

Planning Committee

10.00, Thursday, 15 May 2014

Edinburgh BioQuarter and South East Wedge Parkland: Finalised Masterplan

Item number	7.1
Report number	
Executive/routine	Executive
Wards	Ward 16- Liberton /Gilmerton Ward 17-Portobello/Craigmillar

Executive summary

Committee approved the Supplementary Guidance (SG) for the Edinburgh BioQuarter and the South East Wedge (SEW) Parkland in December 2013. The SG has now been published. At that Committee the non-statutory masterplan was approved for consultation and this has now been carried out.

The Proposed Local Development Plan identifies the Edinburgh BioQuarter as a 'Special Economic Area'. This offers a unique opportunity to establish a commercial, life sciences centre in Edinburgh of a scale comparable with others globally. The Council has prepared the SG and the masterplan in consultation with the other BioQuarter partners and the final masterplan takes account of comments made, where appropriate.

Links

Coalition pledges	P8 , P15 , P17 , P18
Council outcomes	CO7 , CO8 , CO16 , CO18 , CO19 , CO22 , CO23
Single Outcome Agreement	SO1 , SO2 , SO3 , SO4

Edinburgh BioQuarter and South East Wedge Parkland: Finalised Masterplan

Recommendations

- 1.1 It is recommended that the Committee:
1. notes the responses received on the non-statutory Edinburgh BioQuarter Masterplan and South East Wedge Parkland (Appendix 1); and
 2. approves the non-statutory Edinburgh BioQuarter Masterplan (Appendix 2).

Background

- 2.1 The Edinburgh BioQuarter aims to become a top10 global centre of excellence for life sciences. It seeks to offer opportunities for academic, commercial and clinical research and development with health care, teaching facilities and appropriate support services facilities. The LDP identifies the Edinburgh BioQuarter as a 'Special Economic Area', LDP Policy Emp 2: Edinburgh BioQuarter, as it offers a unique opportunity to establish a commercial, life science centre in Edinburgh on a scale comparable with others globally.
- 2.2 The SEW Parkland is to be developed as a significant new strategic park linking with adjoining developments in Midlothian. There is an opportunity within the SEW Parkland to create a new landscape that provides a setting for the Edinburgh BioQuarter and local communities such as Moredun and Craigmillar. The SEW Parkland is identified as Green Space proposal GS4 in the LDP.
- 2.3 The proposed Local Development Plan (LDP) was approved on 19 March 2013. The LDP requires Supplementary Guidance (SG) to be prepared for the Edinburgh BioQuarter and this was approved by Planning Committee on 5 December 2013. The SG is a material consideration for any applications received for the BioQuarter. However, it will not be part of the development plan until the LDP is adopted. It is anticipated that this will be in 2015.
- 2.4 At Planning Committee on 5 December 2013, a non-statutory masterplan for the EBQ was approved for formal consultation. This masterplan, once approved, will be read in conjunction with the SG and will provide more detailed guidance for development. This formal consultation has now been undertaken by the Council and the masterplan is ready for approval in final form.
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Consultation process

- 3.1 Consultation on the draft non-statutory masterplan was carried out between 6 January and 28 February 2014. As part of the consultation, over 500 letters and e-mails were sent to members of the public, community councils and stakeholders, including neighbour notification of surrounding properties. Two public drop-in events were held to discuss the proposals with the communities in Craigmillar (Monday 13 January) and Moredun (Wednesday 15 January).
- 3.2 Six responses were received during the consultation period from Historic Scotland, Scottish Rights of Way Society (ScotWays), Scottish Natural Heritage, Transport Scotland, SEPA and a local resident.
- 3.3 A summary of all responses received is outlined at Appendix 1. The responses have been taken into account when finalising the masterplan. The main changes are set out below. The finalised version of the non-statutory masterplan is attached at Appendix 2 with the changes highlighted in red.

Main changes

Flooding and Drainage

- 3.4 SEPA has expressed its support for the finalised SG and welcomes the additional principles included to address flooding and drainage. However, SEPA also seeks confirmation from the Council that the SUDS strategy and proposed discharge rates are acceptable. Scottish Natural Heritage also encouraged further work to demonstrate how SUDS can be positively integrated within the overall masterplan. It is considered that the technical information provided in the masterplan, read in conjunction with the finalised SG (1.b to k) and the Council's Flood Prevention Guidance, contains sufficient information to inform the basis of a strategic flood risk management framework for the site. All future planning applications should accord with the principles contained within these documents.

Parking

- 3.5 The finalised SG states that an overall parking strategy should be provided as part of the non-statutory masterplan. SEPA has noted that insufficient information is included. The masterplan has therefore been amended to include additional information on the parking options which are being considered for the site.

- 3.6 *Rights of Way*

Scotways (Scottish Rights of Way Society) expressed concern that two rights of way (LC90/LC91) have not been identified. The masterplan has now been amended to show these rights of way.

Next Steps

- 3.7 When the Local Development Plan is adopted in 2015 the approved SG will be part of the development plan. This non-statutory masterplan provides necessary guidance in the form of a key diagram which defines the location of development, points of access, principal movement routes, main areas of public realm, lines of principal facades and activation, and key areas of landscape retention. The finalised SG, the non-statutory masterplan and the Council's Flood Prevention Guidance should be read together. All planning applications received for any future development in the BioQuarter should comply with the principles set out in these documents.

Measures of success

- 4.1 Developments come forward in line with the details set out in this non-statutory masterplan. The full life sciences potential of the Edinburgh BioQuarter is realised in a mixed use urban quarter, which protects and enhances the landscape setting of the city.

Financial impact

- 5.1 There are no direct financial impacts arising from this report. The costs of publishing the non-statutory masterplan will be met from existing budgets.

Risk, policy, compliance and governance impact

- 6.1 The Edinburgh BioQuarter is identified in the LDP as a 'Special Economic Area'. If this masterplan is not approved then there will be a risk that development of this very important and strategic site will be delayed. This could result in high quality jobs being lost to alternative global sites identified for life science uses.

Equalities impact

- 7.1 There are no negative impacts on equalities or rights resulting from this report. Further details on the assessment can be found in the Equalities and Rights Impact Assessment.

Sustainability impact

- 8.1 The finalised non-statutory masterplan will provide additional guidance on policies and proposals within the Proposed LDP.
- 8.2 The Proposed LDP includes policies which require new development to minimise carbon emissions, increase the city's resilience to climate change impacts and manage flood risk. It also requires new development to incorporate adaptations to manage the impact of climate change.

- 8.3 The proposals in this report will help achieve a sustainable Edinburgh because it is one of the stated aims of the Proposed LDP to help create strong, sustainable communities, enabling all residents to enjoy a high quality of life.
- 8.4 The proposals in this report will help achieve a sustainable Edinburgh because it is one of the stated aims of the Proposed LDP to support the growth of the city economy.
- 8.5 The proposals in this report will help achieve a sustainable Edinburgh because the Proposed LDP includes policies which require new development to reduce resource use, protect and enhance biodiversity and which support the national Zero Waste Plan's objectives

Consultation and engagement

- 9.1 Formal consultation on the draft masterplan took place for a period of eight weeks, from 6 January to 28 February 2014. The following groups were consulted: the Edinburgh BioQuarter partners and neighbouring developers, neighbouring authorities, the Key Agencies, universities, health care providers, city-wide amenity bodies, and local communities including Moredun and Craigmillar. A summary of the responses to the consultation is provided in Appendix 1.
- 9.2 The draft masterplan was the subject of a statutory Strategic Environmental Assessment process.

