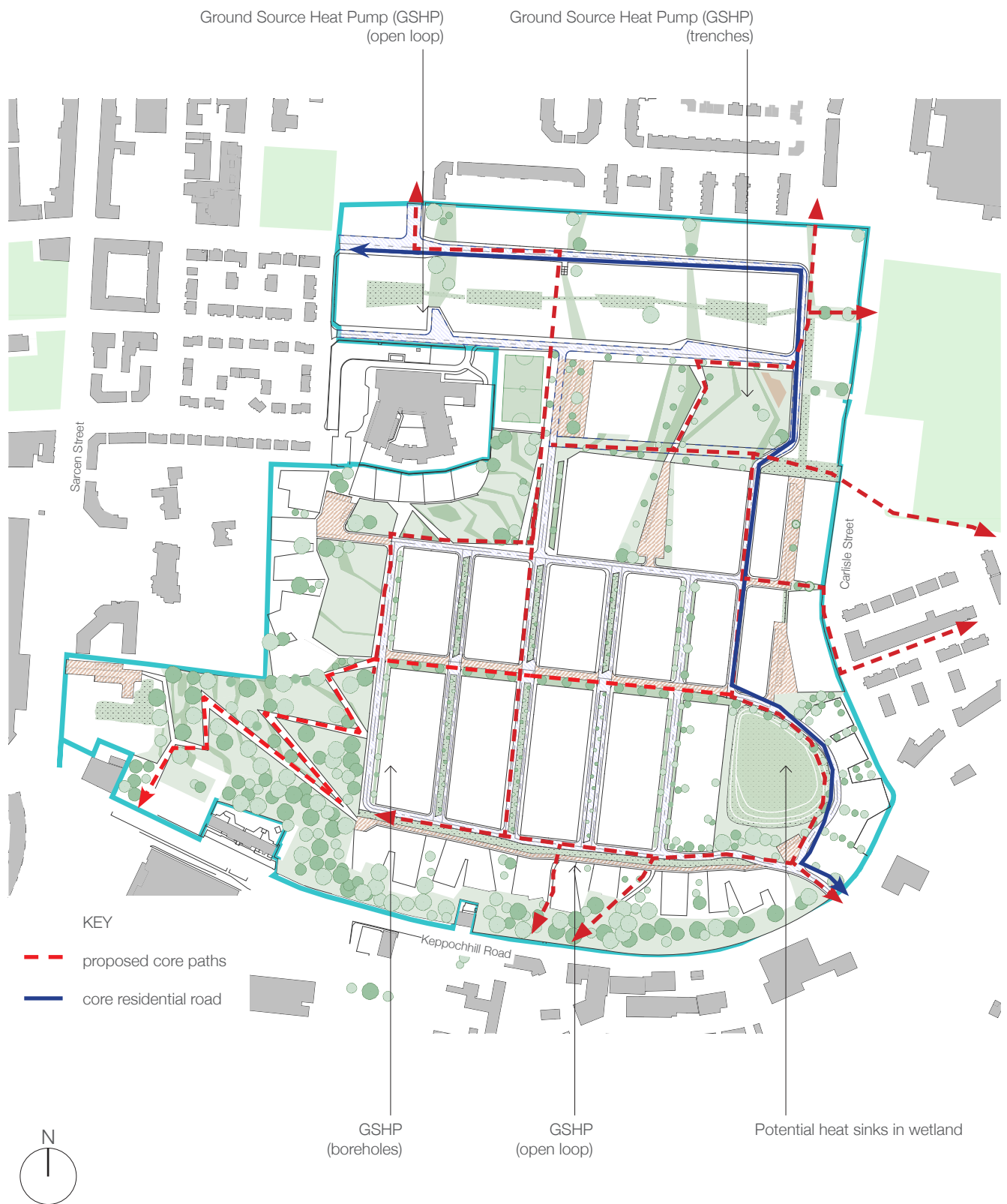


Fig 5.4 Proposed road and pedestrian network. Collective Architecture 2010. Not to scale.



Craigmillar, Edinburgh, Scotland UK



Reinforce existing path and cycleways



Urban wetland and surrounding housing

Access and parking

The site approach offers the potential to promote alternative lifestyles with regards to transport and movement. It is proposed that the terraced plots and hillside dwellings could sustain shared on-street parking with reduced parking to tenements and terraces.

Fig. 5.4: Proposed road and pedestrian network indicates that the existing street pattern to the north of the site has been retained to avoid unnecessary service diversions wherever possible.

A new core residential road passes from the north of the site from Saracen Street along the eastern edge and onto Keppochhill Road. Access is provided for service and emergency vehicles to other housing areas from the new core residential road.

The new road consists of shared surfaces, communal parking and soft landscaping. Precedents include the Drum in Bo'Ness, Fife, Uplands Development, Stroud and PARC Craigmillar in Edinburgh.

Pedestrian routes are retained up through the hillside to connect the north and south of the site to tie into the wider core path network and access to the Forth and Clyde Canal. A series of secondary routes running east to west link the existing graveyard, new wetland and western pathway.

Heating and Power

The design study proposes that all homes within the new development are designed to consume as little energy as possible.

The approach towards inner city development sits well with the growing requirement to positively act on climate change and to motivate the wider community and developers into action with regards to sustainable heating and power.

It is proposed that district heating systems, solar water heating, passive ventilation, thermal mass and super insulation are incorporated into any new development. The proposed wetland offers enormous potential for heat sinks. The ambition should be to achieve EcoHomes Excellent ratings by 2016 and to reduce carbon emissions beyond the continually improving regulatory requirements, which are; a 30% reduction in CO₂ emission by October 2010 (based on 2007 regulations), a 60% reduction by 2013 and the construction of all new homes to net zero carbon standard by 2016/17.



Fig. 5.5 Woodland pre-development

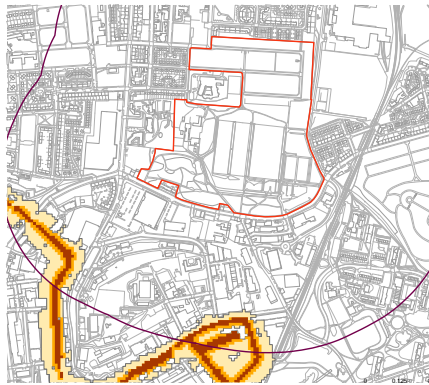


Fig. 5.6 Mineral wetland pre-development

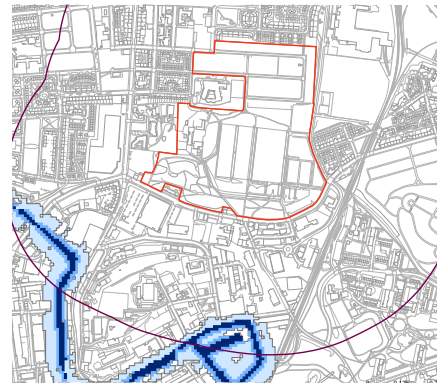
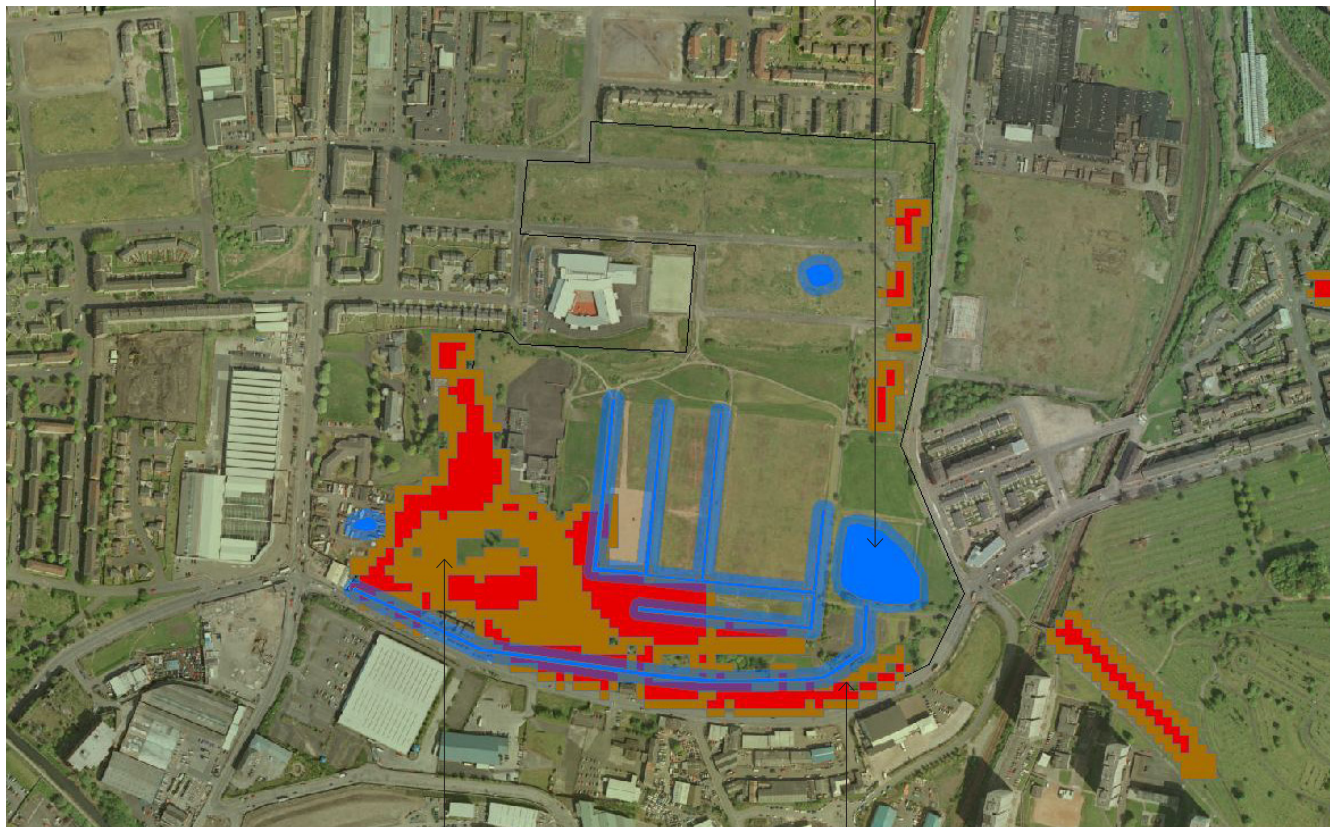


Fig. 5.7 Wetland pre-development

Use native species only when planting at large pond.
Graded banking suitable for wildlife.



