

Jackton and the Gill Burn Valley Design Study

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

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Jackton Road steadings, Collective Architecture 2010

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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

Jackton and the Gill Burn Valley Design Study has benefited from incredibly good timing to help inform the planning development process by the creation of a new sustainable community for an important site in an attractive location.

The study offers intelligent convergence with South Lanarkshire's Local Plan (March 2009) namely East Kilbride's Community Growth Area Masterplan Development Framework (August 2007) by embracing the creative and technological challenges of placemaking in the twenty-first century.

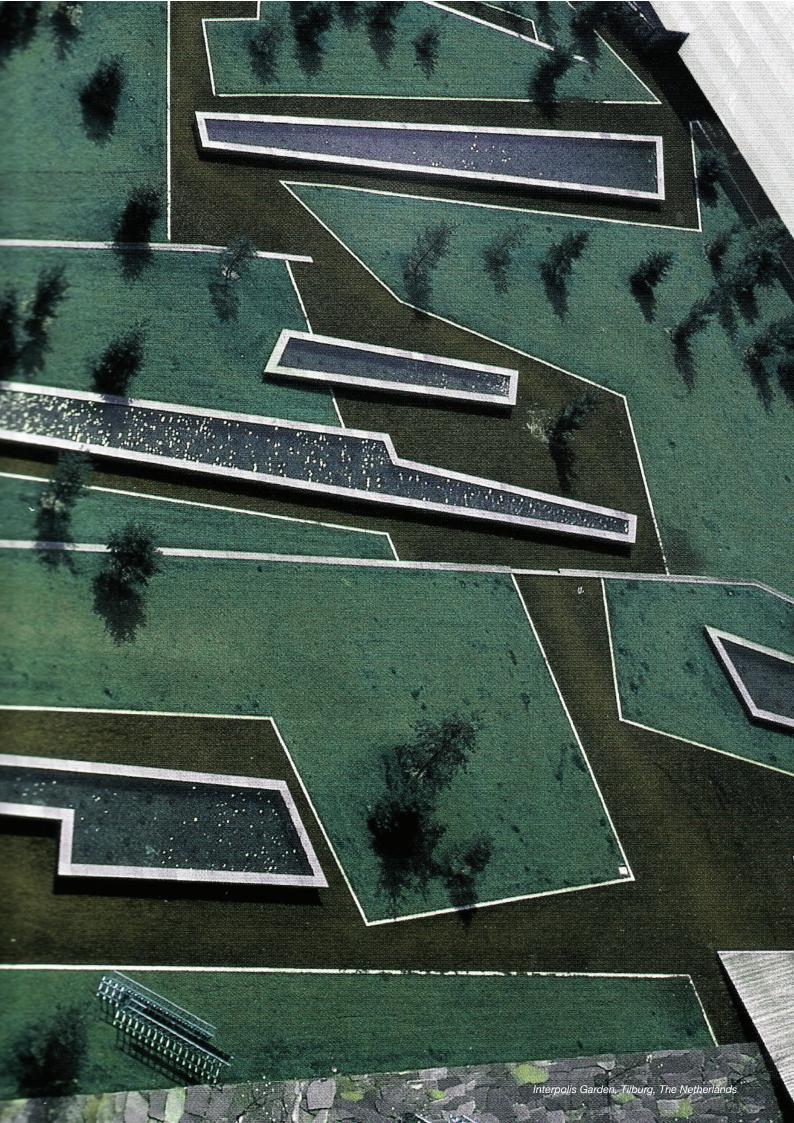
Making better and sustainable places has been the focus of the urban study by finding a cohesive and inclusive spatial relationship between town, village, and countryside. By mitigating the pressures of urban creep we can optimise the Gill Burn ecosystem and productive landscapes.

The study provides clarity and simplicity by exploring the inherent characteristics of water and green networking to find safe patterns that nurture the positive interrelationships that move all systems toward a "mature ecology". It discovers the realities of integrated networks (roads, hydrology, habitat) as an essential design tool which informs the Surface Water Management Strategy that characterise an entirely new kind of interconnected design pedagogy that has infrastructure and well-being at its core.

Consideration has been given to finer-scale site and building design issues and to best practice guidance and review processes that influence the shaping of the built environment. Mature urban neighbourhoods offer a range of housing opportunities and daily conveniences in a pattern that supports walking and transit for most trips and positions Jackton village in a unique position within a distinctive community and ecological arterial highway.

The foresight and commitment shown has made for a truly collaborative approach to urban regeneration, which can only benefit and contribute towards the vision for the future of South Lanarkshire.

Project Board



Approach Infrastructure comes first

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"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 Plan that have been produced for both of Scotland's River Basin Districts."

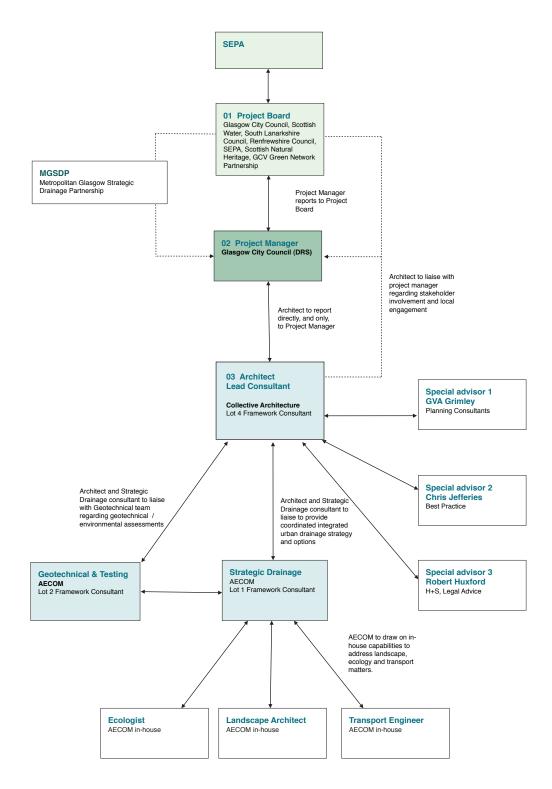


Fig 1.1 Stakeholder mapping, Collective Architecture 2009



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 has been 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 included a number of specialist advisors.

















Greenspace Quality Guide

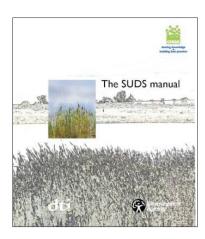
The Greenspace Quality Guide has been prepared to assist those involved in greenspace planning to share and better understand best practice in developing a co-ordinated approach to greenspace provision based on a Greenspace Strategy.



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 Government's determination to raise standards of urban and rural development. Guidelines for Development Roads are currently being revised to reflect Designing Streets and other documents.



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.



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.





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 South Lanarkshire plan covers the entire local authority area and includes all urban and rural communities.



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.



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.



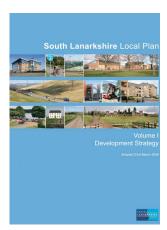
Equally Well

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.



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.



The South Lanarkshire Local Plan

The South Lanarkshire Local Plan sets out the Council's vision and strategy for development and land use across the whole of the Council's area.

The aim of the Plan is to promote the continued growth and regeneration of South Lanarkshire in a sustainable manner, while seeking to improve and safeguard the environment of urban and rural areas.

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 was aimed at transforming places in order that they might realise their full social and economic potential.

Regional level

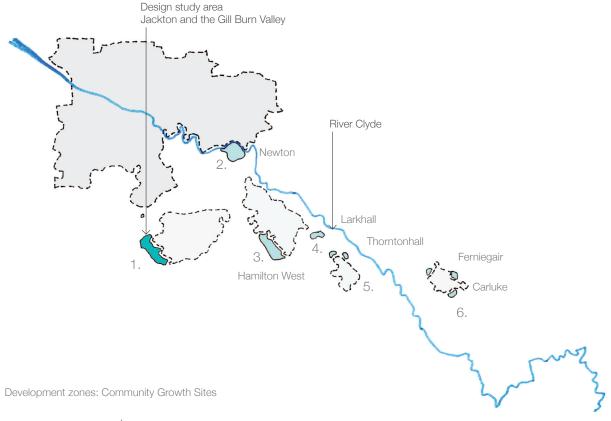
The design study area has been designated as a Community Growth Site by South Lanarkshire Council and is identified within the Glasgow and Clyde Valley Structure Plan.

Local level

South Lanarkshire Council has a series of guidance documents outlining aspirations for the site to meet Scottish Government policy. Key documents include South Lanarkshire Green Network Quality Design Guide, The South Lanarkshire Council Local Plan and the Masterplan Framework for the East Kilbride Community Growth Area.