Background reading / external references

Supporting documents to be published with the Supplementary Guidance for the EBQ and SEW Parkland:

- Equalities and Rights Impact Assessment
 - Previous reports and other background reading:
- Report to Planning Committee, Edinburgh BioQuarter and South East Wedge Parkland: Supplementary Guidance and Masterplan (December 2013)
- [Report to Planning Committee](#), Edinburgh BioQuarter and SEW Parkland (May 2013)
- [Report to Planning Committee](#), Local Development Plan – Proposed Plan and Development Plan Scheme (19 March 2013)
- Report to Planning Committee, Annual Review of Guidance (28 February 2013)
- Edinburgh Local Development Plan [Main Issues Report](#) (October 2011)
- [Summary of Responses to the Main Issues Report](#) (April 2012)
- [Proposed Strategic Development Plan](#) for South East Scotland (November 2011)

- [Planning Circular 1/20](#): Development Planning

Mark Turley

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Links

Coalition pledges	<p>P8 Make sure the city's people are well-housed, including encouraging developers to built residential communities, starting with brownfield sites</p> <p>P15 Work with public organisations, the private sector and social enterprise to promote Edinburgh to investors</p> <p>P17 Continue efforts to develop the city's gap sites and encourage regeneration</p> <p>P18 Complete the tram project in accordance with current plans</p>
Council outcomes	<p>CO7 Edinburgh draws in new investment in development and regeneration</p> <p>CO8 Edinburgh's economy creates and sustains job opportunities</p> <p>CO16 Well-housed – People live in a good quality home that is affordable and meets their needs in a well-managed neighbourhood</p> <p>CO18 Green – We reduce the local environmental impact of our consumption and production</p> <p>CO19 Attractive Places and Well Maintained – Edinburgh remains an attractive city through the development of high quality buildings and places and the delivery of high standards and maintenance of infrastructure and public realm</p> <p>CO22 Moving efficiently – Edinburgh has transport system that improves connectivity and is green, healthy and accessible</p> <p>CO23 Well engaged and well informed – Communities and individuals are empowered and supported to improve local outcomes and foster a sense of community</p>
Single Outcome Agreement	<p>SO1 Edinburgh's economy delivers increased investment, jobs and opportunities for all</p> <p>SO2 Edinburgh's citizens experience improved health and wellbeing, with reduced inequalities in health</p> <p>SO3 Edinburgh's children and young people enjoy their childhood and fulfil their potential</p> <p>SO4 Edinburgh's communities are safer and have improved physical and social fabric</p>

Appendix 1: Responses received on the non-statutory masterplan for the Edinburgh BioQuarter and the South East Wedge (SEW) Parkland.

Appendix 2: The finalised non-statutory masterplan for the Edinburgh BioQuarter and the South East Wedge (SEW) Parkland.

Respondent	Summary of response	CEC response
Historic Scotland	<ul style="list-style-type: none"> • Comments concentrate on HS statutory remit for scheduled monuments and their setting and gardens and designed landscapes and historic battlefields appearing in their respective Inventories. • Overall support for the approach outlined in the masterplan and welcome that the previous comments on the SG have been taken into account. Primary interest in this proposal relates to the potential impact upon the setting of Craigmillar Castle . However, having reviewed layout and design proposals, accept that the change to the baseline/current setting of the monument is unlikely to be significant. • Note the proposed transport connection in the vicinity of Craigmillar Mains and would welcome further engagement on the detail of this in order to understand the extent to which it may affect the Castle and its designed landscape, in due course. • Welcome the approach taken to the management of the historic environment assets within the South East Wedge/proposed parkland area, including the scheduled home farm. 	<p>Noted</p> <p>Noted</p> <p>Noted. Further engagement on the proposed transport connection will be undertaken at the appropriate time.</p> <p>Noted.</p>
Scotways	<ul style="list-style-type: none"> • Two rights of way (LC90 / LC91) Concerned that neither of the rights of way appear on key diagram (p.6). Both routes should be clearly marked on Masterplan. Continuing access should be permitted during construction , even if temporary diversions are required for safety or practical reasons. While LC90 follows the line of a public road, the key diagram marks it for traffic coming from New Greendykes as ‘public transport vehicles’ only, which seems to preclude other public access. Post construction works, this route should be signposted to confirm that cyclists are also permitted to use it. While other pedestrian cycle routes are indicated on diagram, they do not appear to provide access to the same areas as the rights of way. • CEC response to earlier comments about LC90 was that the location of the footpaths was dealt with in the key diagram of the draft NS Masterplan, but neither right of way is marked. The draft Masterplan refers to a cycle route connecting Craigmillar Castle Road and Greendykes Road with the Wisp, the 	<p>Rights of Way (LC90/LC91) have been marked on the key diagram (page 6 of the masterplan).</p> <p>As above.</p>

	<p>line of which is said to be in the SG. Page 4 of the SG asserts that ‘pedestrian and cycle routes should connect to long range strategic cycle paths as identified on Map 2. However LC91 and LC90 do not appear to correspond completely with the routes marked as pedestrian /cycle routes on Map 2. In particular, the route marked alongside the car park area may be where the Council believes LC91 lies or may be a different and new path. Anxious to ensure that both rights of way are referred to as such in the Masterplan to ensure that their status as such is recognised.</p>	
<p>SEPA</p>	<p>Would like to thank CEC for amending the SG to take account of concerns on flooding and drainage. Some comments propose changes to the draft masterplan while other comments identify issues of concern which should be addressed through detailed planning applications for the site. Flood Risk:-</p> <ul style="list-style-type: none"> • Masterplan does not reflect previous discussions requiring space for adequate treatment of surface water run-off within each phase of development. • Highlight that the Surface Water Management section of the masterplan indicates that underground storage is proposed within phase 3. This area is adjacent to previously modelled fluvial functional flood outline and further information may be required to assess if it is suitable for the storage proposed. • Technical input into Draft Masterplan makes various assumptions noted under 6 bullet points • Due to the significant development in the area, request that a strategic flood risk management framework is produced for the whole area. This would provide a strategic approach to flood risk/water management and would integrate into other developments which are adjacent to the site. 	<p>Noted.</p> <p>Noted</p> <p>Noted</p> <p>Noted</p> <p>The technical information provided in the masterplan read in conjunction with the finalised SG(1.b to k) and CEC’s Flood Prevention Guidance contain sufficient information to inform the basis of a strategic flood risk management framework for the site. All future planning applications should accord with the principles contained within these documents.</p>

	<ul style="list-style-type: none"> • Accept that a level of flood mitigation has been achieved by the Niddrie Burn Restoration project. Unclear if these works have been completed. Any update on these works should inform future iterations of the SG. • Welcome that it is highlighted that careful consideration will be required to the phasing of works to maintain existing surface water flow paths and that attenuation will be provided to prevent the increased risk of flooding from run-off from the site. SEPA advise that other flow paths from previous soft land forming are also considered. Any strategic overview of flood risk including surface water management may need to address some detailed calculations to consider if mitigation such as detention basins can be incorporated on site or if agreements between the phases of development need to be in place prior to development. <p>Drainage:-</p> <ul style="list-style-type: none"> • Point 1.n of the SG addresses the issue of car parking and refers to an overall parking strategy for the EBQ as part of the non-statutory masterplan, with individual applications containing full details of their proposals in accordance with this strategy. The detail in the draft masterplan (page 12) provides little detail and we believe this part of the masterplan should be developed incorporating SUDS for parking areas as part of the overall parking strategy. The strategy should address washing/valeting occurring in parking structures(as often tends to happen) as there may well be implications for any discharges of trade effluent to the water environment under the Controlled Activities Regulations. • Our final comment is a request for additional text to be added to the start of the seventh paragraph of the Surface Water Drainage Section on page 17: <i>'In line with the statutory requirements of General Binding Rules 10 and 11 of the Water Environment (Controlled Activities)(Scotland) Regulations 2011(as amended) and the treatment standards set out in CIRIA 697 'The SUDS Manual', flows would be routed etc...</i> 	<p>Noted. Updates on Niddrie Burn Restoration Works will inform future iterations of the SG.</p> <p>Noted</p> <p>The masterplan has been amended to include more detailed information on the options for car parking for the site which are currently being considered.</p> <p>The masterplan has been amended to incorporate this additional text.</p>
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<p>Scottish Natural Heritage</p>	<ul style="list-style-type: none"> • The key diagram on page 6 does not appear to reflect the full extent of proposed development as portrayed elsewhere within the draft masterplan document . SUDS will constitute development and the SUDS strategy diagram shows proposals for off-site features of an uncertain scale or form. SNH have concerns that the SUDS requirements could be extensive and may adversely affect the size and quality of the park and the wider active travel provision that it will provide. • Suggest that a precise boundary is drawn to the developable area and that the form and function of land use proposals is suitably colour coded. • Concerned that the draft Masterplan shows the proposed ‘frontage opportunity’ in a location some 50m further north than shown in the SG. • Support use of term ‘key building project’ rather than ‘frontage opportunity’. However, have concerns that the draft masterplan does not set out clearly how built form, streets and associated green infrastructure should come together to address this key aspect of the site’s landscape setting. Suggest that further information illustrating the outline requirements for the delivery of a well designed frontage should be portrayed by masterplan including building heights and profile, spacing between blocks, connectivity and scale and the location and nature of proposed landscape treatment. 	<p>The technical information provided in the masterplan read in conjunction with the finalised SG(1.b to k) and CEC’s Flood Prevention Guidance contain sufficient information to inform the basis of a strategic flood risk management framework for the site. All future planning applications should accord with the principles contained within these documents.</p> <p>Not agreed. A precise boundary highlighting the developable area with colour coding to indicate the form and function of land use proposals would be too prescriptive at this masterplan stage.</p> <p>The boundaries shown in the SG are diagrammatic. The frontage line shown on the digitised version of the LDP is the statutory boundary and this is the line which any applications will be assessed against. The building line shown on the masterplan coincides with the LDP.</p> <p>Not agreed. It would be inappropriate to include this level of detail at the masterplan stage. The necessary parameters of development are incorporated and sufficient flexibility is preferred for assessment of details at the planning application stage.</p>
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	<ul style="list-style-type: none"> Do not consider that the draft masterplan reflects points r and s of the SG. Suggest that the requirements of standard visibility splays are illustrated accurately on the indicative masterplan as they will guide and inform the likely extent of woodland to be removed or retained. Also suggest that the masterplan information should set out further vision and guidance on the quality, character and design of the landscape treatment and building frontage. While it is noted that one area of enhanced public realm is identified on the key diagram, it is advised that the masterplan should do more at this stage to indicate the likely scale, form and location of key public spaces. Suggest that identifying and maintaining key views to surrounding landmarks may be a starting point in identifying suitable areas and the possible scales of open spaces within the indicative masterplan. Note and welcome the level of detail and associated guidance on flooding, drainage and SUDS. Would encourage further work to demonstrate how SUDS can be positively integrated within the overall masterplan and placemaking vision for the site. Advise that the scale and implications of off site provision should be clearly illustrated. 	<p>Not agreed. Points r and s of the SG have sufficient material weight to ensure that any future planning applications will have to accord with these principles.</p> <p>Not agreed. It is not considered appropriate for the masterplan to incorporate standard visibility splays, and detailed information on quality, character and design. This would be too prescriptive for this masterplan stage.</p> <p>Not agreed. It is considered that the framework for the proposed public realm and public spaces is addressed suitably in the SG and the appropriate parameters set out in the masterplan.</p> <p>The technical information provided in the masterplan read in conjunction with the finalised SG(1.b to k) and CEC’s Flood Prevention Guidance contain sufficient information to inform the basis of a strategic flood risk management framework for the site. All future planning applications should accord with the principles contained within these documents. Discussions are also ongoing to establish how SUDS can be positively integrated within the overall masterplan</p>
<p>Transport Scotland</p>	<ul style="list-style-type: none"> Continues to be concerned about developer contributions and the apparent discontinuity between the Council’s published guidance and it’s response to Transport Scotland’s representations. Transport Scotland considers that it is 	<p>Sheriffhall upgrade is identified within SDP and relevant land in CEC area is safeguarded from development in LDP. Cross border mechanism to</p>