Biodiversity area.

Opportunity to provide native planting of species.

Fig. 5.8 Habitat observations. Scottish Natural Heritage and G&CVGNP 2010. Not to scale.

Considerations

- Additional tree planting along terrace embankments could help to integrate new developments, enhancing the capacity of existing topography to limit local views;
- The long panoramic views from higher ground are a particularly attractive feature of the site and selected long views should be retained where possible;
- Consideration could be given to creating additional road links into the centre of the site from Carlisle Street where a natural dip slopes down to the road;
- There is an opportunity to retain, refurbish and redevelop the steep wooded area to create an attractive linear park as a public amenity and buffer zone to potential new housing areas;
- No statutory designations were found within 2km of the site;
- Within areas of retained greenspace it would be desirable to improve sightlines along footpaths and clear heavily overgrown and hidden areas to discourage anti-social behaviour;
- The area of protected green space would benefit from the retention of mature trees and management of existing woodlands;
- Within a 2km buffer of the site a Site of Special Scientific interest, a site of importance for nature conservation and two green corridors were identified, and
- Notable species include badgers.

Habitat

The Glasgow and Clyde Valley Green Network Partnership, in partnership with Scottish Natural Heritage and Forestry Commission Scotland, has identified key areas for habitat restoration and expansion. These provide linked corridors within Glasgow and the Clyde Valley for the re-establishment and dispersal for numerous local and national species. It aims to prevent further fragmentation and improve connectivity between notable habitats to create functioning habitat networks that benefit the majority of species.

Two main habitat networks were identified within the study area:

- Woodland generalist and broadleaved, and
- Wetland generalist and mineral wetland.

Results from the ecological desk-based survey show that protected species have been recorded within the vicinity of the site. Indications of preferred habitat types have been made using aerial photographs and the following surveys have been recommended:

- Badger;
- Bats;
- Breeding bird habitat survey; and
- Phase 1 habitat survey.

Surveys should be undertaken prior to any works on site and at appropriate times of the year.

Figures 5.5-5.7 indicates pre-development modelling of generalist woodland, mineral wetland and wetland habitat. Mineral wetlands are characterised by rich mineral soils, and include marshlands, wetlands and swamps areas.

Figure 5.8 provides an initial observations regarding the impact of the the design study proposal from Scottish Natural Heritage in partnership with Glasgow and Clyde Valley Green Network Partnership. This highlights that native species should be provided to sloped southern embankments and the south-western corner of the site offers potential for biodiversity.



Accorda, Cambridge, UK, Fielden Clegg Bradley, Image: Tim Croker.

06 Cowlairs Urban Village

Case study 1

| | |
|----------------------------|------|
| Cowlairs Urban Village | p 55 |
| Defining the urban edge | p 57 |
| Building on the hillside | p 59 |
| Forming terraced plots | p 61 |
| Gateway and green corridor | p 63 |

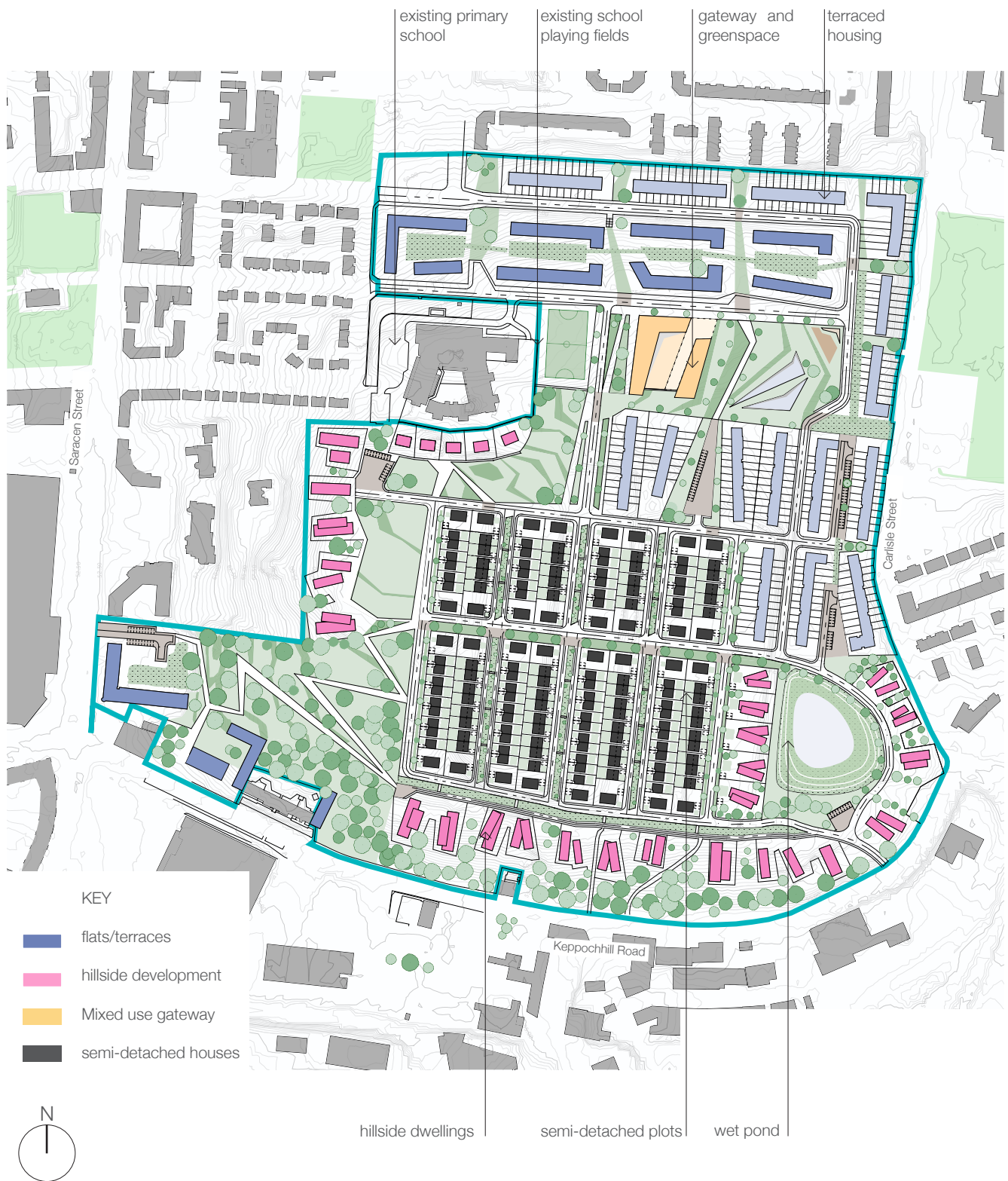


Fig 6.1 Case Study 1 - Cowlairs Urban Village site layout. Collective Architecture 2010. Not to scale.

Cowlairs Urban Village - Case study 1

Figure 6.1: Cowlairs Urban Village site layout is based around the following key principles:

Defining the urban edge

The north, west and eastern edges of the site are intensively developed to create a strong urban edge. A series of terraced and tenemental dwellings, linked by back courts and homezones, define these site boundaries.

Hillside dwelling

Hillside dwellings sit above steep embankments and enjoy fantastic views and southerly light. These properties might form generous split level homes with south facing balconies overlooking the city.

Formation of terraced plots

Semi detached house plots are formed within the existing terraced area to the centre of the site. The gridded street pattern reflects the existing site topography with linear swales to new roads and corridors.

Gateway site

A new mixed use gateway building is located at the northern vehicular entrance into the site adjacent to the existing primary school. This might house a local creche, small work or retail units with associated courtyards and open space. The site falls to the east in the form of sculpted landscapes and public pathways.