The Community Growth Area Masterplan Development Framework (August 2007) for the design study area outlines that the following issues should be addressed:

- Linkage to fixed public transport network;
- · Access to social and community facilities;
- Integration with existing communities;
- Green transport (i.e. walking and cycling) links to areas of employment and services;
- A range of housing choices and affordable housing where required, and
- High design standards in the built environment and urban form.



Jackton

Development requirements for the site

Definition of new landscape measures to consolidate new Green Belt edges and establish green networks within the development.

Improved public transport services through the development area. Contribution to the improvement of park and ride facilities at Hairmyres Station.

Local road network improvements and walking/cycling network through the development area.

Provision of a new Primary School and pre 5 Nursery School.

Provision of local retail facility of a scale appropriate to serve the Community Growth Area.

The provision of 1 grass sports pitch or equivalent provision at a local facility. Assess and consider the impact of development on the setting of listed buildings and other prominent buildings, including the police college, Newhouse of Jackton and any potential development at Hayhill House.

Investment in drainage infrastructure at Philipshill Waste Water Treatment Plant.

Provision of housing types to accord with Local Plan policies RES 4 'Housing for Particular Needs Policy' and RES 5 'Affordable Housing and Housing Choice Policy '.

Fig 1.2. Map extract, East Kilbride's Community Growth Area Masterplan Development

Framework, South Lanarkshire Council August 2007. Not to scale © Crown copyright and database right 2012. All rights reserved. Ordnance Survey Licence Number 1000332510

Planning context

South Lanarkshire Council has a series of guidance documents outlining aspirations for the site to meet Scottish Government policy. Key documents include The Clyde Valley Green Network Strategy, The Local Development Strategy and the Masterplan Framework for the East Kilbride Community Growth Area.

The East Kilbride site is allocated by policy as a Community Growth Area, to satisfy strategic housing land requirements identified in the Glasgow and Clyde Valley Structure Plan (2006, approved 2009). The site can therefore be released from the greenbelt, dependent on satisfactory masterplans being submitted and approved by South Lanarkshire Council. The council has prepared a Masterplan Development Framework for each of the designated Community Growth Areas to act as a briefing document for developers. Figure 1.2: Map Extract shows the proposed layout/strategy contained within East Kilbride's Community Growth Area Masterplan Development Framework.

The East Kilbride Community Growth Area has been allocated an indicative housing capacity to 2018 of 1500 units, with potential for a further 1000 units post 2018. In accordance with Glasgow and Clyde Valley Structure Plan Policy, if these longer term requirements are not proven, the land will be returned to green belt as appropriate. In line with the Adopted South Lanarkshire Local Plan (2009), 25% of the units should be affordable.

East Kilbride Community Growth Area is one of six locations in South Lanarkshire identified as development zones that may contribute towards meeting a housing shortfall of 19,000 units between 2011 and 2018.

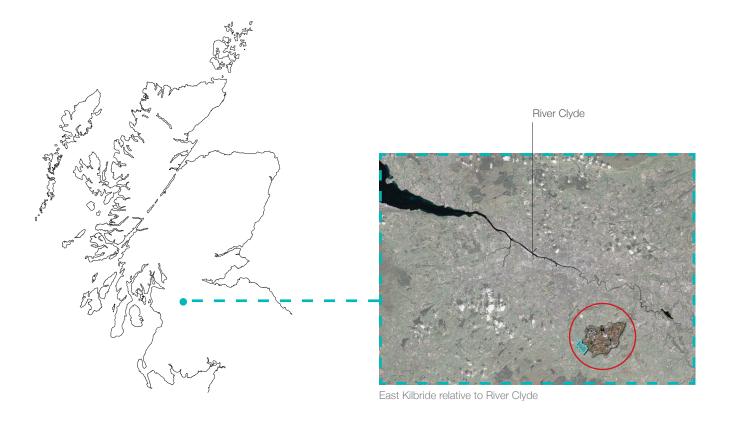
Jackton and the Gill Burn Valley (Community Growth Area) offers potential for innovative and sustainable development through continued investment and regeneration. This approach is consistent with the policy requirements of Scottish Government and the Flood Risk Management (Scotland) Act 2009.

The project commits to placemaking by giving Jackton village a new identity, and successfully modulates the scale between the suburban and rural edge. Improved population health and well-being is achieved by strengthening development between existing communities.



Context Understanding the site

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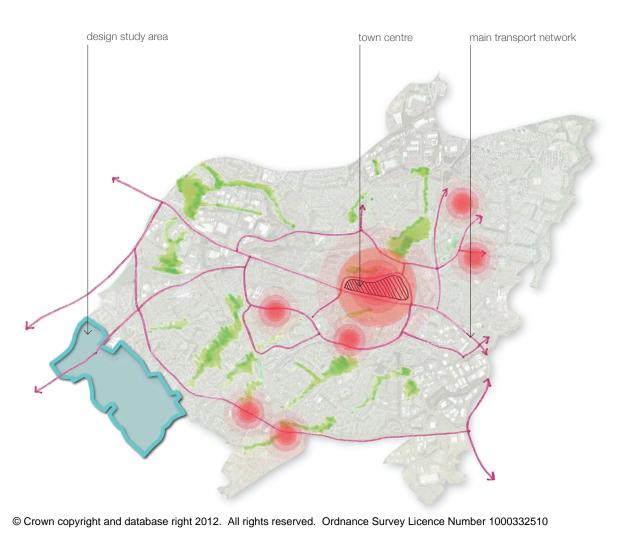


Fig 2.1 Comparative mapping of town centre and design study area, Collective Architecture 2010. Not to scale. CONTEXT

Site context

East Kilbride was the first of five New Towns in Scotland and is located in South Lanarkshire. The design study area lies to the south west of East Kilbride town centre. Figure 2.1: Comparative mapping shows the relationship between the town and the design study area - Jackton and the Gill Burn Valley. The site is within the greenbelt and designated for community growth. It is located to the south west of East Kilbride and covers an area of 140 hectares. The site is bounded by Jackton Road to the south west, to the north west by Hayhill Road, and Newlands Road to the south east.

The town lies sandwiched between the White Cart Water to the west and the Rotten Calder to the east, the former of which flows into the River Clyde. The White Cart Water also passes through Pollokshaws which forms another of the six candidate sites.

Significant to the study area is the Gill Burn. It is a tributary to the White Cart Water and is the main watercourse passing through the site, with contributing tributaries draining from adjacent suburban areas of East Kilbride.

The transport movement network in East Kilbride is designed around a central hub surrounded by a dominant road. From this, further distributor roads branch off from roundabouts to serve smaller residential areas spread around the town. These are usually of a relatively low density and are bounded by further distributor roads, forming clearly defined rings around the periphery of the town, and eventually leading to other towns.

The existing road network prioritises the movement of cars over pedestrians and cyclists. Residential neighbourhoods are often poorly connected via pedestrian links and underpasses.



Aerial photograph of East Kilbride Town Centre

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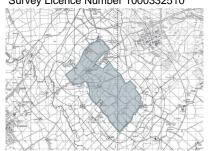


Fig 2.3.East Kilbride study area: 1957

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Fig 2.4. East Kilbride study area: 1980

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Fig.2.5 East Kilbride study area: 2006

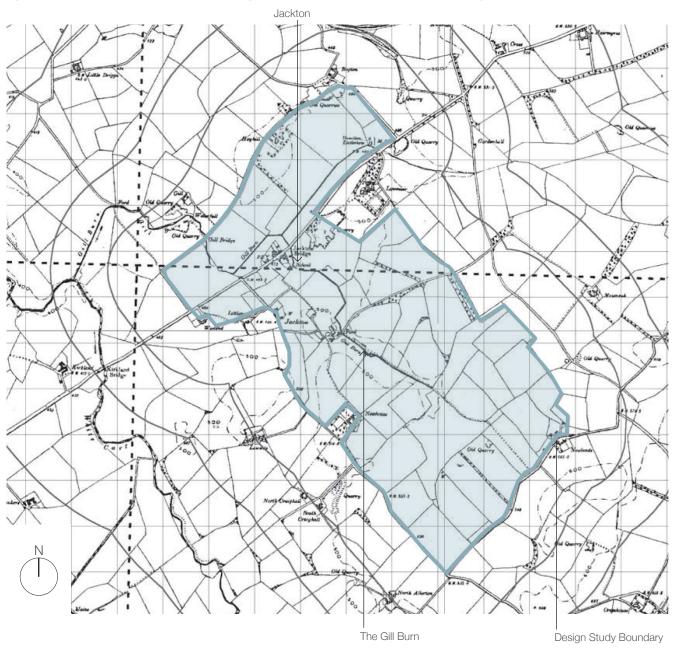


Fig 2.2. Historical OS Map Extract, 1898 East Kilbride study area. Not to scale

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Historical context

East Kilbride originated as a small settlement before its development into a New Town in 1947. Historical map extract (Fig 2.2) shows Jackton and the Gill Burn Valley dated 1898 in relation to the design study area.