	<p>insufficient to simply refer to the cross border mechanism to collect developer contributions without specifically linking the BioQuarter to the impacts of development on the A720 Sheriffhall junction.</p>	<p>collect developer contributions is being progressed and more detail will be included in a future version of the LDP Action Programme.</p>
<p>Marion Mackay</p>	<ul style="list-style-type: none"> • Not opposed to development, but simply wishes to make an appeal that the very small number of residents in this location are not sacrificed as development progresses. • This area was part of the Green belt and should be preserved as such, as much as possible. Why remove any of the existing wall and mature tree belt? It would be possible to develop behind this, leaving the screening. • What will happen to the existing laybys? This is the only parking available for my property and the adjacent property. Parking is already near impossible because of the hospital parking and requests to the Council for residents' parking have been declined. There is no alternative parking nearby so it is essential that this is safeguarded. • The Bioquarter is a unique opportunity to house life sciences beside the hospital. If there is not sufficient appetite for it just now, why dilute this with housing/shops etc. The land cannot be recovered for life sciences once it has been developed for housing. • The area is already poorly served by public transport beyond the ERI. Any development which increases this will exacerbate the problem. Residents may be unable to get on buses at peak times. This should be addressed now. 	<p>Noted</p> <p>These specific details relating to the site will be dealt with as part of the process of determining future planning applications.</p> <p>There are no proposals to remove laybys as part of the plans for this BioQuarter. These site specific details will be dealt with as part of the process of determining future planning applications.</p> <p>A proportion of mixed uses is required within the site to create a place to attract investment in life sciences. The level of any housing and ancillary development is capped.</p> <p>As development at the BioQuarter unfolds it is crucial that it is served by an efficient and effective public transport system. Bus connections to the area will be improved to meet demand and in the longer term the introduction of tram line 3 from the city centre to the ERI/BioQuarter will be considered. Public transport provision will be monitored closely as development progresses.</p>

Edinburgh BioQuarter Non-Statutory Masterplan

May 2014

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Introduction

This masterplan will form Non-Statutory Guidance for the Edinburgh BioQuarter (EBQ). It should be read in conjunction with the Supplementary Guidance (SG) for the Edinburgh BioQuarter and South East Wedge Parkland.

The Supplementary Guidance (SG) supports the development of the EBQ for life sciences development and directly related commercial developments. The SG sets out development principles for Edinburgh BioQuarter including the location of development, quantum of floorspace, acceptable uses, heights and massing of development, site access points, and areas of landscape sensitivity.

This **finalised**, non-statutory masterplan provides additional detail in the form of a key masterplan diagram which defines in more detail the location of development, points of access, principal movement routes, main areas of public realm, lines of principal façades and activation, and key areas of landscape retention. In addition the masterplan sets out further detail in regards to placemaking, density, building heights, landscape impact, flexibility, transport and connectivity and flooding & drainage.

Appendix 1 to this guidance contains technical information on:

- Air Quality
- Noise
- Ecology and Biodiversity
- Ground Conditions
- Water Resources
- Archaeology and Cultural Heritage
- Transport Appraisal

Appendix 2 to this guidance provides a report of pre-draft consultation.

This non-statutory masterplan, in parallel with the SG, will provide the basis from which subsequent detailed planning applications and design proposals will be assessed.



Aerial Photograph of the Edinburgh BioQuarter Site

Background

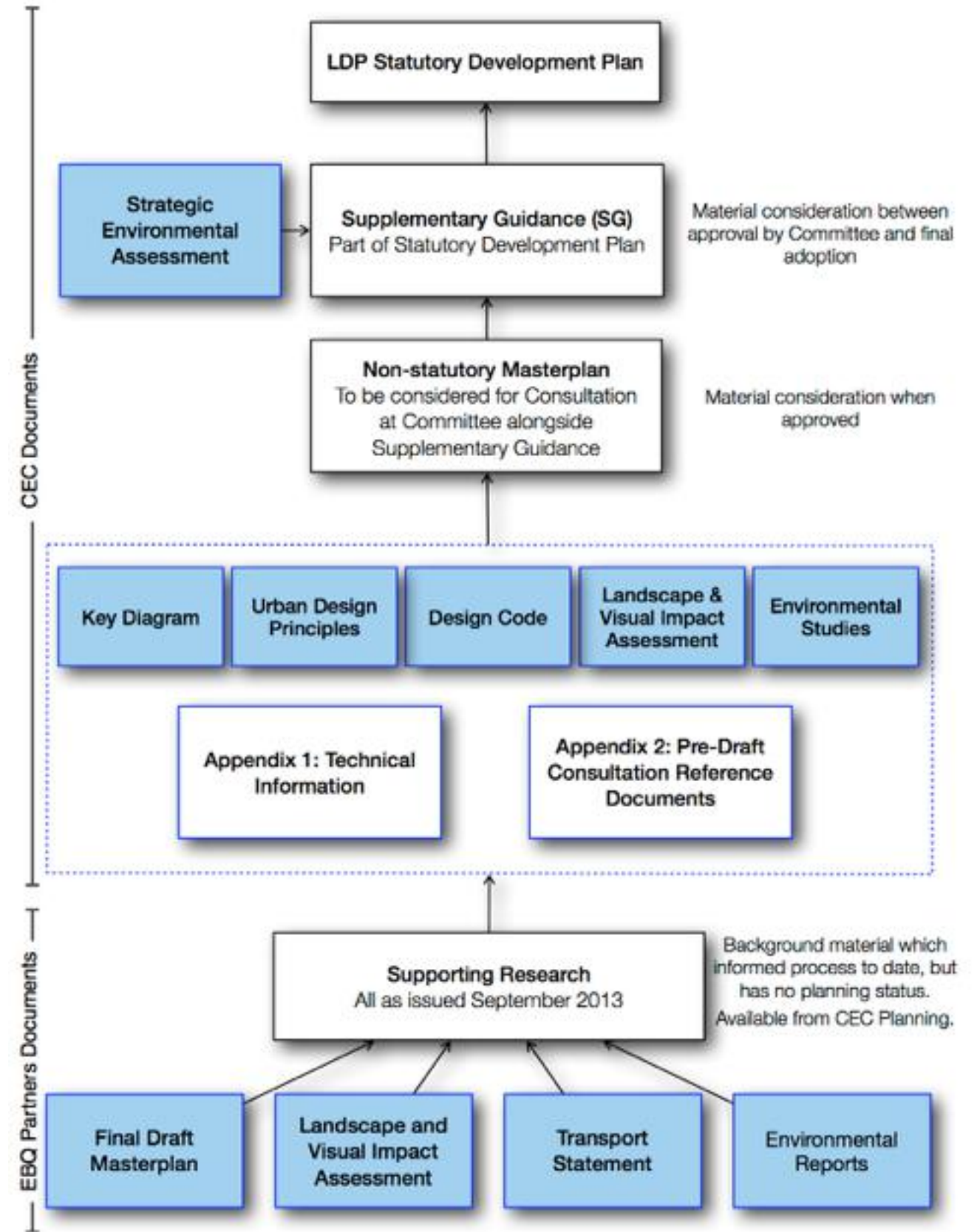
This Masterplan forms an important part of the Edinburgh BioQuarter Partner's (EBP) long term ambitions for the BioQuarter, a plan that will mature over the next 20-30 years as the requirements of Life Science buildings evolve.