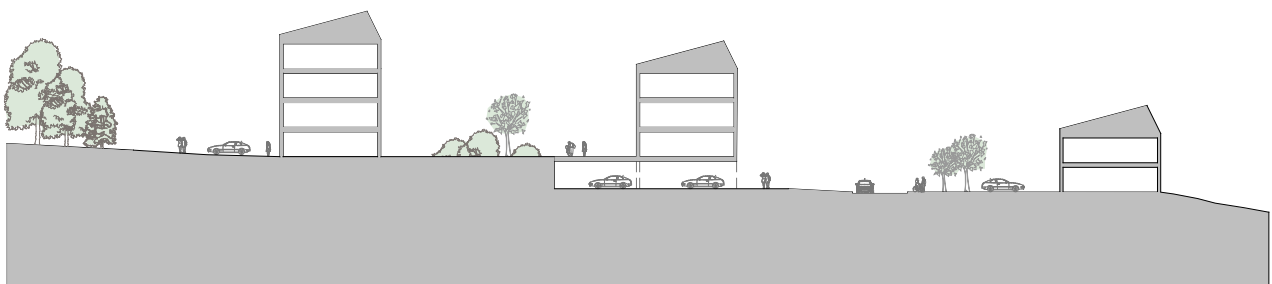
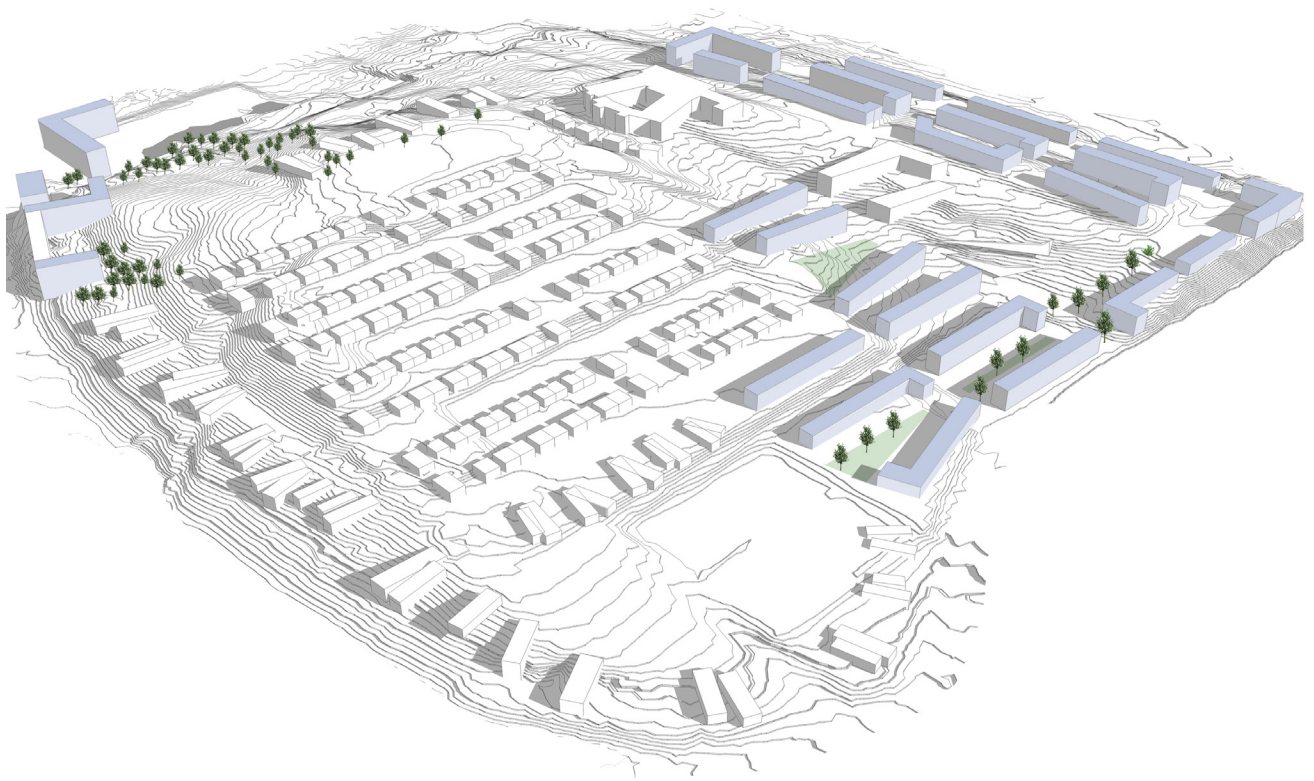


Fig 6.2 Cross section through tenemental blocks, Collective Architecture 2010, Not to scale.

COWLAIRS URBAN VILLAGE



Ekostaden Augustenborg, Sweden

Defining the urban edge

A series of terraced and tenemental houses define the urban edge between existing dwellings and the central greenspace.

The street pattern and back courts are arranged to provide a route for surface water, which runs from the north of the site to the south-east and western edge.

The terraced housing has front and rear gardens with a shared surface street arrangement designed to the principles of the Scottish Government's recently published 'Designing Streets' 2010.

Tenemental housing is arranged in blocks, which step down the sloped topography to the east. These blocks are also stepped in section to provide level back courts with undercroft parking from Allander Street.

A wet pond sits to the south east corner, acting as a retention area for discharge to the Forth and Clyde Canal in the event of an extreme flood. It also provides amenity benefits and links to a pedestrian route running from east to west across the site.



Tenemental back court, Collective Architecture, 2010.

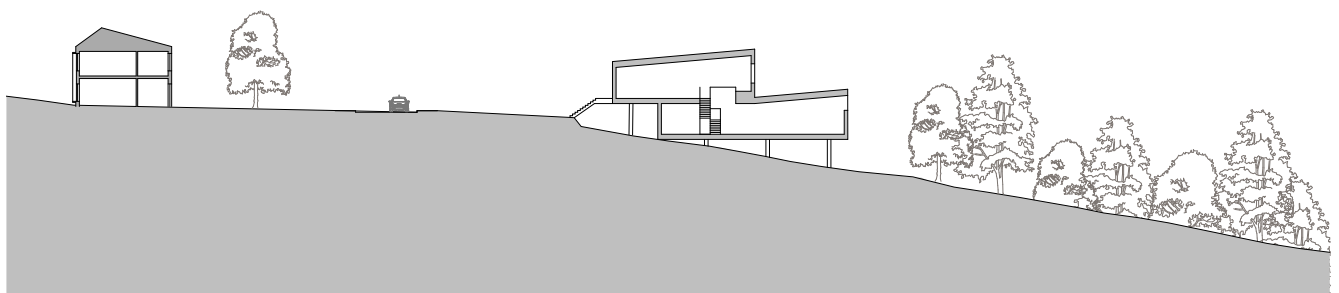
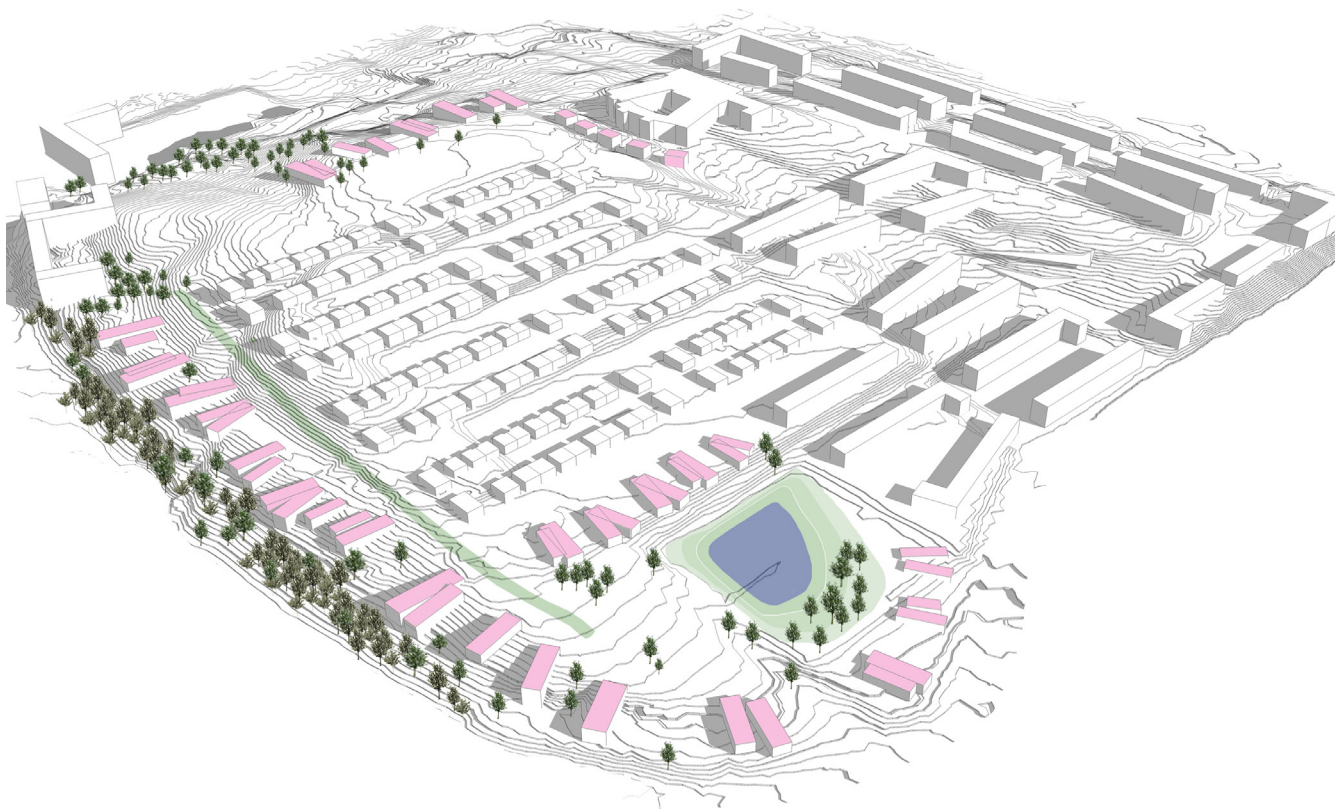


Fig. 6.3 Section through hillside dwellings, Collective Architecture 2010. Not to scale.