Significant to the site at this date are:

- The Gill Burn runs through the existing valley;
- Farm roads of Hayhill Road and Jackton Road bound the northern and western edges of the site;
- An un-named farm road runs east to west across the site bounded by mature trees;
- Jackton forms the principle settlement with Jackton Bridge crossing Eaglesham Road;
- Newhouse Farm forms a significant presence along Jackton Road, and
- A number of small quarries are dotted around the site.

New town suburban expansion was rapid between 1957 and 2006 (Figs. 2.3 to 2.5). Until recently this has occurred via the densification of the existing sub-urban developments.

East Kilbride is expected to expand significantly to the south west in line with South Lanarkshire Council's policy to designate the study area site as a Community Growth Area.



Fig 2.6 Site map as existing, Collective Architecture 2010. Not to scale.

Site description

The design study area (Fig. 2.6) is located to East Kibride's south western perimeter, and covers 140 hectares. It is rural in character and consists of rolling fields bounded by fences, mature trees, hedgerows and farm roads (Fig.2.7 overleaf). The Gill Burn and tributaries run through the site within an existing valley. Built heritage is represented by the existing, category B listed Newhouse farm.

Individual farms and associated buildings sit on and around the site to the southern, eastern and western edges.

The north eastern boundary is defined by low-rise suburban developments arranged around streets and cul-de-sacs. These are of no distinct character but offer fantastic views across the region.

The existing settlement of Jackton straddles Eaglesham Road and contains low rise dwellings and several small businesses or holdings. A Police Training Academy lies to the north of the site.



Surrounding housing development and views beyond



Fig 2.7 View towards site from Jackton Road looking north

rural character to roads and fencing



Green routes crossing the site



Steadings to the East of the site



Existing watercourses

existing farmland

mature hedgerows and trees



Jackton Road - rural scale



Existing B-Listed farm entrance



Mature hedgerows



Mature trees



Constraints Informing the approach

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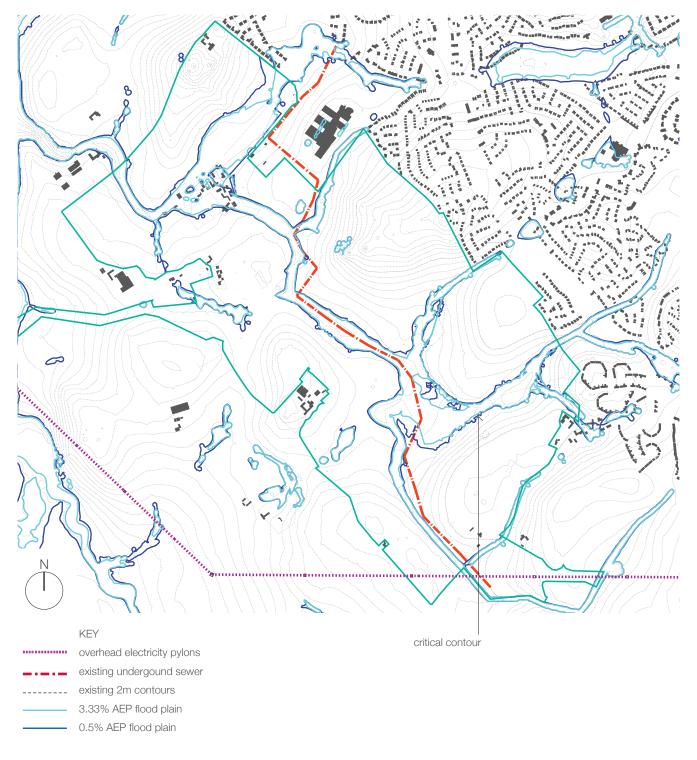


Fig. 3.1 Site constraints, Collective Architecture 2010. Not to scale.

Natural topography of the site

The topography of the site poses a natural constraint to any future development. The low-lying valley, existing watercourses and undulating hills create a series of physical challenges that need to be addressed through the design process.

Figure 3.1: Site Constraints indicates the extent of the existing 0.5% Annual Exceedence Probability (AEP) flood event including potential future climate change.

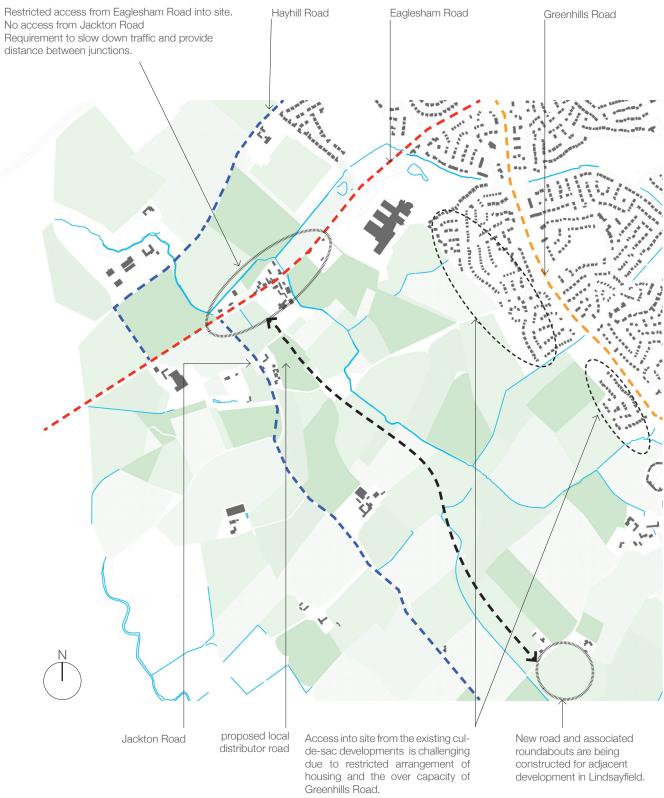
The extent of the central flood plain, and the zone within which development is prohibited, is significant relative to the overall site area. This poses the challenge as to where new developments might be situated and how they might relate to their immediate surroundings and site topography.

Public utilities

The site contains a number of significant utility routes that will restrict the location of any new development (Fig.3.1). Public utilities include a large, existing foul sewer which runs from the south east to the north west and electricity pylons, which cross the southern boundary.

Construction of buildings and structures in close proximity to a sewer is restricted through Scottish Water's technical specifications. The restricted area can vary between 3.0m and 6.5m on either side dependant on the size and depth of the sewer. This sewer, 450mm in diameter and generally 2-3m deep requires 3.5m either side, increased where it is deeper.

New buildings below existing, high voltage electricity pylons are not permitted, thereby restricting land use in this area.



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Fig. 3.2 Existing transport network, Collective Architecture 2010. Not to scale.

Eaglesham Road is a regional distributor road passing through the Community Growth Site connecting Eaglesham and East Kilbride.

It passes through existing Jackton village with a speed limit of largely 30mph with sections of 40mph. There is a significant roundabout connecting Eaglesham Road and Greenhills Road (by the Police Academy).

Jackton Road and Hayhill Road are existing, single track farm roads bounding the site.

These are rural in character, bounded by fences and hedges, and used for walking, cycling and local access to local farms and dwellings. The existing farm roads are unfit to carry an increase in vehicular traffic

Greenhills Road is a local distributor road running from east-west to the north of the Community Growth site. This serves adjacent housing to either side, contains a bus route and has a 40-60mph speed limit. A variety of pedestrian underpasses and roundabouts are dotted along its length.

Roads

East Kilbride is a New Town served by a network of local and regional distributor roads. These lead to housing developments arranged primarily around cul-de-sacs.

The East Kilbride Masterplan Development Framework proposes that a new local distributor road pass through the site to serve 2500 new homes and local facilities (Fig 3.2). This is to connect Eaglsham Road (regional distributor road) with a new local distributor road and roundabout within the Lindsayfield development (currently under construction). It is also intended to carry a new bus route.

The provision of a new distributor road through the heart of a newly designed community is contrary to current Scottish Government policy document 'Designing Streets', which states that pedestrian movement should take priority over cars. Any new roads should not isolate or separate communities and ensure safe passage.

The challenge for the design study is to balance a requirement for vehicular access to new homes, school and businesses with a safe and meaningful pedestrian and cycle network.