The Royal Infirmary of Edinburgh has transformed the character of this 'edge of city' location into an area of significant built form. The hospital already attracts a large number of people and, coupled with the potential future developments on the BioQuarter, the character of the area will further transform from rural hinterland to a more urban character.

It is not only the BioQuarter site that is undergoing significant change. The 1998 South East Wedge Joint Development Study and the Craigmillar Urban Design Framework (approved in 2005 and updated in 2013) sets out the extent of new lands given over to housing, including the Greendykes edge to the north. These developments once completed will create a clear northern edge to the landscape strongly defining the open space as well as reinforcing the open space as amenity space for the BioQuarter and the wider community.

This draft Edinburgh BioQuarter (EBQ) Masterplan and supporting documents have been the subject of pre-draft consultation throughout its preparation in 2012. A report of this consultation is provided in Appendix 3. This pre-draft stage has informed the preparation of the EBQ SG, and this masterplan.

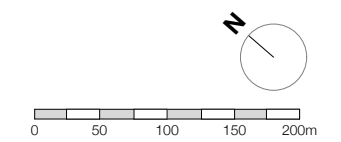
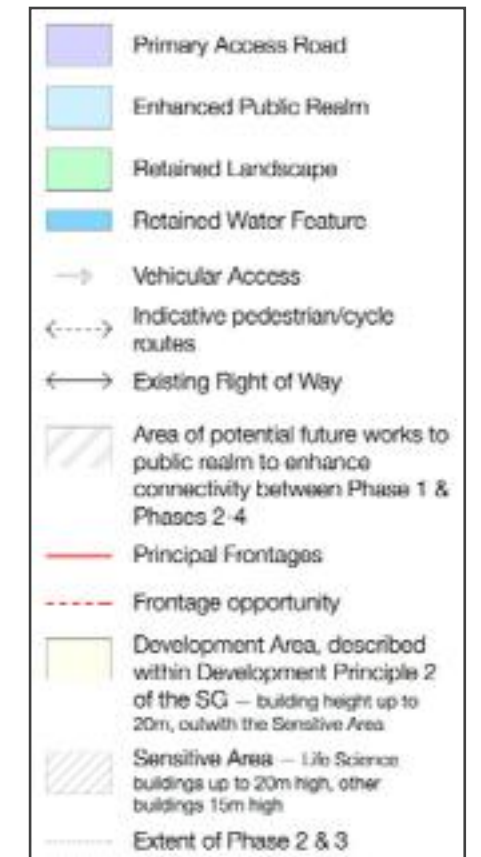
The consultation draft, non-statutory Masterplan has been informed by regular meetings with City of Edinburgh Council (CEC) key stakeholders and consultees and the surrounding communities to determine the best approach to the creation of a world class Life Sciences environment at the BioQuarter.



Organogram showing the relationship between the EBQ Partners' documents, the Supplementary Guidance & the Non-Statutory Masterplan

Masterplan and Urban Design Principles

Key Diagram



Placemaking

Like many of their competitors, the presence of a major hospital, together with University Medical School and clinical research organisations form the heart of the Edinburgh BioQuarter. However, successful examples of the Edinburgh BioQuarter’s global competitors illustrate that it is also the external environment that is a significant factor in attracting global investment, global institutions and importantly, retaining a highly skilled workforce. Global competitors are increasingly locating in more dense, urban environments where there is greater co-location between functions and a high degree of connectivity between buildings.

There is also a strong trend toward a more diverse range of functions and uses to support the Life Sciences facilities. This includes services such as cafes and restaurants, but also offices supporting services such as IP and legal professionals, marketing and venture capital, as well as hotels, and student and residential accommodation. These uses are very important to create a sense of place and support a more sustainable BioQuarter community. The Supplementary Guidance outlines the quantum and types of uses that would be considered appropriate to include in the BioQuarter.

The masterplan’s objective is to therefore create a physically integrated environment, with as a cohesive brand and identifiable sense of place that will be easy to use, easy to understand and that will promote a high level of interaction between users and co-location between BioQuarter businesses. The proximity of Life Science buildings, with a quality urban environment linking them together, enlivened by a balance of mixed supporting uses is therefore key to making the BioQuarter attractive to investors and the people who will work there.

Density

The masterplan seeks to create urban blocks that promote a number of buildings in proximity to each other. The overall strategy for the site recognises the need for integration of public transport and that in order to achieve the building development densities car parking will need to be in multi level structures.

Flexibility

Life Science buildings require very high levels of technology and servicing and the needs of the future buildings within a very dynamic and emerging research field are not fully known and therefore cannot be fully prescribed in terms of size, shape or form. A robust masterplan must be able to adapt and accommodate a very dynamic

and changing business and therefore flexibility is fundamental to its usefulness and its ability to deliver buildings.

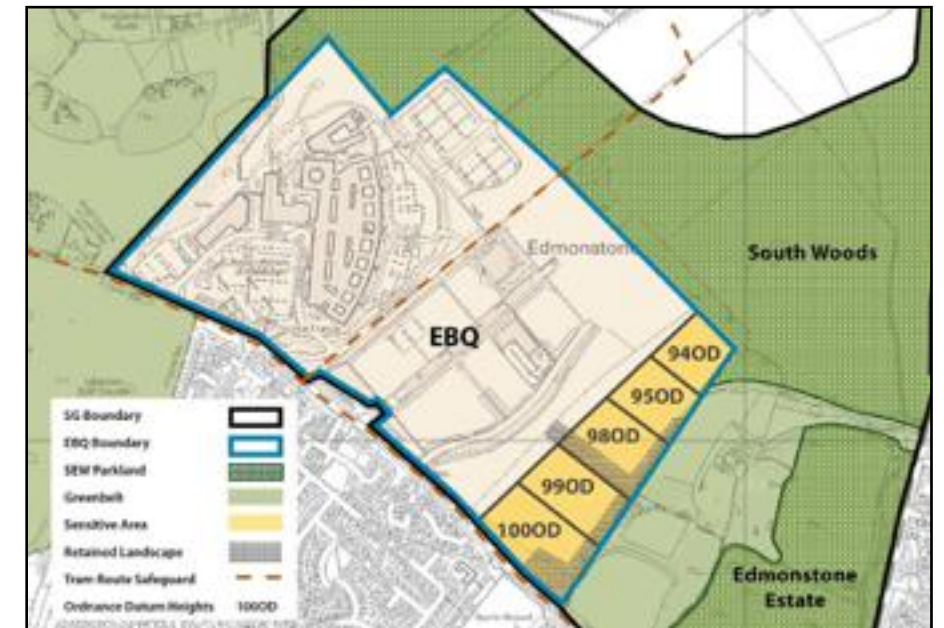
One of the most problematic issues with many masterplans which adopt the ‘business park’ approach is that they are overly prescriptive and plan for very similar models of built form. Therefore, this masterplan seeks to structure the main urban blocks only and not to subdivide these further into plots for development. In this manner the masterplan will be able to accommodate a number of future building sizes and forms.