Kawanishi Cottage, Nicolas Pople, Japan



South facing balconies, Germany

Building on the hillside

The south facing slopes onto Keppochhill Road provide the opportunity for stepped housing typologies, which might not require large areas of associated land. This will allow trees and parkland to pass around and below.

A series of linear dwellings, accessed from the rear, step down the slope. These look towards Glasgow City Centre and offer the opportunity for spectacular views via large windows and external balconies. The south facing aspect lends itself to solar collection and passive heating and ventilation.

These generous, desirable dwellings would be suited to a variety of residents ranging from the elderly to young couples. There is also a clear association between the hillside dwellings and the terraced plots.

It is proposed that pedestrian routes be retained up through the hillside to connect the north and south of the site to tie into the wider core path network and access to the Forth and Clyde Canal.



Hillside dwellings, Collective Architecture 2010.

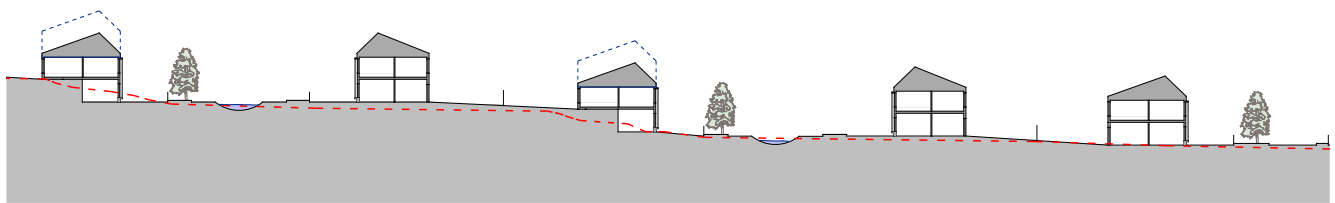
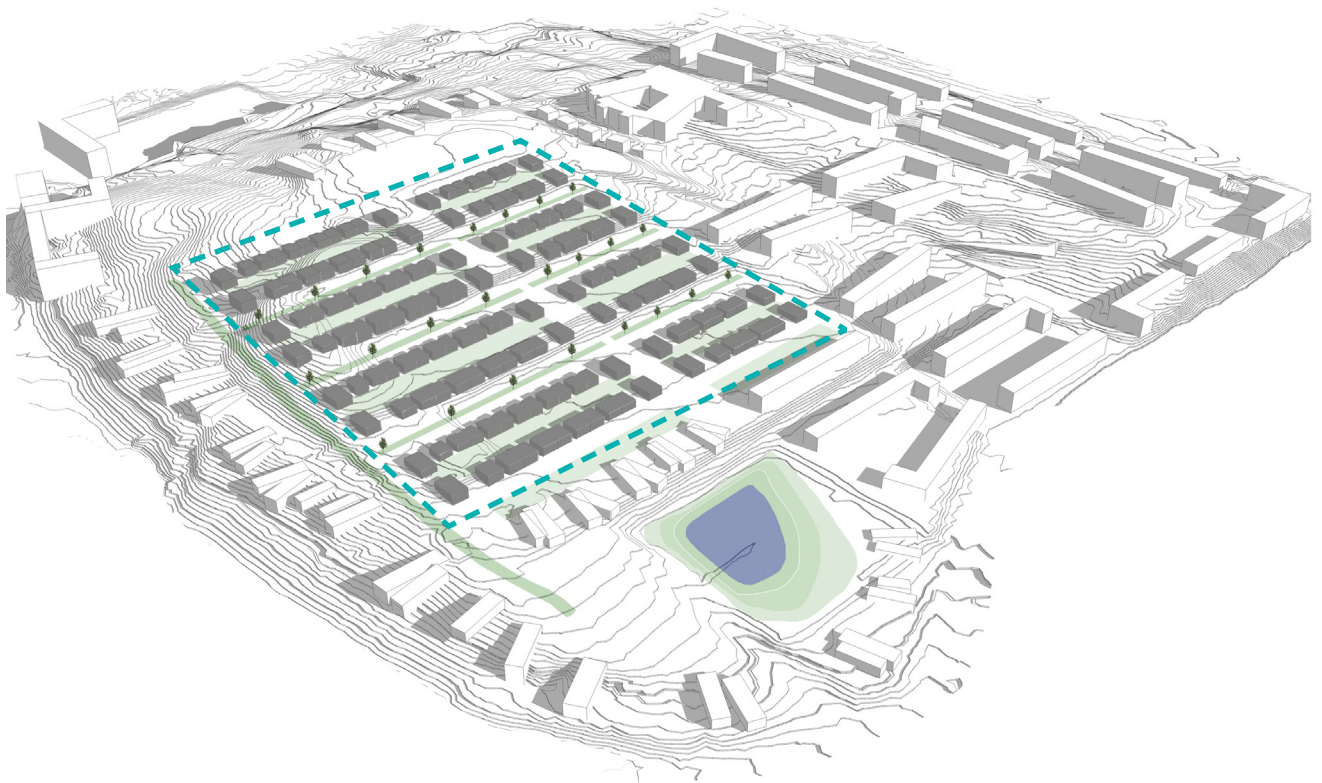


Fig 6.4 Section through terraced plots and swales (existing site in red). Collective Architecture, 2010. Not to scale.

COWLAIRS URBAN VILLAGE



Swales, Upton, England UK

Forming terraced plots

The large flat areas of land to the centre of the site form a series of stepped terraces. It is proposed that these areas be used to provide a series of streets and swales overlooked by semi-detached houses.

Swales run north to south down each road to form a natural conveyance route for surface water. These are planted and contain small bridges allowing pedestrian passage from side to side. In-curtilage parking is provided to the front of houses with permeable paving. All garden areas and permeable surfaces form part of the wider strategic drainage proposal and must remain permeable.

Figure 6.4: Section through stepped terraced plots and swales outlines the sectional arrangement of the proposed houses relative to the road layout and swales. The existing ground levels (shown in red) are followed as closely as possible to prevent the need for costly earthworks. It is proposed that a stepped house type be provided at existing changes in level to provide level access from street level and level gardens to the rear.



Housing and swales to terraced plots, Collective Architecture, 2010.