Existing Greenhills Road

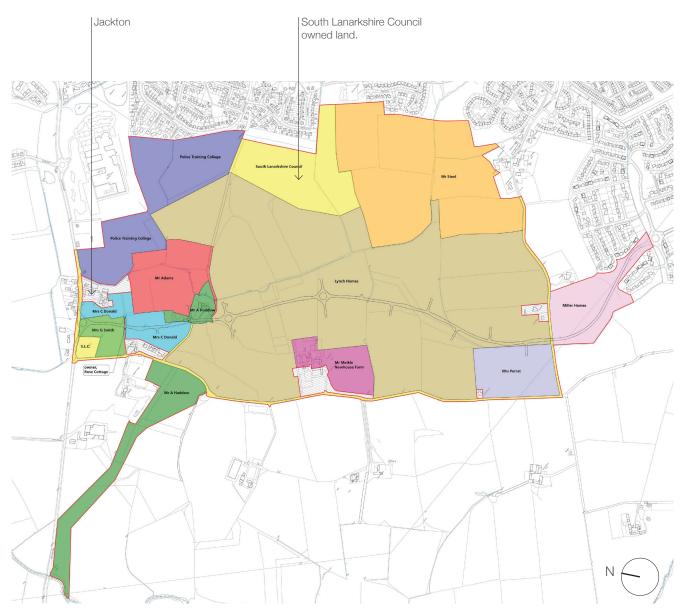


Fig. 3.3 Ownership map, courtesy of Geddes Consulting 2009. Not to scale.

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Land ownership

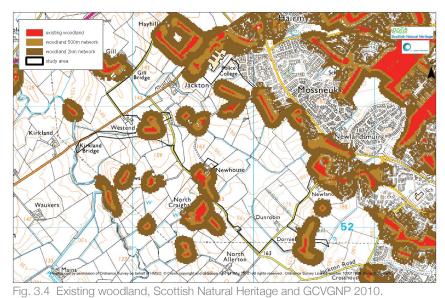
The site is in multiple land ownership as outlined within Fig.3.3: Ownership map.

Legal and financial agreements will be required with all owners to facilitate an integrated site development strategy.

The complex site ownership poses a potential constraint in that it may prohibit the development of a overall and comprehensive site strategy. Detailed site purchase arrangements will be required to ensure the implementation of an integrated approach towards infrastructure across the entire site.

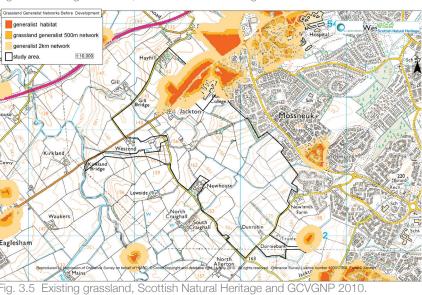


Existing farm holding in private ownership on Jackton Road



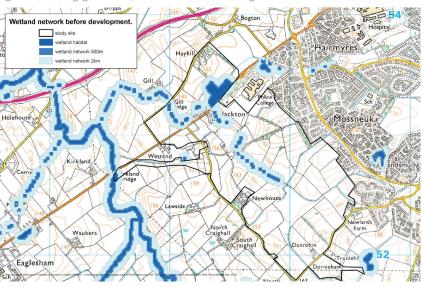
Mature shelter belts
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Existing grassland

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Fig. 3.6 Existing wetland, Scottish Natural Heritage and GCVGNP 2010.



CONSTRAINTS

Natural habitat

The study area is designated as Plateau Farmland Type 5.b within the Glasgow and Clyde Valley Integrated Habitat Network Report. Strong bands of mature trees, hedgerows and watercourses are present within the site and form principle corridors for local wildlife and habitat

Key habitats are present within and around the site (Figs.3.4-3.6). This information has been obtained from the Integrated Habitat Network Modelling Project (IHN) from Glasgow Clyde Valley Green Network Partnership in association with Scottish Natural Heritage and The Forestry Commission Scotland. This creates a detailed habitat map of the Glasgow and Clyde Valley region from which habitat networks for woodland, grassland and wetland can be modelled. The model can be interpreted to identify the location and types of habitat which need to be protected, enhanced or created.

The IHN model is an important step forward in putting biodiversity on an equal footing with other development considerations and offers a powerful decision support tool for the planning process, protecting and creating functionally connected habitats and seeking an optimal solution for development and biodiversity.

Key Landscape characteristics:

- Visually open rolling farmland primarily for grazing sheep and cattle.
- Mature deciduous and evergreen shelter belts and hedgerow trees and hedges. There is a visually prominent wooded natural ridge between Easterhouse, Garden Hall and Newhouse which defines the boundary of the two local landscape character areas. This ridge is particularly sensitive and should be retained.
- Most of the tree and hedgerow planting are very mature and seem to be around the same age.
- Most of the existing properties along the urban fringe are screened by mature tree planting with exception of some housing along the south east edge of the site. There is fragmentation and loss of landscape quality along urban edges.
- There are a number of field ditches and small watercourses including the Gill Burn, a small stream running through the centre of the site.
 Drainage typically consists of meandering streams within broad valleys.
- Natural vegetation along the banks of the burn including the shrubs and trees typical of a riparian corridor appear largely sparse or absent.



Strategic drainage The water journey

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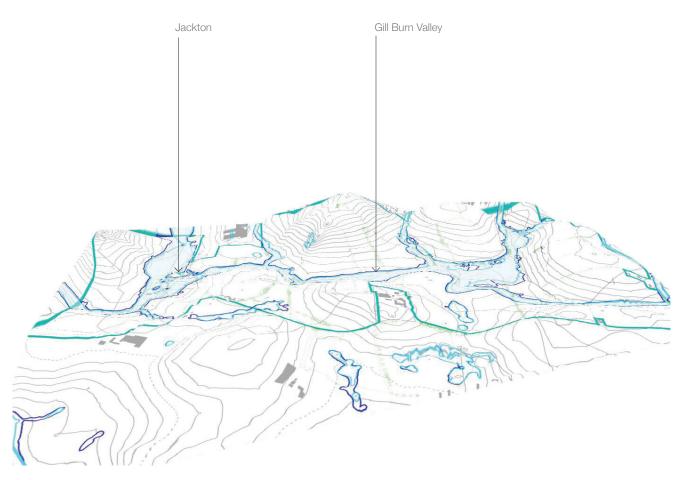


Fig 4.1. Digital terrain model, general view looking north east. AECOM Ltd 2010. Not to scale.



The Gill Burn



Existing fields and hedgerows

Understanding the site and hydrology

A meaningful and coherent surface water management strategy requires an understanding of the site dynamics and characteristics in terms of topography, water catchment analysis, hydrology and geology.

The Digital Terrain Model (Fig.4.1) shows that the site's topography is generally undulating with the elevation in the catchment, varying from over 180m AOD to below 140m AOD. The Digital Terrain Model has informed the design development of the infrastructure through an iterative process with placemaking.

The Gill Burn - a tributary to the White Cart Water - is the main watercourse which passes through the site and has contributing tributaries which drain from existing suburban areas from East Kilbride.

Flood risk and drainage aspects were considered through a baselining exercise that considered all possible sources of flooding and potential mitigation measures to minimise the impact of the future development on the natural hydrological system and manage future flood risk.

A flood outline of the 0.5% Annual Exceedance Probability (AEP) event including a 20% allowance for climate change was provided by South Lanarkshire Council, having been generated as part of the existing development proposals. This has been combined with modelled 0.5% AEP pluvial extents, to produce a full extent of fluvial and pluvial flooding with 0.5% AEP.



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Fig 4.2 Existing site and proposed sub-catchments with wider area sub-catchment, Collective Architecture/AECOM Ltd 2010. Not to scale.

Catchments

Existing and future developments have been considered at a hydrological catchment scale. This provides a more holistic approach than individual, site focused solutions.

Consideration has been given to the hydrological catchment of the Gill Burn and tributaries, upstream of the lowest part of the site. All contributions to the hydrological cycle within this catchment have been reviewed. Measures for existing and future surface water drainage have been considered.

The Gill Burn Surface Water Management Strategy comprises eight sub-catchments (Fig. 4.2), defined by the topographical constraints of watersheds and watercourses. The strategy for each of the sub-catchments has been considered to enhance and create green network opportunities across the site.

White Cart Water

Due to the existing flooding issues within the site and downstream within the White Cart Water catchment it is recognised that surface water will need to be managed and drained via SuDS to the receiving watercourses. This will ensure that the probability of flooding will not be increased up to the 0.5% AEP events, including an allowance to adapt to future climate change.