Design Code

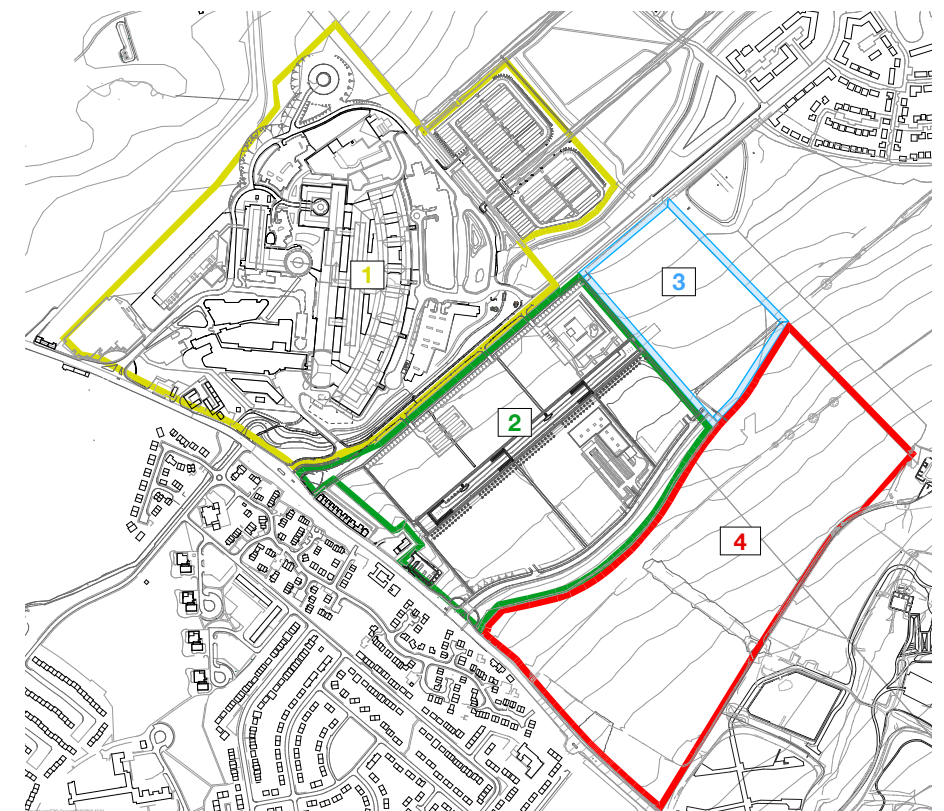
The SG identifies a Sensitive Area where building height is reduced to 15m with an additional 5m zone in which life sciences floorspace and plant will be allowed, subject to it complying with a design code for the area. The aim of the design code is to ensure that views to Edmonstone ridge are carefully considered in the design of the building form. Building form within the sensitive area should be designed to a high standard and avoid long visually unbroken horizontal lines with no single roof line element exceeding 20m in width viewed from Little France Drive or 40m in width when viewed from Old Dalkeith Road.

Building Heights and Landscape Impact

The SG sets maximum heights across the site. These are balanced between the functional requirements of the research buildings and the visual character of the site particularly the landscape ridge of Edmonstone estate to the south east. A visual assessment of the impact of the BioQuarter has been undertaken and key views from the massing model are included within the masterplan..



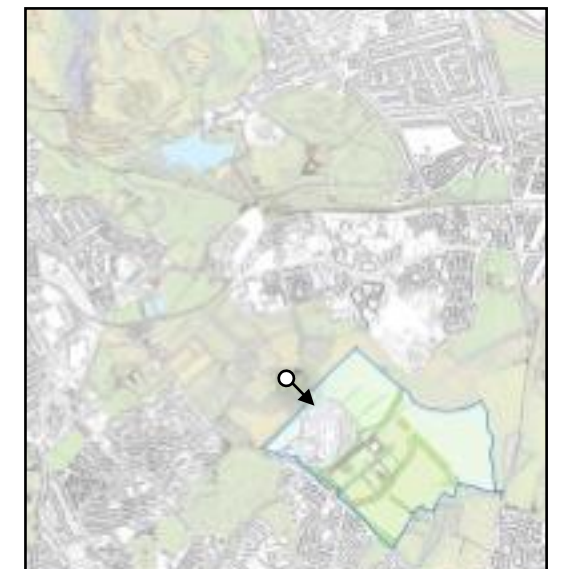
Extract from CEC Supplementary Guidance Map 3



Edinburgh BioQuarter Phasing Diagram



View from Craigmillar Castle



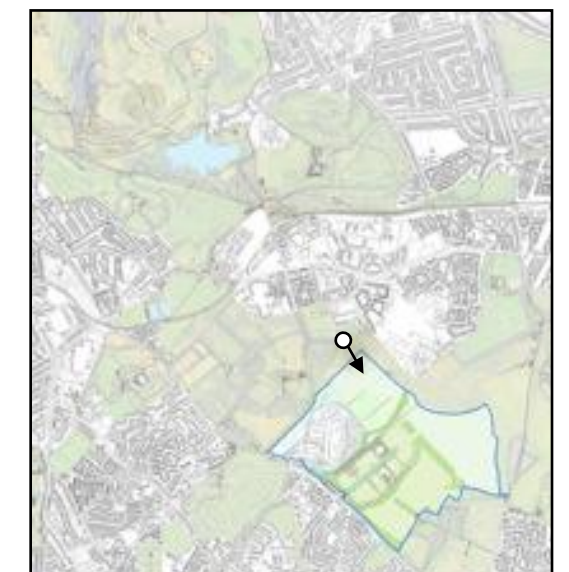


View from Old Dalkeith Road





View from Edge of Hawkhill Woods





View from near Meadowfield Drive



Transport and Connectivity

There are considerable physical barriers to greater integration of the site. The Niddrie Burn and flood prevention works, Little France Drive, reservation zone for the tram line, canals as water features and man-made bermed slopes all form physical barriers which make simple pedestrian connections across the site difficult, dislocating the buildings from one another.

The masterplan seeks to create network of roads, paths and pedestrian zones that will focus movement in a more coherent manner. A transport appraisal for the entire EBQ development site was carried 2012 and is provided in Appendix 1.

Walking and Cycling

The transport appraisal identifies the walking and cycling provision at and around the existing site area. It also identifies where improvements are required. These include pedestrian / cycle routes:

- from the BioQuarter to Moredun and the A772.
- connecting the EBQ with the RIE, aligned along a vista of Craigmillar Castle, with a new bridge over the existing canal, to improve connectivity.
- to the northeast, aligned on a vista of Arthur's Seat.
- connecting Craigmillar Castle Road and Greendykes Road to the Wisp and beyond, potentially planted with trees to form a

pleasant avenue which would be attractive to pedestrians and cyclists. The line of this route is set out within the SG.

Public Transport

The transport appraisal identifies that there is excellent bus provision to the area (up to 28 buses per hour in each direction), with high bus mode share for both the RIE and the University of Edinburgh (UoE). The transport appraisal predict that the EBQ development will result in an additional 900 public transport trips in both morning and evening peaks. The masterplan therefore proposes new bus hubs at the RIE and at the central part of the western site boundary of Phase 4 (on Little France Road). The masterplan also allows for a new tram stop to be incorporated near the RIE entrance should the proposed Tram Line 3 go ahead.

Vehicular Traffic

The transport appraisal also identifies the required mitigation to local roads and junctions, including minor mitigation to Little France Crescent and Little France Drive, as well as the design of the further two access points. The access to Phase 4 is proposed in the report as being at the southeast corner of the Phase 4 site, leading northeast onto the site from the A7. The location of this access is identified on the key diagram. The route options as presented in the masterplan concept are flexible, to allow optimisation of design as future development of the site and wider area progresses.

Mitigation of the transport impact of the EBQ will need to be considered strategically for the overall development, and cumulatively with other committed and proposed development in the wider area. Policies DTS1 and DTS2 of the Proposed LDP, as well as the Council's Action Programme and draft guidance on developer contributions set out the requirements for the Edinburgh BioQuarter.

Parking

Car parking has been identified as a significant concern in the local community, given the current parking situation at the RIE in particular, where parking spaces can be either unavailable or considered unaffordable. Various parking alternatives are being considered. Any parking solutions have to be flexible to address the needs of much later phases.