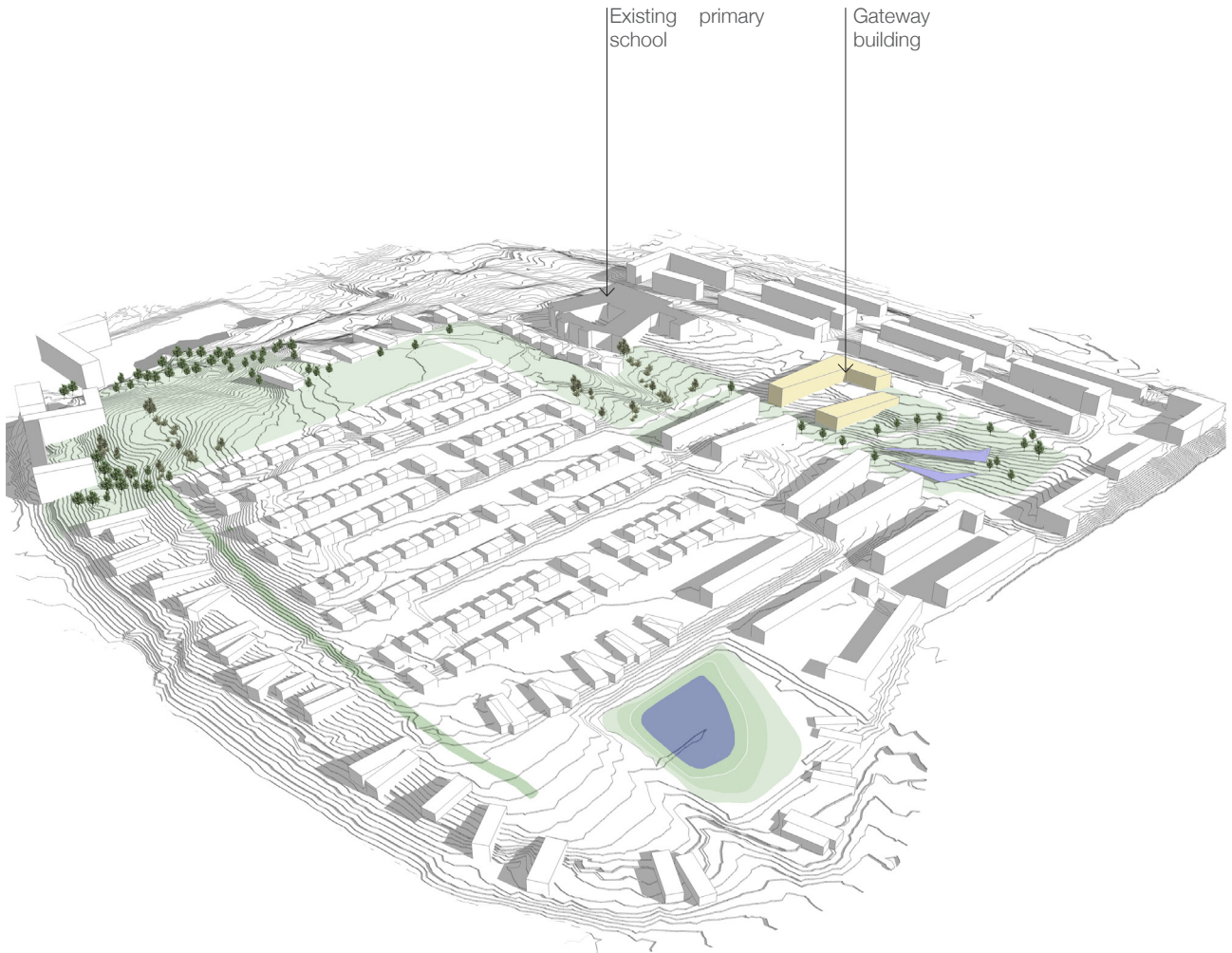


Fig 6.5 Gateway and green corridor, Collective Architecture 2010. Not to scale.



Rottonrow Gardens, Glasgow, UK

Gateway and green corridor

A green corridor of open space and pathways connects the east and west of the site. The open space is sculpted to provide a dynamic landscape of paths, terraces and courtyards.

New and existing roads feed into the green corridor to provide a network of blue-green routes which connect into the surrounding path network and neighbourhoods.

The site is within close proximity to the Possilpark Town Centre. Nevertheless, it is proposed that a new mixed use gateway building is located at the northern vehicular entrance into the site adjacent to the existing primary school to provide immediate local facilities. This might house a local creche, small work or retail units with associated courtyards and open space with a relationship to the existing school and green corridor.



Gateway and green corridor, Collective Architecture 2010.

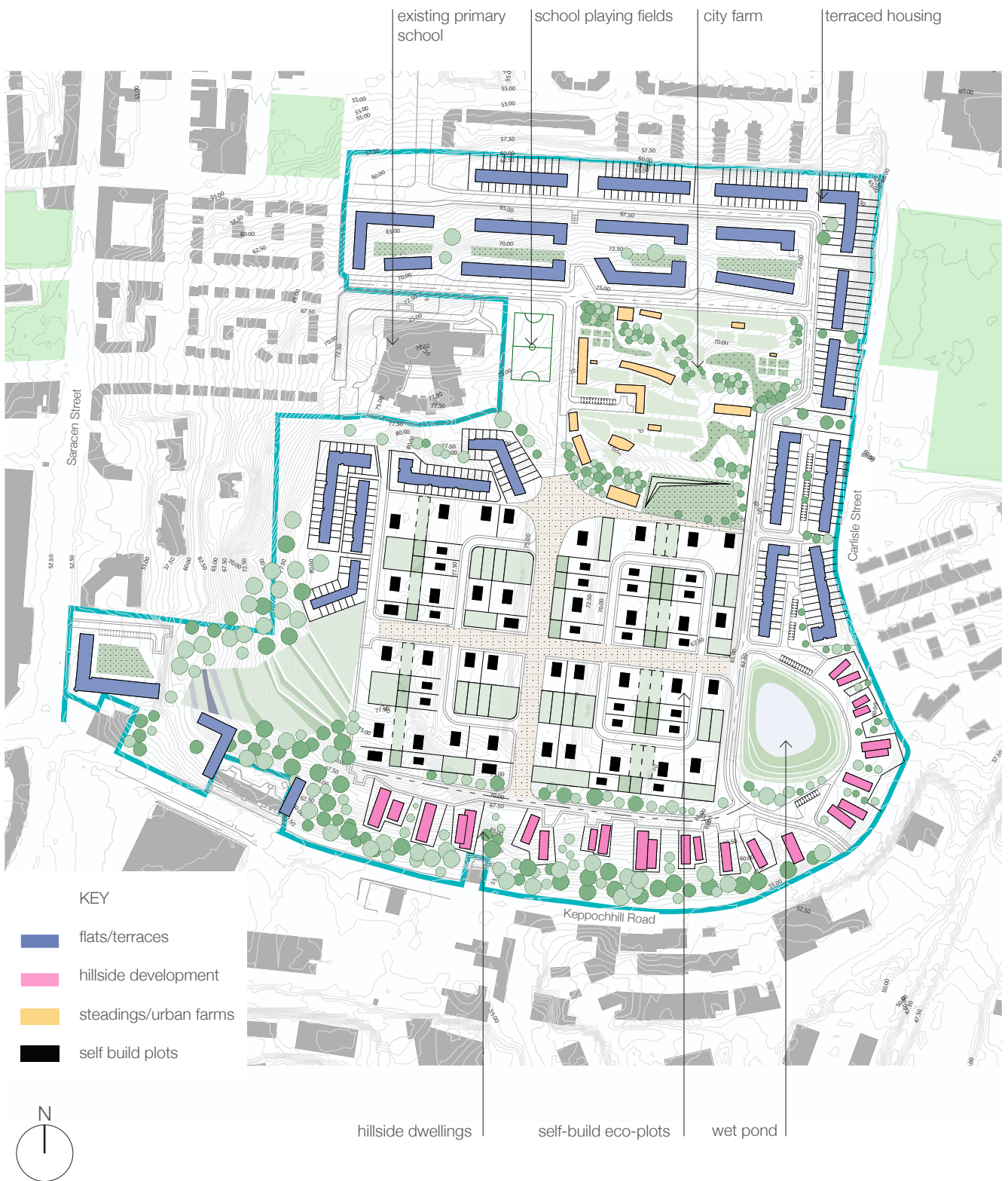


Bridgend Community Garden, Islay, Scotland UK

07 Cowlairs Eco Village

Case study 2

| | |
|------------------------------|------|
| Cowlairs Eco Village | p 67 |
| Introducing Urban Farming | p 69 |
| Forming self-build eco-plots | p 71 |
| Self-sufficient dwelling | p 73 |



Cowlairs Eco-Village

Figure 7.1: Cowlairs Eco-Village site layout is based around the following key sustainable principles:

Urban farming

A new city farm is located at the heart of the development adjacent to the existing primary school. This might also house a number of steadings or small holdings with land for growing.

Formation of eco-plots

Individual self-build house plots are formed within the existing terraced area to the centre of the site. These plots are allocated for self-build homes with sufficient land for growing to support a family. A series of water storage walls are provided between the terraces for irrigation.

Car free housing

It is proposed that the central areas of the site are car free, with vehicular access for service and emergency vehicles only.

A new residential road passes from the north-west at Saracen Street to the south east onto Keppochhill Road.

Defining the urban edge

The treatment of boundaries and urban edges are similar to those outlined within Case Study 1. The north, west and eastern edges of the site are intensively developed to create a strong edge to these boundaries. A series of terraced and tenemental dwellings, linked by back courts and homezones, define these site boundaries. The steep southerly edge is punctuated by linear dwellings, which step down the hillside.

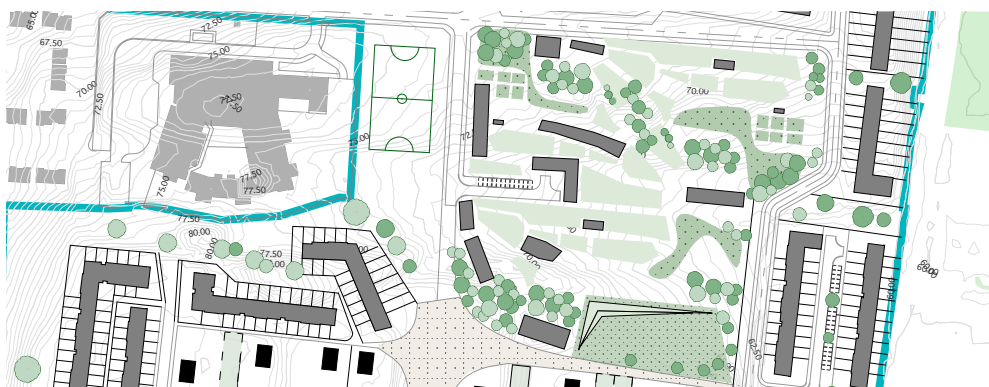


Fig. 7.2 indicates the location of the proposed City Farm. This sits immediately adjacent to the existing Primary School.

The relationship between the existing school and the city farm offers the potential for educational and social benefits to young people and the surrounding community.

Fig 7.2 Cowlairs Eco-Village, productive landscape. City Farm. Collective Architecture 2010. Not to scale.



Victoria Garden Allotments, Glasgow



Bridgend Community Gardens, Islay



Heeley City Farm, Sheffield

Introducing urban farming

Urban agriculture is the practice of cultivating, processing and distributing food in, or around a village, town or city² and can also involve animal husbandry, aquaculture, agro-forestry and horticulture.