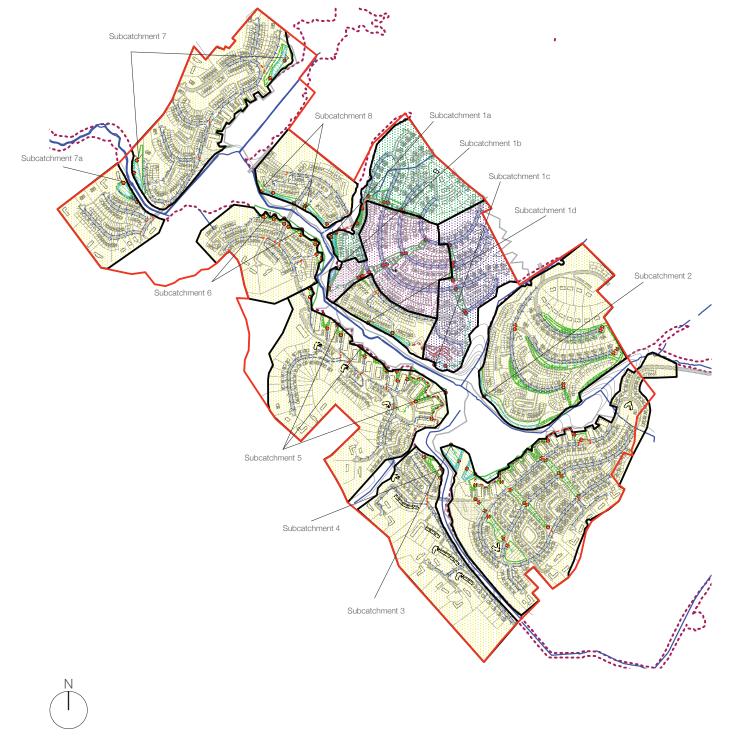


Fig 4.3 Proposed critical contours and SuDs features, AECOM 2010. Not to scale.



Linear swales, Malmo, Sweder



Wetland, Dumfermline, Fife



Green Streets, Portland, Oregon, USA

Surface water management strategy

The proposed surface water management strategy (Fig. 4.3) responds to the natural topography of the site, integrates existing watercourses, aligns the water journey with pedestrian movement and incorporates water elements throughout development.

It provides benefits to the natural environment, reduces flood risk and provides capacity for adaptation for climate change. This delivers the following benefits to stakeholders, landowners, local authorities, developers and future communities:

- environmental benefits including habitat enhancement and creation:
- focal points within the masterplan that incorporate open spaces and blue/green access routes;
- provision of a 'buffer' between the existing water environment and urban form;
- incorporation of simpler and more sustainable construction methods;
- increased adaptability, ease of modification and adaptability to potential additional climate change;
- reduced long term high cost maintenance requirements, introducing a softer landscape management requirement, and
- raised public awareness of the environment and water environment, by keeping water visible.

Measures taken to reduce/prevent runoff include:

- Surfaces should be left permeable using soft landscaping and rainwater recycling to prevent runoff wherever possible,
- Source control should be used as a first level of treatment throughout the sub-catchments such as permeable paving and green roofs.
- The approach towards hydrology takes consideration of the existing ground conditions, available land and required design criteria.
- The water journey and associated green and blue routes have developed in response to the site topography, existing watercourses, current habitat conditions and future road infrastructure.



Infrastructure comes first Informing the approach

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'The East Kilbride Community Growth Area presents an opportunity to create a high quality, well connected place This can be achieved by holistically thinking about the site and how the various elements of the development, buildings, streets, spaces and land-scape can be brought together in an integrated way which responds specifically to the character and sensitivities of the site.'





Fig 5.1 The Water journey - green and blue routes, Collective Architecture 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% AEP event with climate change.
- Ensure surface water is kept and managed on the surface.
- Ensure no increased flood probability.
- Maximise potential for environmental benefit and enhancement.
- Ensure in-curtilage space is retained as permeable surfaces to minimise runoff.
- Maximise the environmental and aesthetic properties of the Gill Burn through river restoration.
- Seek opportunities for enhancing existing environment.
- Set target of 10% green roofs within development.

The water journey

A strategic surface water system has been developed between the architect and engineer to inform the strategy for future development of the site.

The water journey has been considered in parallel with green pedestrian movement networks in order to ensure a fully integrated and holistic approach to placemaking.

The Gill Burn provides a dynamic regional water-responsive open space (Fig. 5.1) and extends the quality and value of the existing green network in East Kilbride. This is a carefully constructed and safe river system environment, designed to provide flexibility of use. The core function is to provide a natural flood plain and to provide retention ponds that conclude the water journey through the individual sub-catchment areas. The sculptural and angular remodelling of the landscape on the south bank is designed to mitigate the 0.5% Annual Exceedance Probability (AEP) and provides a dynamic contrast to the softer natural edge of the north bank and conveyance tributaries which extend into the valley

The future Surface Water Management Plan (SWMP) removes reliance on the combined sewerage system and mitigates flows from the sub-catchment areas. The SWMP and water journey comprises:

- Prevention preventing an increase of natural run off by using soft landscaping and incorporating appropriate surface types;
- Source control utilising porous paving, green roofs and water butts within the development;
- Conveyance providing clearly defined drainage paths which also provide 'holding' points where water will be contained during extreme events, using these routes to create exceedance routes, where water will be anticipated to flow during extreme events, including those which exceed the design standards for the drainage systems, clearly directing water to the least vulnerable areas; and,
- Attenuation/retention/discharge to watercourse wetlands, ponds or detention basins will provide treatment volume storage and the remaining amount of the attenuation which is not being contained within the upper elements of the system and discharge at pre-development runoff rates.

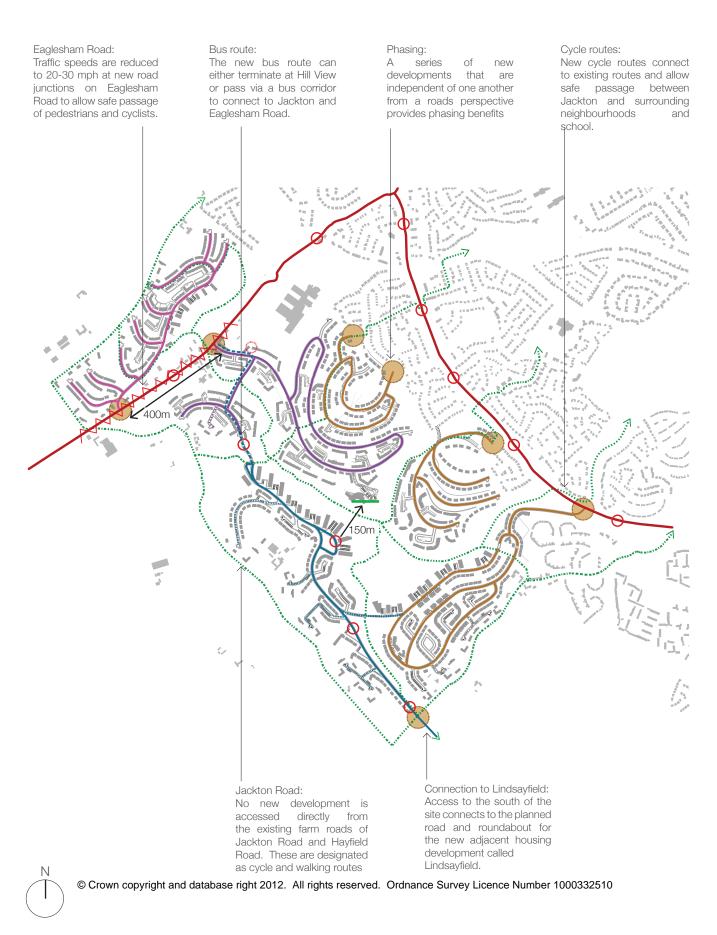


Fig 5.2 Proposed transport network, Collective Architecture/AECOM Ltd. 2010 Not to scale.

Existing distributor roads, Greenhills Road and Eaglesham Road, and associated bus routes New core residential road and bus routes through Hill View, connecting Lindsayfield to Jackton New core residential roads and junction from Eaglesham Road into Jackton High Street New core residential roads and junction from Eaglesham Road into Hayfield New core residential roads formed

ments via new junctions cycle routes in and around the site

as extensions to existing develop-



KFY

Access to Public Transport:

A new bus route connects into the existing public transport network.

Existing bus routes within 400m walking zones serve the community growth area to the north east of the site. The new bus route into the site to the south corner serves the community growth area to the south, and new developments to the east.



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Road network

The principle of 'infrastructure comes first' lies at the heart of the design study. Road design and associated site arrangement are integral to the success of this principle.