Solutions being considered include multi-storey car parking, which will result in significantly lower land take than surface parking. This could have some charged spaces and some spaces allocated to businesses. Also being considered is gated access to uncharged parking areas within the Phase 4 development. In addition there will be an emphasis on travel planning for the Phase 4 development. The aim will be to encourage staff and site users to travel by public transport, walking and cycling. The encouragement of these modes of travel will also be considered in the masterplan concept and design, as discussed above.

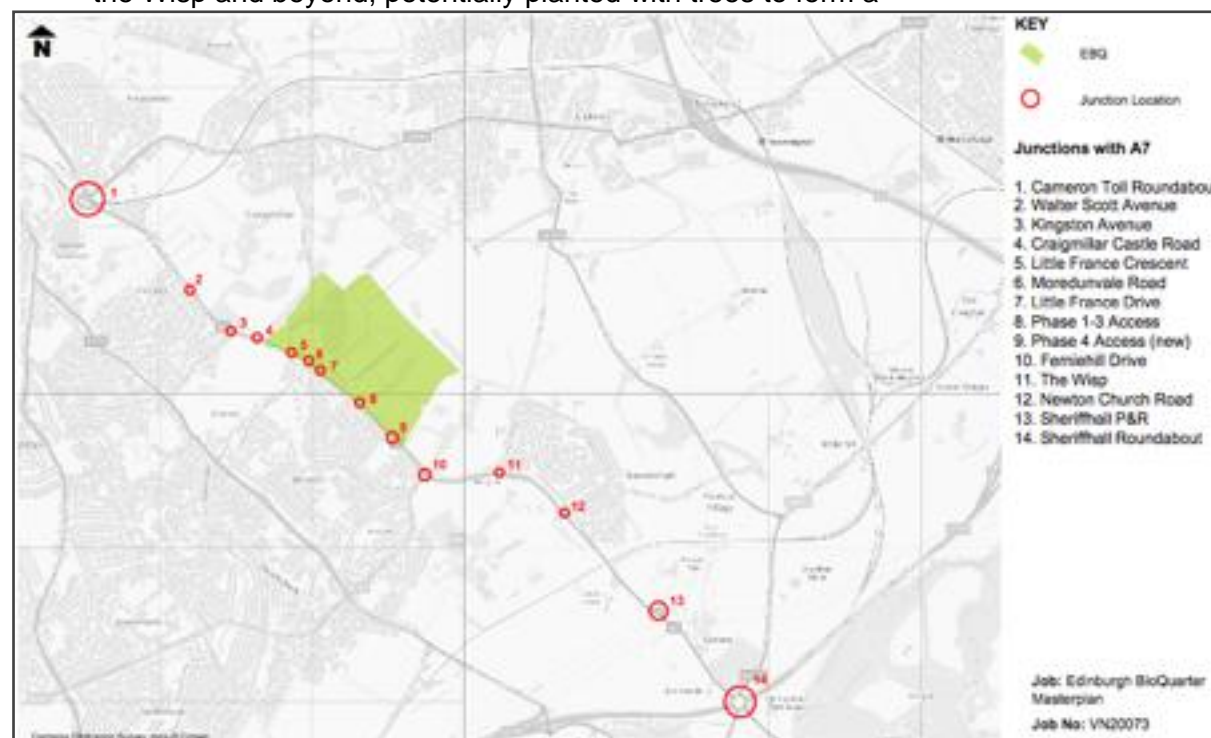


Figure A.1 – Long term bus access strategy



Figure – site constraints

Flooding and Drainage

Site Overview

The proposed site is approximately 39.4 hectares in area, generally rectangular in shape.

The northern part of the site is partially developed as BioQuarter Phase 2, with earthworks platforming in place, along with perimeter roads, plot drainage/utility infrastructure and network connections installed. Only two of the development plots are currently developed and occupied.

To the east (Phase 3) and south (Phase 4) the site is currently open fields.

The site is bounded:

- To the south east by the grounds of Edmonstone Estate;
- To the south by a tree belt and beyond by Old Dalkeith Road (A7);
- To the north west by Little France Drive, the Niddrie Burn and the roads, car parks and buildings of the Edinburgh's Royal Infirmary (ERI) site beyond; and
- To the north east by open fields

An as-built topographical survey of BioQuarter Phases 2 & 3 was carried out which indicates levels ranging from 53.96m Above Ordnance Datum (AOD) to 51.90m along the north west boundary with Little France Drive. The survey shows the levels ranging from 71.21m to 75.14m along the defined boundary between BioQuarter Phase 2 and 4.

Ordnance Survey mapping indicates contours between 75.0m – 85.0m, north to south, across the Phase 4 site.

Phases 2 to 4 - Stage 1 Flood Risk Assessment

A Stage 1 Flood Risk Assessment has been carried out to identify and quantify flooding issues associated with the BioQuarter, a life science and commercial development located in south east Edinburgh.

The assessment focuses on the Phases 2, 3 and 4 development areas, south of Little France Drive, and does not include assessment of developed areas, or sites earmarked for future development within Phase 1, i.e. Edinburgh Royal Infirmary, Royal Hospital for Sick Children or other adjacent NHS and UoE buildings.

The report takes into account the recommendations of the Scottish Planning Policy (SPP), issued by the Scottish Executive in February 2010, Planning Advice Note PAN 61 Planning and Sustainable Urban

Drainage Systems, issued by the Scottish Executive in July 2001, and the Guidance Note for Sewers for Scotland 2nd Edition, issued by the Scottish Executive in November 2007.

SPP identifies flood risk as a specific consideration in the allocation and release of sites for new development. The Government's sustainable development strategy makes it a requirement to assess forms of development for areas at risk of flooding. This is to avoid an increase in the need for flood defences. A requirement of SPP is that developers who submit planning applications for sites potentially at risk from flooding, or whose proposals could materially increase the probability of flooding elsewhere, should consult with the local authority and, where appropriate, produce a Flood Risk Assessment for their proposals.

The flood risk assessment should show that the development is not at risk in a 1:200yr (0.5% AEP) flood from a watercourse, allowing for climate change, and assuming no land raising is introduced to protect the development within the functional flood plain.

Existing Watercourses – Niddrie Burn

The Niddrie Burn rises as the Lothian Burn in the Pentland Hills 7km south west of the proposed development site. From its origin the burn meanders in a generally easterly direction and is culverted beneath the A720 Edinburgh City Bypass.

The burn continues generally eastwards crossing beneath Burdiehouse Road, before turning to flow north between residential areas. Over this section, the burn is known as the Burdiehouse Burn.

The burn continues to flow northwards, turning to the north east, and is culverted beneath Gilmerton Road (A772). The burn thereafter routes through the Edinburgh Royal Infirmary (ERI) site at Little France. The burn is called the Niddrie Burn from this point.

As the burn routes north east from the ERI site the previous alignment of the burn, bifurcating into two separate channels, and routed to culverts laid under the Greendykes residential area, has been **changed. Although the channels and culverts remain in place the Niddrie Burn has been diverted downstream of the ERI access road bridge** to realign the watercourse to its historical meandering routing across the flood plain. This is as part of a scheme known as the Niddrie Burn Restoration (NBR). The NBR has recently been completed by CEC and includes a 2km long, two-stage channel construction, flood management control/ storage elements and improvements to the existing ERI surface water outfalls.

The watercourse connects back to its previous alignment at a point adjacent to the Jack Kane Leisure Centre.

The burn then routes north eastwards, known as the Brunstane Burn, and reaches its outfall to the Firth of Forth at Joppa.

The section of burn immediately upstream of the NBR, within BioQuarter Phase 1, is known to have a flooding problem, and is currently being assessed for flood mitigation measures as part of Royal Hospital for Sick Children (RHSC) advanced works. A flood risk assessment and mitigation strategy is under development and it is understood the proposals require sections of the left bank to be raised in proximity to the ERI and the proposed RHSC buildings. The scheme, incorporating below-ground seepage piles, will defend the hospitals against a 1 in 1000 yr extreme flood event, appropriate for essential civil infrastructure.

No works are proposed on the right bank of the watercourse, the Little France Drive side of the burn corridor. It is however assumed that the RHSC advanced **flood mitigation works, scheduled to be undertaken shortly**, will have been designed / modelled to demonstrate no increase in flooding up/downstream, or in this case, on the opposite bank.