In the UK the Federation of City Farms and Community Gardens supports, represents and promotes community-managed farms, gardens, allotments and other green spaces.

City Farms, such as Gorgie Farm in Edinburgh and Heeley City Farm in Sheffield, are run by a management committee of local people in partnership with local authorities. The success of such farms relies on local input and involvement.

Most projects provide food-growing activities, training courses, school visits, community allotments and community businesses. In addition, some provide play and sports facilities and after school and holiday schemes.

2. Bailkey, M. and J. Nasr. 2000. From Brownfields to Greenfields: Producing Food in North American Cities. Community Food Security News. Winter 2000.

- Community-growing projects reconnect people with nature and promote local action on global environmental issues through composting, the use of organic methods, wildlife areas and local food production;
- The presence of hands-on food growing experiences on our doorsteps promotes uptake of healthier diets and bridges the gap from field to plate;
- Community farms and gardens provide opportunities for exercise and learning in alternative outdoor settings, acting as stepping-stones to wider path networks;
- Plants and animals can be used to engage individuals with learning difficulties and disaffected young people, instilling a sense of responsibility and providing routes into education and/or employment;
- Social opportunities provided at these facilities instigate the development of support networks and strengthen communities, promoting integration and inclusion;
- Community farms and gardens have a positive impact on the local economy through local spending and employment opportunities, and
- Community farms and gardens support the delivery of government agendas relating to social inclusion, health, climate change, education, regeneration and local economies.

'The true value of community farms and gardens: social, environmental, health and economic' Research paper by the Federation of City Farms and Community Gardens 2007.

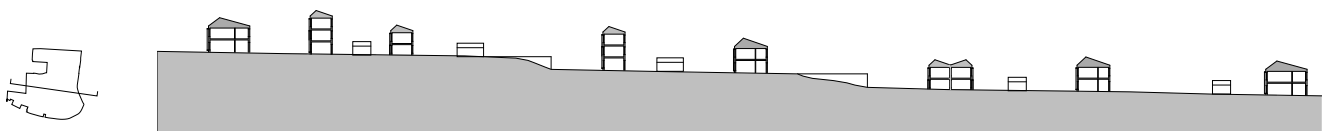
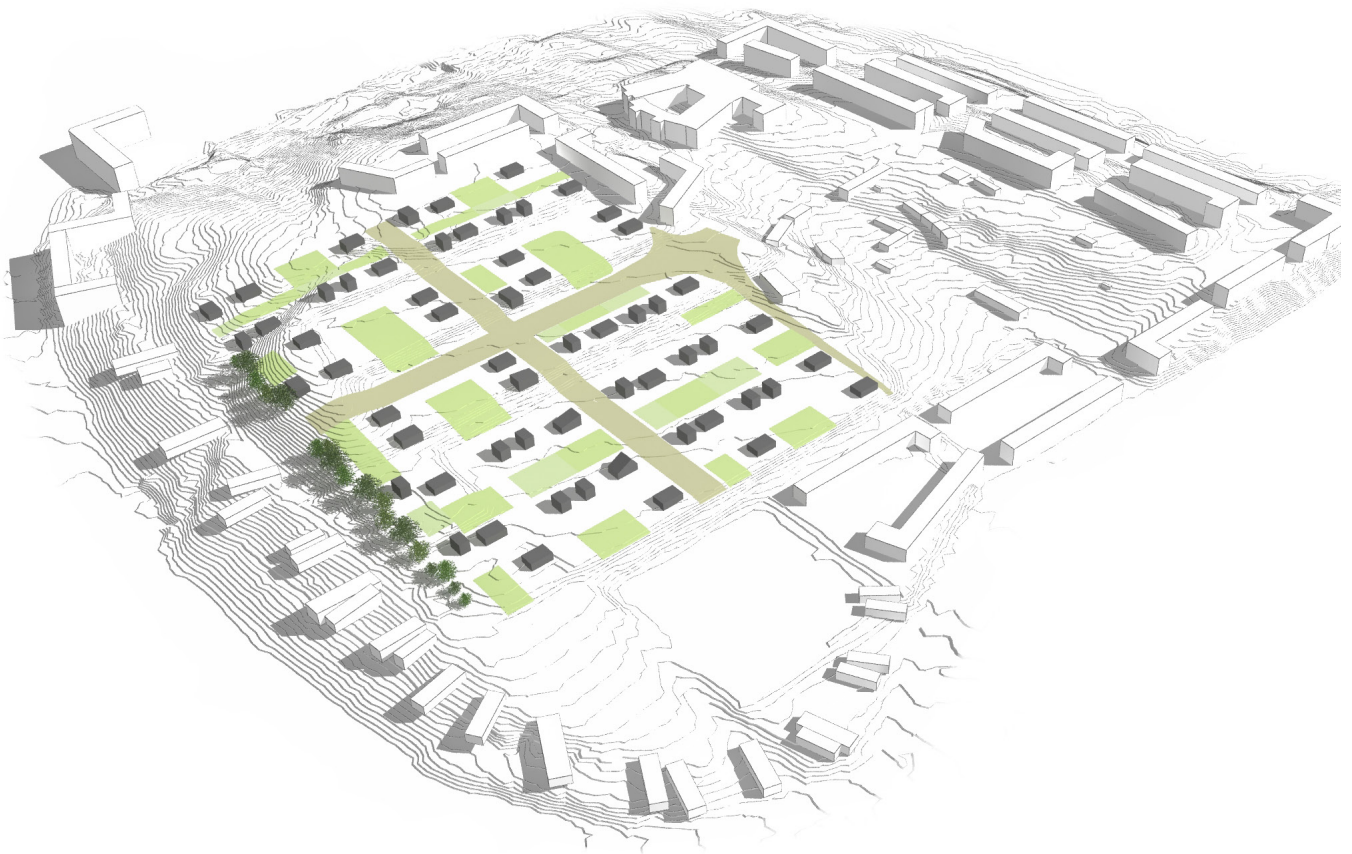


Fig 7.3 Section through terraces and self-build plots. Collective Architecture, 2010. Not to scale.

COWLAIRS ECO VILLAGE



Self build unit by Hebridean Homes.



Allotments, Glasgow.

Forming self-build eco-plots

The formation of generous self-build eco-plots within the terraced area of the site suggests an alternative form of urban dwelling.

The demand for family housing with associated land continues to increase. Families with sufficient income are relocating from city centres to the suburbs and greenbelts in search of larger gardens and open space.

Glasgow City Council operates 24 allotment sites across the city, with a total of 1320 plots. Demand is such that waiting lists are high, with waiting times of more than seven years for a plot on the most popular sites³.

The proposed self-build plots and gardens create an agricultural tapestry within the centre of the development. The area is predominantly car-free and is publicly accessible by foot and bicycle. The stepped terraces hold irrigation channels which collect surface water runoff.

3. Glasgow City Council Land and Environmental Services figures of August 2007.

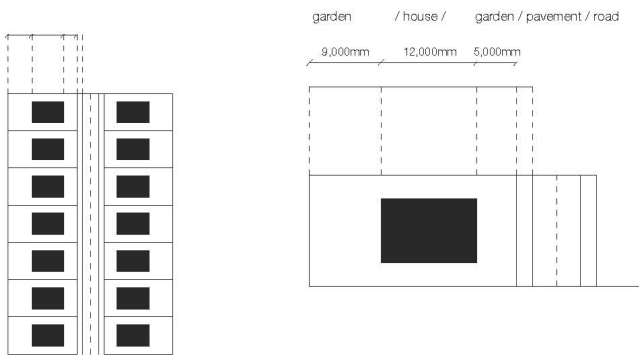


Cowlairs Eco Village self-build plots, Collective Architecture, 2010.

Calculation of plot sizes and arrangement

The following diagrams outline the method used to calculate plot sizes and arrangement. These are based on information provided by ZEDfactory Limited (www.zedstandards.com) and the National Society of Allotment and Leisure Gardeners Limited (www.nsalg.org.uk).

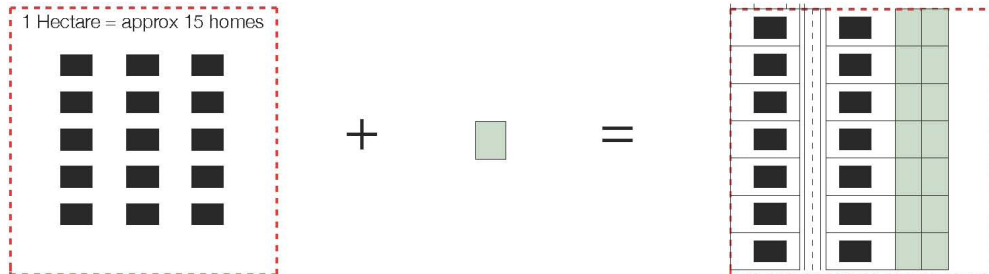
Minimum planning standards for typical house to plot arrangement.



Minimum plot sizes required to annually feed a family.



Minimum number of homes per hectare (15) plus plot sizes required to feed a family (250sqm, 125sqm) equals min. layout per hectare.



Possible site arrangements for 15 homes within one hectare.