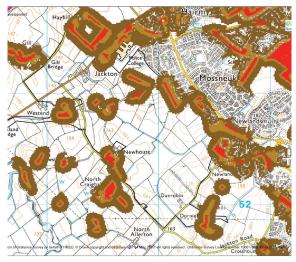
The proposed road and cycle network is based on guidance set out with the Scottish Government's 'Designing Streets' policy document of April 2010. This established that roads should be planned to prioritise pedestrian movement followed by bicycles, public transport and finally cars.

South Lanarkshire Council's Community Growth Masterplan Development Framework of 2007 proposes that a new local distributor road should pass through the centre of the site to connect Eaglesham Road to new housing developments and infrastructure in south-west Lindsayfield.

This design study questions this approach. It also seeks to demonstrate that an alternative road infrastructure is preferable, consisting of a series of core residental roads serving individual neighbourhoods that might be developed in phases.

Nevertheless, should South Lanarkshire Council decide to implement the proposed new local distributor road connecting Eaglesham Road and Lindsayfield this could potentially be located between Jackton Steadings and Hill View (alternative blue route on Figure 5.2). This would be contrary to the recommendations of the design study and would require careful planning and consideration towards pedestrian and cycle movement, with support from the wider character and values of the overall design study.

The proposed design study road strategy prioritises pedestrian movement across and around neighbourhoods and also offers the potential for phased development, reduces the likelihood of 'ratrunning' across the site and connects into the existing road network (Fig.5.2). It also seeks to break the cul-de-sac and distributor road pattern that has dominated East Kilbride since the 1960's and present a holistic road, cycle and path network.



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Wetterd

Gill

Fig. 5.6 Grassland pre-development

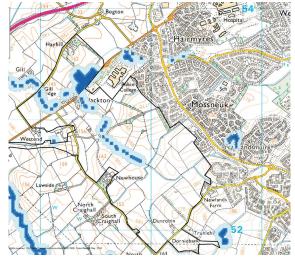
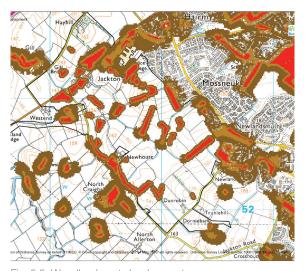


Fig. 5.8 Wetland pre-development © Crown copyright and database right 2012. All rights reserved. Ordnance Survey Licence Number 1000332510



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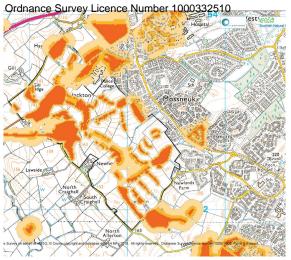


Fig. 5.7 Grassland post-development

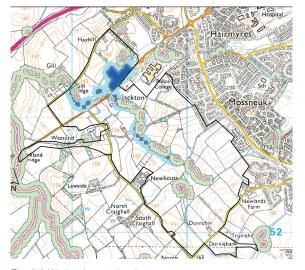


Fig. 5.9 Wetland post-development © Crown copyright and database right 2012. All rights reserved. Ordnance Survey Licence Number 1000332510

Figures 5.4-5.9 Integrated Habitat Modelling, Scottish Natural Heritage and GCVGNP 2010.



Westerpark, Amsterdam, Netherlands

Green and blue routes

Hydrological and place-making principles have been married to create pedestrian and habitiat corridors that connect neighbourhoods within and around the site to provide safe and diverse access routes.

Enhanced local habitat and green networks have been achieved by the design study via the site arrangement and water journey through Jackton and the Gill Burn Valley (Figs. 5.4 to 5.9).

The interconnection of the water journey (blue routes) and the pedestrian journey (green routes) through the site collaborate to provide a truly inclusive environment (Fig. 5.10).



Fig 5.10 Green-blue routes through the study area, Collective Architecture 2010.



Place-making Jackton and the Gill Burn Valley

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The Gill Burn Way	p 5
Reinforcing Jackton	p 59
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Controlling the urban edge	p 6

"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."

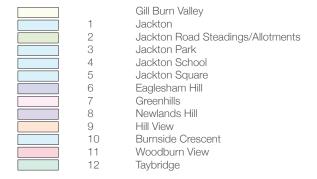




Fig 6.1. Neighbourhood map, Collective Architecture 2010. Not to scale



Westerpark, Amsterdam, Netherlands



Melrose Market Square, Scotland



Rural steadings, Belgium

Place-making

The approach to place-making has developed in response to the rural character of the site, location, history and topography. The site strategy has been designed to meet not only hydrological and infrastructural requirements but to also address the objectives set out within the East Kilbride Development Framework, South Lanarkshire Council's Green Network Design Guide and the Scottish Government's 'Designing Places' publications.

The site strategy and water journey are based around the following key principles:

Enhancing the Gill Burn Valley

The Gill Burn Valley is enhanced as a dynamic, new landscape of green and blue spaces connected by Jackton Forest and allotments to the west and Jackton Park in the east. These areas collaborate to provide significant greenspace and potential for integrated habitats. The landscape responds to the existing topography and contains an engineered and safe river system environment designed to provide flexibility of use and well-being. The core function of the valley is to contain the surface water management train, retention basins and to mitigate the effects of the critical storm events.

Reinforcing Jackton

Jackton is maintained as an identifiable settlement and is reinforced as a village and social centre. It reflects the special quality of scale and simplicity associated with a core, linear village of rural character.

Creating neighbourhoods

Twelve distinctive and sustainable neighbourhoods are formed. These relate to their location on the site and the integrated infrastructure of the Gill Burn Valley. Figure 6.1 Neighbourhood map identifies these inter-related neighbourhoods.

Controlling the urban edge

Development is reduced to the rural perimeter in a manner that responds to the character of the surrounding countryside.

Appendix A provides a scale drawing of the design study, which should be read with this chapter.



Fig 6.2 Placemaking and open space strategy, Collective Architecture 2010. Not to scale.

Maxwell Park, Glasgow, UK



Hazelwood School, Glasgow, UK



Bridgend community gardens, Islay, UK

Enhancing the Gill Burn Valley

New and existing neighbourhoods are dynamically connected by their direct relationship to the Gill Burn Valley and access to Jackton's facilities (Fig. 6.2).

Jackton Park sits to the south west of the site within the Gill Burn Valley. It hosts a large wetland which sits within, but below, the flood plain to provide both a visual and social focus to the park. The wetland offers additional benefits such as surface water treatment, biodiversity and educational opportunities for the nearby school and community. It is proposed that a small community building be situated adjacent to the wetland to provide a centre for park activities and offer additional local facilities for south eastern neighbourhoods such as a Housing Association office, Ranger's station, corner shop or garden centre.

Jackton Forest is located to the north of the valley by Eaglesham Road. It creates an edge to the regional distributor road and a backdrop for the new housing to the north of the site. It is proposed that a linear pond be provided within the forest area. This space would lend itself to biking, walking and a play are to serve the neighbourhood to the north of Eaglesham Road. It also connects to the Gill Burn Way and cycle track leading to the bounding farm road called Havhill Road.

It is also proposed that a small retail unit be provided to this area containing local shop or facilties for the adjacent community.

Jackton Primary School forms a centre-piece to the valley. It overlooks the Gill Burn Way and a new pond. The pond is directly associated with the school and forms part of the educational and amenity aspects of school life.

Jackton Road Allotments are located to the south east of the site, readily accessed by bus, foot and bicycle. Their location is connected to the surface water management strategy as this area is not readily developable for new buildings.

Play areas are strategically placed around the new site to provide designated facilities for young children. Nevertheless, it is also anticipated that the readily accessible green routes, parks and water elements will provide recreational and imaginative play benefits.

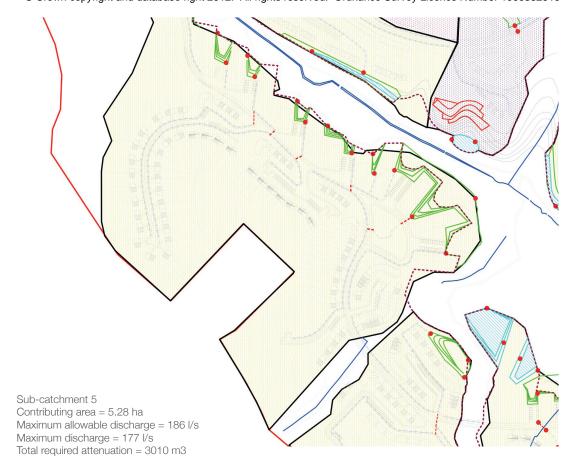


Fig 6.3 The Gill Burn Valley sub-catchment diagram 5, AECOM Ltd 2010. Not to scale.