It is expected that the flood mitigation works to protect ERI/RHSC will be completed by Oct 2014, with further flood prevention measures completed upstream of the A7 at Nether Craigour, by April 2015

There is currently no relevant output from the RHSC flood model for review as part of this assessment. The available flood extent information is considered to be conservative due to an over estimation of the watercourse catchment during development of the flood model.

The plan provided shows the 1 in 200 yr plus climate change flooding extending to the CEC-owned verge (within the future tram corridor) on the south side of Little France Drive. The extent covers over half the length of BioQuarter Phase 2, the footprint suggest a minimal depth of flooding along the existing road and verge. There is also a channel of flood water spilling over the verge into Phase 2 land just downstream of the ERI footbridge over the Niddrie Burn. This flooding crosses the future tram corridor with ponding within the soft landscaped strip of Plot 4.

Our understanding is the future tram corridor is currently assumed to be aligned at-grade over the extent of its route through the BioQuarter. Levels may have to be reviewed at a future date if the assumed flood levels are confirmed as being accurate.

An area at the rear of the ERI, originally bounded by the bifurcation channels of the Niddrie Burn, and set within the function flood plain, has been developed by NHS Lothian as surface car parks to replace

parking lost in developing the RHSC. As part of planning, flood risk assessment and mitigation options were agreed with SEPA which allowed the car parks to be raised 750mm above the flood plain subject to compensatory flood storage being provided within the adjacent flood management area of the NBR.

The NBR flood management proposals have subsequently re-worked to provide the additional storage required.

Existing Watercourses – Magdalene Burn

The Magdalene Burn is the only other named watercourse in proximity to the site. The burn has low flow and is sufficiently remote from the site not to cause flooding impact.

The burn is shown to originate to the north east of the BioQuarter at a location south of the Greendykes residential area. The burn flows along field boundaries, close to properties on The Wisp (A6106), and is routed to the north for a short distance before being culverted beneath this road.

During construction of NBR, an existing drain was re-connected to the Magdalene Burn by means of an overflow arrangement. This drain was believed to flow continuously and the assumption was that it was spring-fed.

Flows along the Magdalene Burn have reduced significantly in recent times, possibly as a result of development work. There may be scope to divert surface water flow to the burn from adjacent sites.

Further and detailed investigation may establish that there is an existing drainage system within, or immediately adjacent to, BioQuarter, which will allow conveyance of surface water to the burn. Without this opportunity, topography, land constraints and economic factors will dictate that a contributing flow from BioQuarter is unlikely as part of an emerging surface water management strategy.

From initial discussions, site walkovers and desktop studies, there is no evidence that natural catchment drainage patterns to the burn will be affected by the development of Phase 2, 3 and 4 of the BioQuarter.

Existing/Historical Flooding

There are no records of flooding within the proposed site.

Anticipated Fluvial Flooding

Pre- and post-development areas at risk from flooding have been considered and it can be confirmed that no flood mitigation will be required if external landscaped areas are maintained along the northern boundary of Phase 2.

An as-built topographical survey of BioQuarter Phases 2 & 3 was carried out by Balfour Beatty which indicates levels ranging from 53.96m Above Ordnance Datum (AOD) to 51.90m along the north west boundary with Little France Drive. The survey shows the levels ranging from 71.21m to 75.14m along the defined boundary between BioQuarter Phase 2 and 4.

Ordnance Survey mapping indicates contours between 75.0m – 85.0m, north to south, across the Phase 4 site.

Given the BioQuarter slopes up fairly steeply from the north, with a lowest boundary level of around 52m, it is anticipated that the finished floor level of many buildings within Phase 2 will be several metres higher. Phase 3 boundaries will be protected as the realigned Niddrie Burn remains in bank and Phase 4 buildings will be at least 25m above the flood zone.

The Magdalene Burn is situated at a similar level to the Niddrie Burn. It is a much more minor watercourse.

It is therefore considered that fluvial flooding of the BioQuarter Phases 2 to 4 from the Niddrie Burn and the Magdalene Burn is unlikely to occur and consequently is a low to medium risk.

Anticipated Pluvial Flooding

Pre- and post-development areas at risk from flooding have been considered and we can confirm that there is no flood mitigation required other than as noted below.

As the land slopes down to the northern boundary the site is likely to be served by a series of land drainage networks that will ultimately connect to either the Niddrie or Magdalene Burn. Careful consideration will be required to the phasing of such works to ensure the maintenance of existing surface water flow paths, including from areas outwith the site. Attenuation will be provided on site if run-off is likely to increase flooding risk elsewhere and development platforms will be designed to avoid low-lying areas prone to secondary flooding.

The current proposals for the Edmonstone Estate south of the development site show a residential development of 150 houses located in the NW sector of the development area.

A flood risk assessment (FRA) undertaken on behalf of Sheratan Limited concludes that the site has little or no risk of flooding.

The South East Wedge Parkland is a north-to-south landscaped corridor located east of BioQuarter Phases 3 and 4. Landforming works in this area, undertaken as part of the NBR, have introduced changes to the local topography, as the fairly evenly-graded slope

has been contoured and mounded to accommodate future paths and soft landscape features.

In terms of pluvial flooding it is assumed that the landformings being implemented have been designed with careful consideration of their possible impact to future works, with adequate provisions made to ensure existing flow paths are maintained.

During intense or prolonged rainfall it is important that overland flow is not concentrated into new channels which will then cause localised flooding issues, ponding or impact to infrastructure construction to the North. Further, it is assumed that landforming has been designed in a manner that does not introduce low-lying areas prone to secondary flooding.

Sustainable Urban Drainage Systems (SUDS) for plots within the development site should be appropriately sized to deal with the catchment area. Proper maintenance of any features and their outfalls will be required to prevent blockages and consequent problems. This is particularly important in a sloping site where features may be located on the upper slopes.

Flood Routing and Risk

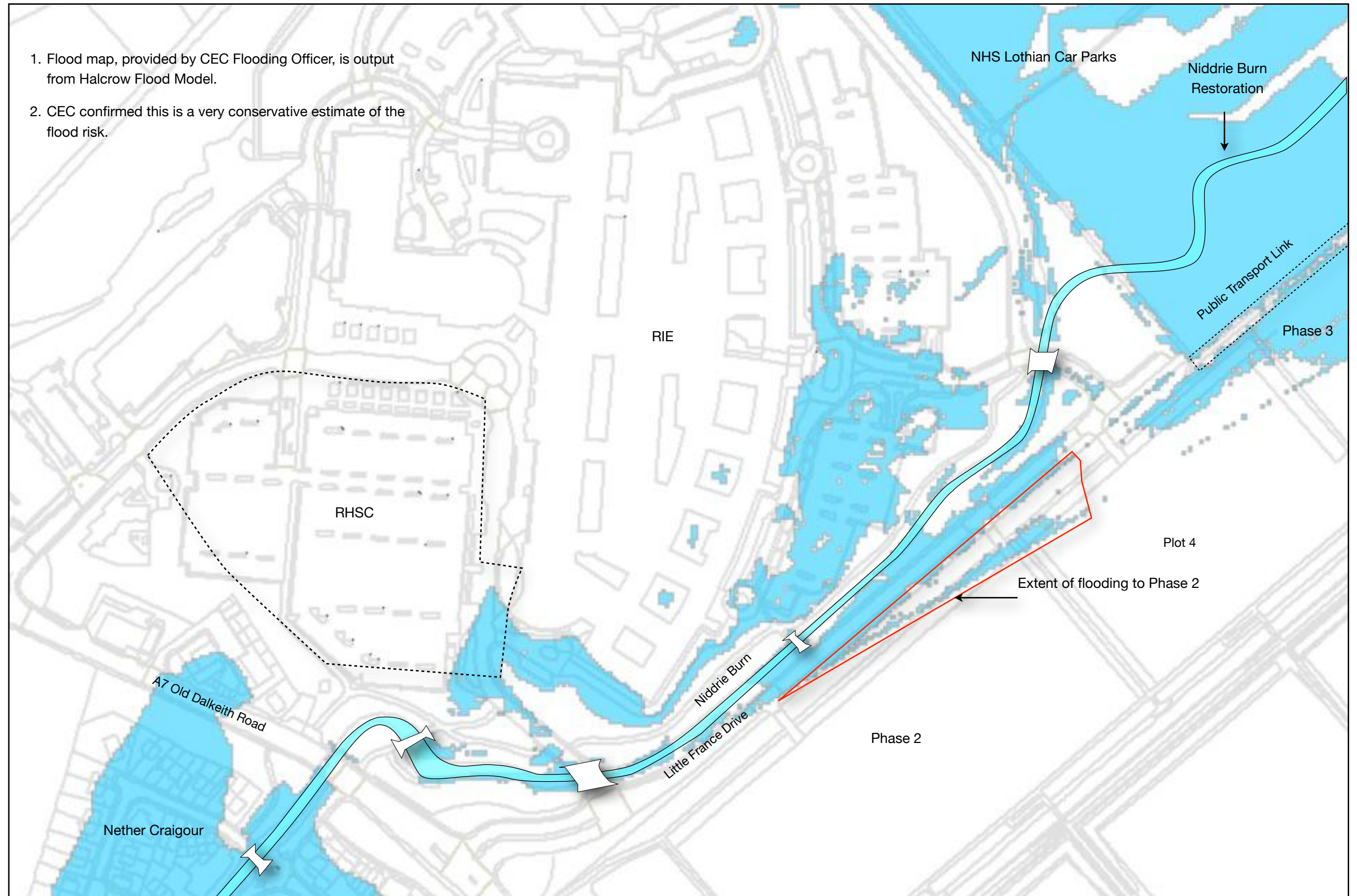
As noted previously, fluvial flooding from the Niddrie and Magdalene Burn is considered to be a low to medium risk. However, it is essential that appropriate protection to development buildings and overland sheet flow routes are adequately considered during planning and detailed design respectively.