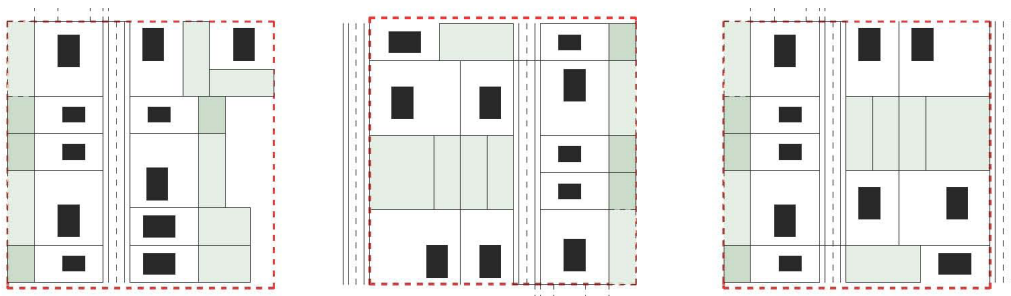


Fig. 7.4 Self-build eco-plot size investigation. Collective Architecture 2010. Not to scale.



Lighthouse, Sheppard Robson Architects



Findhorn Eco-Village, Morayshire



Highland Housing Expo, Inverness 2010



Highland Housing Expo, Inverness 2010

Self-sufficient dwelling

Figure 7.4: Self-build eco-plot size investigation identifies the method used for calculating eco-plot sizes within the design study. This provides approximately 50 homes and associated land. Eco-village precedents include Findhorn Community Eco-Village in Morayshire, Scotland, The Lighthouse zero-carbon home and the Highland Housing Expo in Inverness.

Findhorn Eco-Village is a long established collection of self-sufficient dwellings based around an existing community. It has expanded in the last ten years to include individual sustainable homes with shared power, solar water heating and green roofs.

The Lighthouse is the UK's first net zero-carbon house that also meets Level 6 (the highest level) of the Code for Sustainable Homes – the standard to which all new homes must be constructed by 2016 within England and Wales. It is designed to provide a way of living that encourages lifestyles which are inherently 'light' on the world's resources.

The Highland Housing Expo 2010 is a recently planned community just outside Inverness showcasing over fifty innovative and sustainable houses built to achieve Scottish Ecohomes 'Excellent' rating.



Fig. 7.5 Self-build eco-plot arrangement, Collective Architecture 2010, Not to scale.



08 Next steps

Recommendations

| | |
|---------------------------------------|------|
| Accommodation schedule - Case study 1 | p 77 |
| Accommodation schedule - Case study 2 | p 79 |
| Infrastructure | p 81 |
| Operational framework | p 83 |
| Recommendations | p 85 |

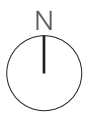
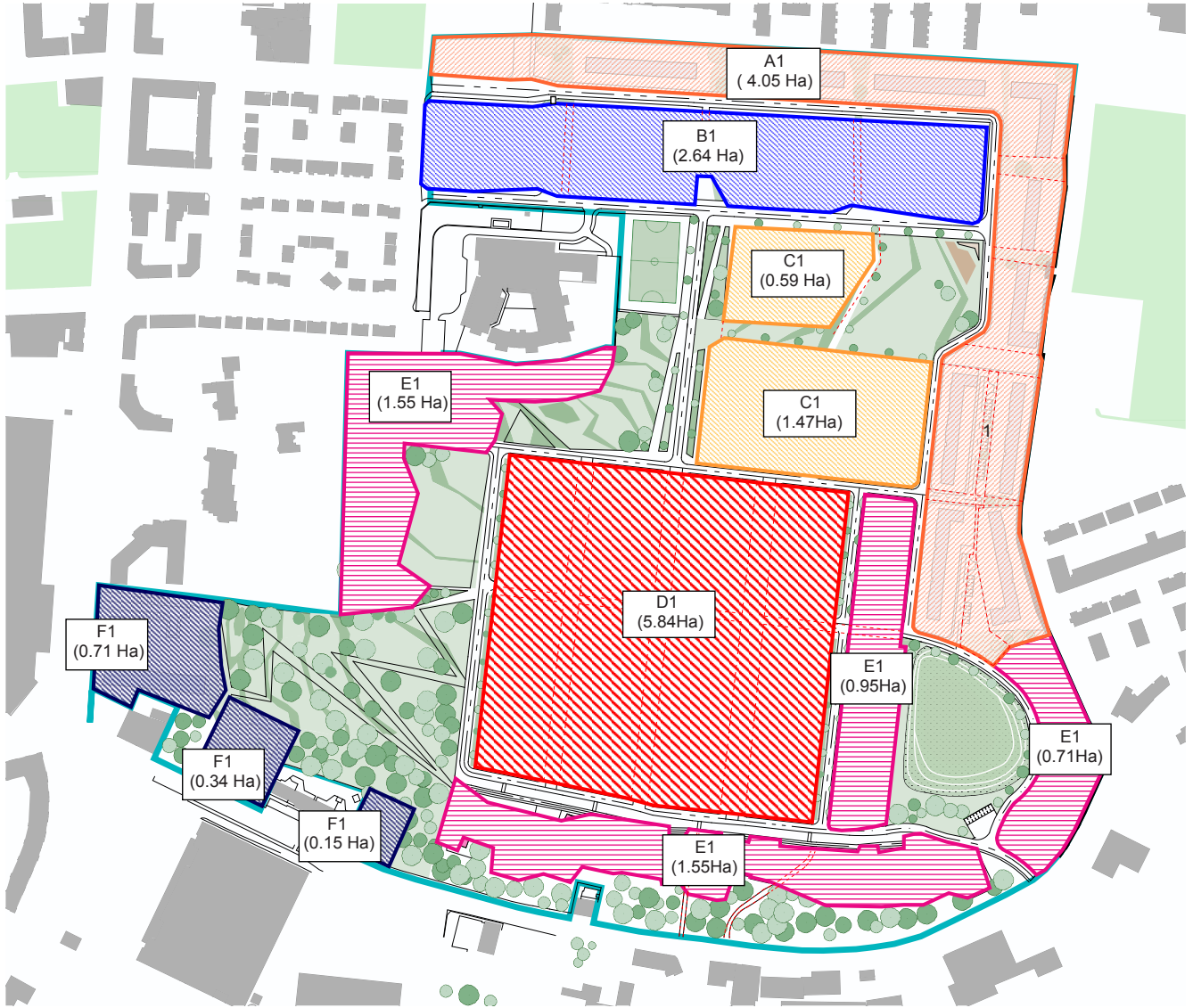


Fig 8.1 Schedule of accommodation schematic - Case Study 1. Collective Architecture 2010.

NEXT STEPS

Accommodation schedule - Case study 1

The following schedule of accommodation has been prepared to provide an indicative housing mix and probable unit numbers based on the site schematic shown (Fig 8.1).

| Plot | Area (ha) | House Type | No. of units |
|-------------|------------------|-------------------------|---------------------|
| A1 | 4.05 | Two storey terraces | 124 |
| B1 | 2.64 | Tenement (4-storey) | 220 |
| C1 | 1.76 | Mixed use | 50 |
| D1 | 5.84 | Semi-detached (2-4 bed) | 152 |
| E1 | 4.61 | Hill-side (3-4 bed) | 105 |
| F1 | 1.20 | Tenements (4-storey) | 100 |
| | | TOTAL UNITS | 750 |