Fig 6.4 The Gill Burn Valley sub-catchment diagram 5, Collective Architecture 2010. Not to scale.



Manor and Castle, Sheffield, UK



Ekostaden Augustenborg, Sweden

The Gill Burn Way

Rolling farmland forms a valley to the centre of the site around the existing Gill Burn. It runs from the south east to the north west of the site and connects to the White Cart Water.

The sub-catchment schematic (Fig. 6.3) is built upon the existing topography and geology and directly informs both the surface water management strategy and the creation of a meaningful green network across the site.

The Gill Burn Way is a safe, green route through the valley bounded by linear retention ponds, paths and cycleways (Fig.6.4). It connects two generous public park areas known as Jackton Park and Jackton Woods. Both areas are located within the flood plain. It also connects green routes, or 'fingers', leading down and through surrounding neighbourhoods.

Buildings and front gardens overlook the Gill Burn Way (Fig.6.5), Jackton Park and Jackton Woods to provide natural surveillance throughout the day and evening.



Fig 6.5 The Gill Burn Valley overlooked by Jackton and Hill View, Collective Architecture 2010.

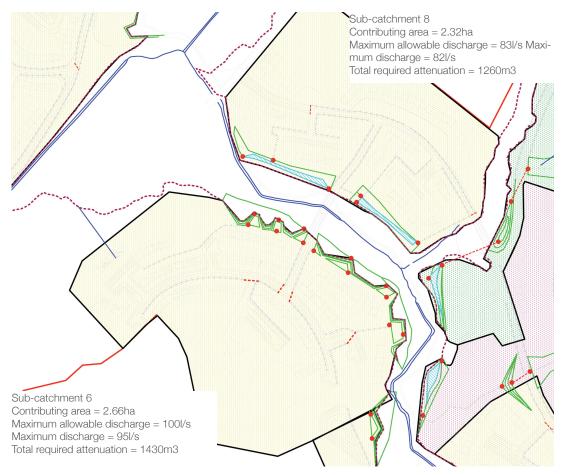


Fig 6.6 Jackton sub-catchment diagram 6/8, AECOM Ltd 2010. Not to scale.



Fig 6.7 Jackton sub-catchment diagram 6/8, Collective Architecture 2010. Not to scale.



Green Streets, USA



Ekostaden Augustenborg, Sweden

Reinforcing Jackton

Jackton village is located to the north west of the site, consists of a number of dwellings, local businesses and farm holdings straddling Eaglesham Road and the Gill Burn. Historical maps from 1864 onwards show Jackton to be an identifiable settlement.

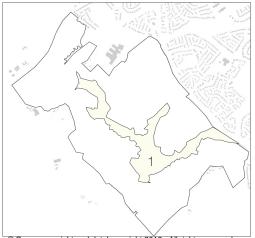
Sub-catchment schematic (Fig. 6.6) shows Jackton positioned in the flood plain of the Gill Burn Valley.

It is proposed that Jackton be reinforced as a place by extending it into the site to the east from Eaglesham Road (Fig 6.7) along with the formation of Jackton High Street as a new core residential road connecting the newly formed Village Square with Jackton Primary School. Densely formed terraced houses line the High Street with back court parking allowing front-facing facades to both the High Street and the pedestrian Gill Burn Way.

Small scale retail units around Jackton Square (Fig 6.8) provide local conveniences such as grocers, news-agents, hairdressers and cafes. There is also the opportunity to provide retail units by the new school if required.

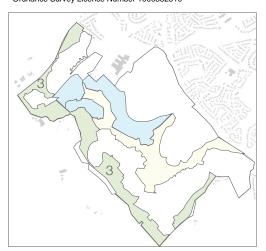


Fig 6.8 Jackton High Street fronted by Jackton Square, Collective Architecture 2010.



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The Gill Burn Valley (1)

The Gill Burn Valley lies at the centre of the Community Growth site. It provides a focus to the surrounding neighbourhoods with its own identity formed around the Gill Burn. A series of linear retention ponds link a network of pedestrian and cycle routes with clearly defined parkland and forest to either end. All neighbourhoods overlook the valley. These are readily and safely accessed through, around and from it by foot and bicycle.

Jackton (2)

Jackton is an extension of the existing settlement on Eaglesham Road. A new, dense neighbourhood containing vital local services such as local shops/retail units, cafe and primary school is formed leading to the centre of the site. The dominant housing typology is terraced housing with back court parking to create front-facing gardens with low boundary walls/fences overlooking both Jackton High Street and the Gill Burn Valley. The new Primary School and associated pond terminates Jackton High Street, overlooks the Gill Burn Valley and sits at the heart of the Community Growth Site.

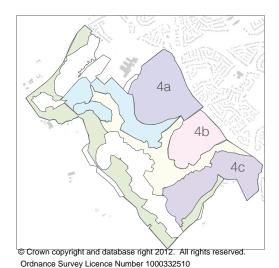
Jackton Road / Hayhill Road Steadings (3)

A steading typology bounds the existing farm roads with large areas of associated land, fences and hedges. It is anticipated that these residential properties are of rural character with proximity to local bus routes and services. They sit immediately adjacent to the surrounding farm roads but can be accessed from Hill View Road. Allotments are located to an area along Jackton Road within the Steading neighbourhood. These are readily accessed by buses and are linked to the green route passing through Eaglesham Hill and the Gill Burn Valley.

Creating neighbourhoods - site strategy

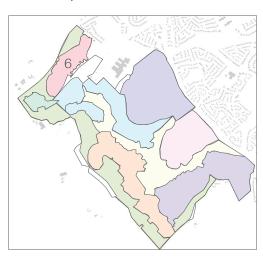
Figure 6.1 (Neighbourhood map, page 52) outlines the way in which the proposed site strategy provides a series of identifiable neighbourhoods hinged around Jackton, the Gill Burn Valley and associated surface water management strategy. Each neighbourhood is described in more detail below.

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Commonwight and darkers just 202. All rights proposed

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Eaglesham Hill (4a), Green Hill (4b), Newlands Hill (4c)

A series of hillside residential neighbourhoods overlook the Gill Burn Valley and countryside beyond. These form extensions to the existing suburban housing developments to the north and east.

The topography of these hills require that a stepped housing typology be investigated to avoid large areas of retaining wall. It is proposed that semi-detached housing will generally be provided to these areas combined with stepped flatted developments rising from 2-3 storeys at specific steep corners and larger villas to hill tops.

The hills are punctuated with green fingers of trees and green space to act as retention areas for source/site control to the new development. They also offer the opportunity for safe pedestrian routes down the hill and through the site. Permeable paving sits within the roads at the crossing between the green areas to act as source control and create clearly defined areas of pedestrian priority.

Hill View (5)

Hill View sits to the south of the site overlooking the northernly neighbourhoods of Eaglesham Hill, Green Hill and Newlands Hill. It is clearly bounded by linear fingers of higher density housing to the edge of the Gill Burn Valley. These are orientated perpendicular to the valley to allow views between blocks and to provide landscaped amenity terraces acting as on-site retention out-with the 1 in 200 year flood plain. It is proposed that these properties have green roofs to provide source control.

A combination of terraced, semi-detached and villa dwellings sit beyond the high density housing bounded to their southern edge by the Jackton Road steadings.

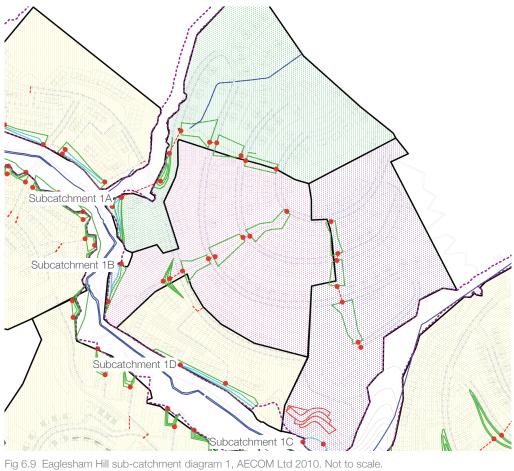
Hill View Road passes through the centre of the neighbourhood with a proposed bus route linking to the new Lindsayfield development to the south east and its associated infrastructure.

Woodburn View and Taybridge (6)

The neighbourhood to the north west of the Community Growth Site sits between Eaglesham Road and Hayhill Road. It is a sloped site that falls towards a large, low-lying area within the flood plain.

It is proposed that stepped semi-detached houses and terraces wrap themselves around existing contours. These are bounded to the base of the slope by higher density housing overlooking the new Jackton Woods and Gill Burn.

A new retail unit is proposed adjacent to a small public realm to the rear of existing properties in Jackton to provide a local shop for the 360 new homes within this neighbourhood.