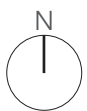
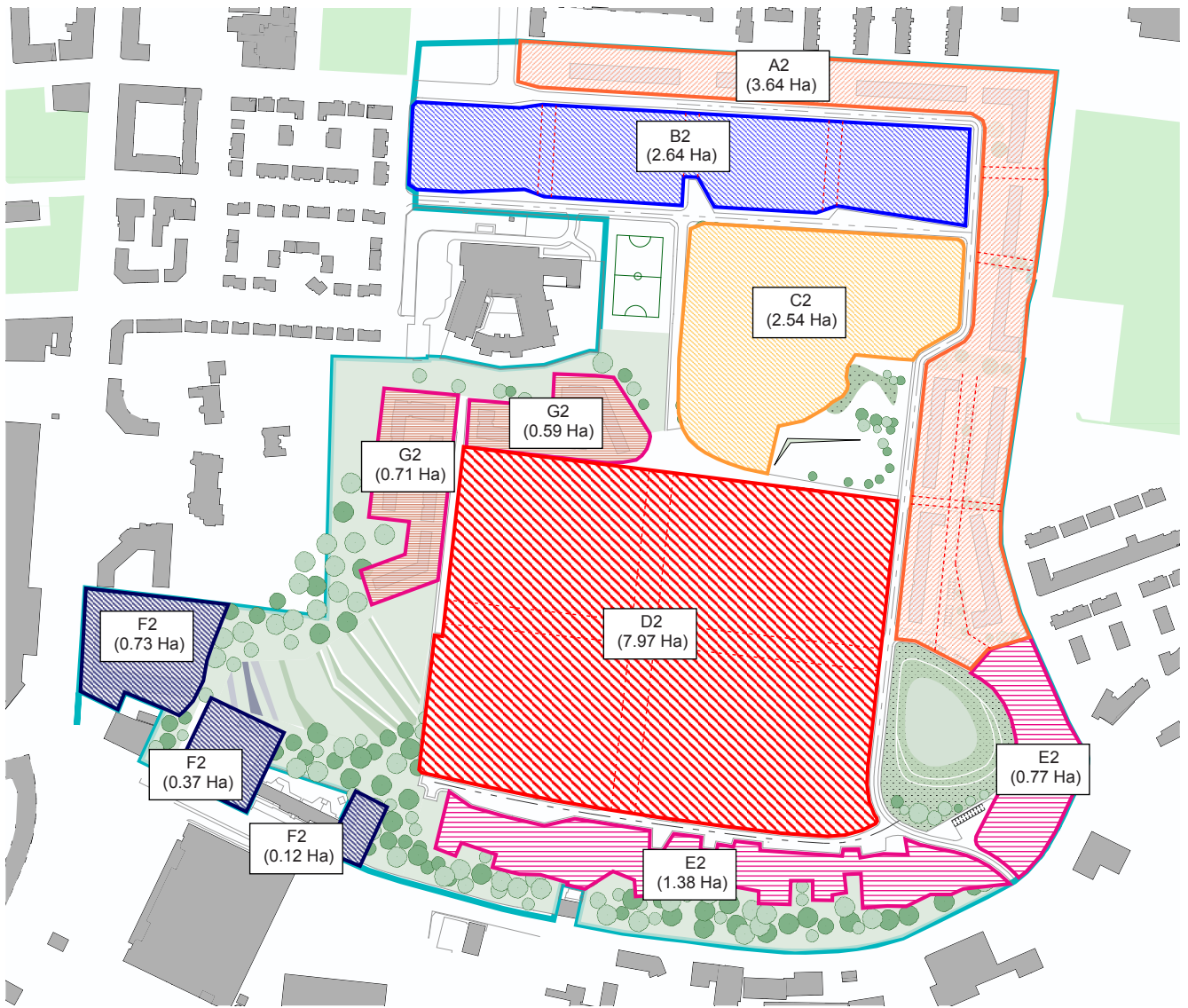


Fig 8.2 Schedule of accommodation schematic - Case Study 2. Collective Architecture 2010.

NEXT STEPS

Accommodation schedule - Case study 2

The following schedule of accommodation has been prepared to provide an indicative housing mix and probable unit numbers based on the site schematic shown (Fig 8.2).

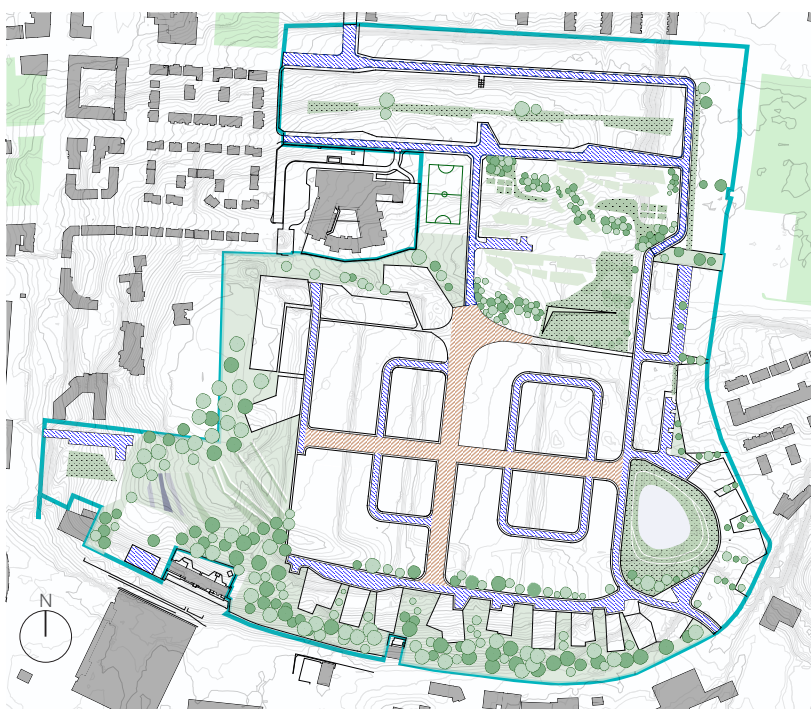
| Plot | Area (ha) | House Type | No. of units |
|-------------|------------------|----------------------|---------------------|
| A2 | 3.64 | Two storey terraces | 130 |
| B2 | 2.64 | Tenement (4-storey) | 220 |
| C2 | 2.54 | City Farm | 0 |
| D2 | 7.97 | Self build eco-plots | 60 |
| E2 | 2.15 | Hill-side (3-4 bed) | 50 |
| F2 | 1.22 | Tenements (4-storey) | 85 |
| G2 | 1.30 | Two storey terraces | 60 |
| | | TOTAL UNITS | 605 |



KEY

-  New road network (6m width and 3m swales)
-  Existing road resurfaced with new footways
-  Developer roads and parking (70% permeable)
-  Swales and retention areas
-  Open green space (landscaped)

Fig 8.3. Case Study 1 Infrastructure Schematic, Collective Architecture 2010, Not to scale.



KEY

-  New road network (6m width and 3m swales)
-  Existing road resurfaced with new footways
-  Developer roads and parking (70% permeable)
-  Swales and retention areas
-  Open green space (landscaped)

Fig 8.4. Case Study 2 Infrastructure Schematic, Collective Architecture 2010, Not to scale.

Infrastructure

Figures 8.3 and 8.4: Infrastructural schematics outline the scope of infrastructure that might be put in place to enable the development of Case Study 1 and Case Study 2.

The following assumptions have been made when producing the schematics:

- The existing road infrastructure to the north of the site can be retained, repaired and resurfaced with new footways provided;
- Existing pathways to the south and west of the site will be retained and reused as far as possible;
- Retaining walls required for individual plots and house typologies would be provided by housing developers;
- Ground conditions will not be problematic;
- Any shared parking or developer-provided road surfaces allows for 70% permeable paving;
- That access to the Forth & Clyde Canal can be achieved, and
- That public utilities exist adjacent to the site and no new primary infrastructure is required.

The schematics are 'high level' only and aim to give an order of the extent of the proposed site infrastructure which may be required to implement a sustainable urban drainage system at the site.



Fig 8.5 Terraced plots and swales - Case Study 1. Collective Architecture 2010, Not to scale.



Fig 8.6 Forming self-build eco-plots - Case Study 2. Collective Architecture 2010, Not to scale.

NEXT STEPS

Operational framework

The design study builds upon the existing park and core path networks to create a high quality and animated environment containing significant new character areas. These require a robust operational and maintenance framework.

Discussion is required with the Local Authority to establish controlled on-street parking (where applicable) and associated maintenance within public areas.

The operational framework will rely on both Glasgow City Council and Scottish Water committing under a legal agreement to responsibilities for management and maintenance. The framework would see the capital and operational roles for the area divided between Glasgow City Council and Scottish Water. The precise breakdown of these responsibilities will depend on, and to some extent will shape, the integrated landscape design.

The general arrangement for operational maintenance activities would be for Scottish Water to take responsibility for maintaining below-ground structures, and those functional parts, which are hydraulically required for the continued operation of the system. Glasgow City Council would then take responsibility for the wider amenity and landscape maintenance, such as inspection, vegetation management and litter removal. Agreements would also be required between Glasgow City Council and the Local Education Authority or any community trust that might be established to manage any public buildings.

For capital maintenance, where structural repair or replacement might be needed, the costs incurred are likely to be more significant. Design coding shall play a significant part in the selection and control of material use to reduce operational maintenance risks.

It may be necessary to define a mechanism whereby costs can be attributed to each agency for defined tasks.



Fig. 8.7 Cowlares Urban Village, Case Study 1, Collective Architecture 2010.

NEXT STEPS

Recommendations

1. City Property (Glasgow) LLP are invited to consider the following recommendations made by the design study;
2. Inform the publication of Supplementary Planning Policy; namely Ruchill Keppoch New Neighbourhood Local Development Strategy;
3. Preparation of a joint venture Business Case to procure masterplanning and full design services adopting a strategic project approach of “infrastructure comes first” inclusive of:
 - urban spatial analysis;
 - sustainability;
 - strategic drainage - surface water management strategy;
 - catchment modeling to inform a surface water management plan;
 - traffic analysis;
 - design coding;
 - ecological studies including Integrated Habitat Modelling;
 - environmental impact assessment,
 - field/geotechnical investigations, technical reporting;
 - assignation of Collateral Warranties;
 - community engagement, and
 - cost management including commercial appraisals;
4. Early consideration of adoption and maintenance strategies by Glasgow City Council and Scottish Water;
5. City Property (Glasgow) LLP should explore all suitable deliverability mechanisms that would ensure the regeneration of the site, which may include entering into a Joint Venture with an agreed developer or consortium over the period of the project;
6. Invite audit from Architecture and Design Scotland, and
7. Seek community response through engagement, most particularly with the Joint Community Consultative Group (JCCG) and Keppoch Campus (local primary school).



Appendix

Consultants' reports (CD-Rom)

Cowlairs Urban Village - Design study, 2010 Collective Architecture.

Cowlairs - Surface water management strategy, 2010 AECOM.

Cowlairs - Technical baseline assessments, 2010 AECOM.