Sub-catchment 1A Contributing area = 3.45ha Allowable discharge = 118l/s Actual discharge = 99l/s Total required attenuation = 2230m3

Sub-catchment 1B Contributing area = 3.58ha Allowable discharge = 122l/s Actual discharge = 117l/s Total required attenuation = 2200m3

Sub-catchment 1C Contributing area = 3.13ha Allowable discharge = 108l/s Actual discharge = 99l/s Total required attenuation = 1900m3

Sub-catchment 1D Contributing area = 1.5ha Allowable discharge = 56l/s Actual discharge = 53l/s Total required attenuation = 800m3



Fig 6.10 Eaglesham Hill sub-catchment diagram 1, Collective Architecture 2010. Not to scale.



Water conveyance, Malmo, Sweden



Western Harbour, Malmo, Sweden

Neighbourhood study - Eaglesham Hill

Eaglesham Hill forms an extention to the existing housing development to the north of the site. Detached and semi-detached houses are stepped in section and cascade down the hill to meet terraced housing on Jackton High Street.

The water sub-catchment diagram for Eaglesham Hill shows a series of strategic green 'fingers' (site control) conveyance routes (Fig. 6.9), which pass through the residential area to form retention storage areas as part of the wider surface water management strategy and provide strong pedestrian and habitat corridors. Existing lines of mature trees determine the location of these areas. Pedestrian priority is enhanced to roads crossing the green routes through the use of permeable paving at pavement level.

Water runoff is retained as it travels down the hill (Fig.6.10) to reduce the need for large attenuation areas within the valley. The green fingers capture and convey surface water, providing treatment and attenuation of runoff from extreme events. Water travels down the hillside via a series of check dams and terraces. These form key features such as waterfalls and spouts. Surface water routes would normally be dry and utilised by the public for the majority of the time with the exception of extreme rainfall events. The required treatment volume of water is captured and held at the bottom of the hill within linear retention ponds or wetlands prior to discharging to the watercourse at existing greenfield runoff rates.

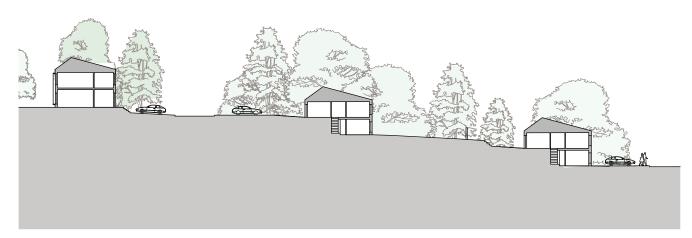


Fig 6.11 Cross-section through Eaglesham Hill stepped dwellings, Collective Architecture 2010. Not to scale.

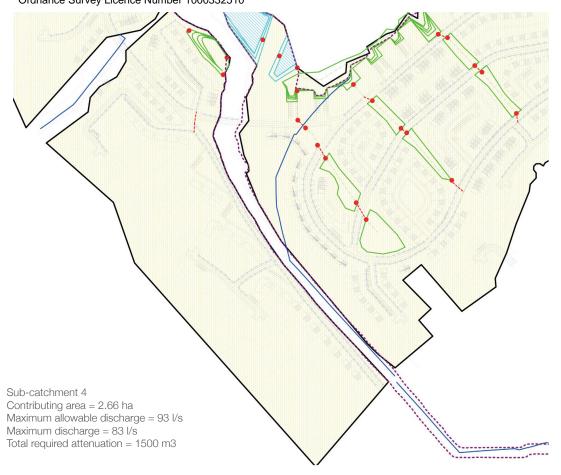


Fig 6.12 Controlling the urban edge sub-catchment diagram 4, AECOM Ltd 2010. Not to scale.



Fig 6.13 Controlling the urban edge sub-catchment diagram 4, Collective Architecture 2010. Not to scale.



Existing farm buildings



Gardens and allotments

Controlling the urban edge - Jackton steadings

The proposed Community Growth Site sits between existing suburban developments to the north east and rural dwellings/farm roads to the south west at Hayhill Road and Jackton Road.

A rolling tapestry of fields form a valley to the Gill Burn. These are dotted with rural buildings and bands of mature trees and hedgerows.

It is therefore proposed that development to the south, east and western boundaries be reduced in density to respond to the existing rural boundary. This provides a softer green edge overlooking fields and farm roads to retain the character of the surrounding countryside (Fig 6.14).

A new steading housing typology, with large areas of associated land, is proposed to the rural edge bounded by fences and hedges. These dwellings are accessed from new roads but overlook Jackton Road and surrounding fields.



Fig 6.14 Controlling the urban edge, Jackton Road and new steadings, Collective Architecture 2010.



7 Next steps Recommendations

Operational framework	p 69
Accommodation schedule	p 71
Recommendations	p 73

'The most successful places, the ones that flourish socially and economically, tend to have certain qualities in common. First, they have a distinct identity. Second, their spaces are safe and pleasant. Third, they are easy to move around, especially on foot. Fourth, visitors feel a sense of welcome.'





Fig 7.1. Operational framework plan, Collective Architecture 2010. Not to scale. $\ensuremath{\mathsf{NEXT}}$ STEPS

Operational framework

The design study builds upon the existing green and core path networks by creating a high quality environment containing significant new green and integrated blue spaces, which require a robust operational and maintenance framework.

Operational framework plan (Fig.7.1) shows a comparative analysis of classified greenspace with new open space and public realm for adoption and care. Discussion is required with South Lanarkshire Council to establish controlled on-street parking and associated maintenance within the public realm.

The operational framework will rely on both South Lanarkshire 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 South Lanarkshire 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. South Lanarkshire Council would then take responsibility for the wider amenity and landscape maintenance, such as inspection, vegetation management, and litter removal.

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.



Accommodation schedule

The following schedule of accommodation has been prepared to provide an indicative housing mix and probable unit numbers across the site.

Unit numbers could be increased if required through further densification of flatted properties, reducing the extent of large villa dwellings or by re-modelling steadings to the rural edge.

Site Area north

steadings (purple):
large dwellings (pink):
medium rise (yellow):
terrace/semi detached (grey):

11 units
09 units
84 units

No. of units - north (approx): 362 units

retail/leisure (red): 370 sqm

Site Area south

steadings (purple): 32 units large dwellings (pink): 68 units medium rise (yellow): 546 units terrace/semi detached (grey): 1240 units

No. of units - south (approx): 1886 units

retail/leisure (red): 2800 sqm school (red): 1700 sqm

Overall site

steadings (purple):
large dwellings (pink):
medium rise (yellow):
terrace/semi detached (grey):

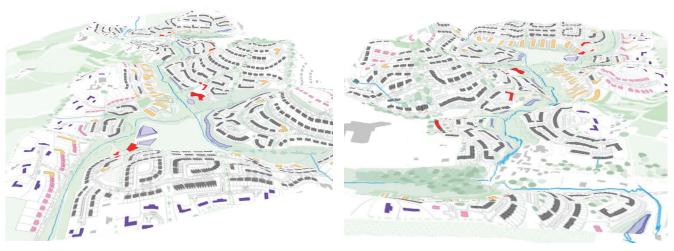
43 units
77 units
630 units

Total units (approx): 2250units

retail/leisure (red): 3170 sqm school (red): 1700 sqm



View looking north east from existing countryside



View looking north west through Jackton Park and the Gill Burn Valley

View looking south east at Jackton Forest and Eaglesham Road

Fig 7.3 Digital terrain model as proposed, AECOM Ltd 2010.

Recommendations

South Lanarkshire Council are invited to consider the following recommendations made by the design study:

- 1. Adopt a strategic development approach of "infrastructure comes first"
- 2. Invite audit from Architecture and Design Scotland.
- 3. Seek community response through engagement.
- 4. Inform the development of any emerging masterplans and where possible be included as Supplementary Planning Policy.
- 5. Within the structure of Supplementary Planning Policy invite masterplanning services inclusive of :
- strategic drainage surface water management strategy;
- traffic analysis;
- design coding;
- community engagement, and
- cost management.
- 6. Early consideration of adoption and maintenance strategies
- 7. The Integrated Habitat Network Model should be used to further test the impact of new development and landscaping on existing open space and native species.





Appendix Design study scale plan

Jackton and the Gill Burn Valley - Proposed design study A1 plan. Collective Architecture, 2010. Scale 1: 4000



Appendix Consultants' reports (CD Rom)

Jackton and the Gill Burn Valley - Design Study, Collective Architecture 2010

East Kilbride - Surface water management strategy, AECOM Ltd 2010

East Kilbride - Technical Baseline Assessments, AECOM Ltd 2010