Conclusions

In conclusion, fluvial flood risk from the Niddrie and Magdalene Burn is considered to be low to medium, given the difference in level between these watercourses and the lowest part of the site.

However, given the entire site generally slopes down to the north it is particularly important that the phasing of the development proposals do not introduce low-lying areas or obstruct existing pluvial flow routes, as this may cause a secondary pluvial flood risk.

The technical information provided in this masterplan, read in conjunction with the finalised Supplementary Guidance (1.b to k) and CEC's Flood Prevention Guidance, contain sufficient information to inform the basis of a strategic flood risk assessment for the site. All future planning applications should accord with the principles contained within these documents.



1:200 Year Flood Extents (NTS)

Phases 2 to 4 - Drainage & SUDS Strategy Report

WSP has completed an outline Drainage & SUDS Strategy for BioQuarter, located on the south eastern side of Edinburgh. The site is intended to incorporate life sciences and associated commercial development.

The strategy focuses on the Phases 2, 3 and 4 development areas, south of Little France Drive, and does not include assessment of developed areas, or sites earmarked for future development within Phase 1, i.e. Edinburgh Royal Infirmary, Royal Hospital for Sick Children or other adjacent NHS and UoE buildings.

The objective of this report is to inform the client of the key foul drainage, surface water drainage and Sustainable Urban Drainage Systems (SUDS) issues and constraints, which may influence the development / masterplanning process.

Existing Drainage/Sewerage Infrastructure

Scottish Water plans indicating location of existing sewerage in the vicinity of the proposed site were available for review. It should however be noted that sewerage systems in proximity to the proposed site have changed as part of the Niddrie Burn Restoration (NBR) scheme. WSP has had past involvement as designer of the scheme.

The Edinburgh Royal Infirmary (ERI), to the northwest of the BioQuarter Phase 2 site is served by three combined sewers that route generally north eastwards beyond its western boundary. These sewers are 375mm, 915mm and 840mm diameter as they leave the hospital curtilage.

The northern most combined sewer (375mm dia) routes directly north east into the Greendykes residential estate, running partially beneath Greendykes Drive, and collecting various branches connections on its route.

The two other combined sewers (915mm and 840mm diameter) are shown to route generally north east either side of the pre-existing line of the Niddrie Burn. The sewers skirt the southern side of the Greendykes / Niddrie residential area, progressively upsizing, and turning generally to the north to route adjacent to the Jack Kane Leisure Centre and beyond. This is what is shown on the Scottish Water plans we hold.

Impact of NBR has resulted in diversions to the existing sewerage. The 915mm diameter combined sewer, referred to previously, has

been diverted to the south to run along the southern bank of the re-aligned Niddrie Burn.

As part of NBR, a new link road is being constructed connecting Little France Drive (on the southern side of the ERI site) to Greendykes Road.

On behalf of Scottish Enterprise, WSP designed a 375mm diameter foul drainage system that routes beneath the ERI Link Road and connects to the diverted 915mm diameter combined sewer adjacent to the Persimmon housing road bridge. The pipework is routed along the southern side of the ERI Link Road. This drain has been installed to service the BioQuarter Phase 4 development and Edmonstone Care Village.

In terms of surface water drainage features, the most prominent is the Niddrie Burn to the north of the site. This watercourse flows along the southern margins of the ERI site. Downstream of the ERI curtilage, the diverted burn, currently under construction, routes generally north eastwards skirting the Greendykes / Niddrie residential area. It thereafter turns to the north to tie-in to the pre-existing line of the burn, adjacent to the Jack Kane Leisure Centre.

Another watercourse, the Magdalene Burn is situated to the south of the re-aligned Niddrie Burn. This burn is located to the north east of the BioQuarter Phase 4 site and flows along field boundaries, in the form of a culvert or stone drain, to the north east. This drain connects to an open ditch on the southside of the tree belt bounding the Jack Kane Playing Fields. This burn diverts from this line, close to properties on The Wisp (A6106), routing to the north for a short distance and thereafter being culverted east beneath this road.

It is unclear whether the upper slopes of the hillside to the south of the existing BioQuarter site (proposed Phase 4 area) are currently served by land drainage systems or merely encourage overland flow northwards down the hill. A study of available Ordnance Survey mapping and aerial photography appears to indicate the presence of a drainage route that follows a wooded margin in the centre of the proposed site. This appears to route through the middle of the site north westwards towards the southern boundary of the existing BioQuarter site.

To the northern boundary of Phase 4, the as-built topographic survey shows filter drains at the toe and top of the cutting slope forming the earthworks interface with the southern access road of Phase 2. This survey appears to suggest these drains connect to the Magdalene Burn, although the NBR works included remedial drainage works to intercept flows which may have changed the previous arrangements. These systems will collect sheet runoff from the pre-existing

BioQuarter Phase 4 site, and may also serve as an outfall for the drainage route referred to above.

The developed BioQuarter site, Phase 2 and 3, to the north is served by various SUDS water features. These include a linear water feature situated through the centre of the development area, which also manages the level difference, and is orientated south west to north east.

Surface water flows from the roofs and car park areas are generally shown to route north east from the site to outfall into two linked detention basins, located on the southern side of the new ERI Link Road. These basins are connected to the Niddrie Burn by piped outfall.

It is understood that foul discharge from Phase 2 (and Phase 3 when constructed) is routed generally to the north east, beneath the re-aligned Niddrie Burn, to connect to one of the larger diameter combined sewers on the northern side of the burn, in the vicinity of the NHS Lothian car parks.

Site Drainage Strategy

Foul Drainage

The main infrastructure for Phase 2 and 3 of the BioQuarter site has been installed and routes flows to the sewer as noted in the previous section. This is as per separate agreement with Scottish Water.

It is anticipated that foul flows from Phase 4 of BioQuarter will be conveyed via a service corridor along the eastern boundary of phases 2 & 4 to connect into the new 375mm diameter foul drain laid to the south of the ERI Link Road.

Given a basic understanding of the topography of the proposed development site, it is considered possible to route a closed pipe system to fall by gravity to the north east and further to the proposed connection point.

If certain parts of the site prove difficult to drain by these means it may be possible to route drainage to connect through BioQuarter Phase 2. This is clearly dependent on capacity and condition and further discussion with Scottish Water.

During design of the 375mm diameter foul connection drain, assumptions were made on anticipated contributing flows. Assumptions were made in consideration of the future development of the BioQuarter Phase 4:

- 15 No. Lab/office units assumed;
- Developable Area = 12.5 ha;
- Domestic flows = 0.6 litres/second/ha (Sewers for Scotland 2nd edition); and
- Trade effluent for wet industry = 1.0 litres/second/ha (Sewers for Scotland 2nd Edition).

Using the above parameters, anticipated design foul flows from the BioQuarter Phase 4 site were calculated as 20 litres/second.

Development within an overall masterplan area (of which BioQuarter forms part) has been considered by Scottish Water through a Development Impact Assessment (DIA). The network modelling undertaken identified off-site network reinforcement works which have been implemented by Scottish Water. Provided the BioQuarter Phase 4 site foul flows remain within the above limit, no further external upgrading works will be required by Scottish Water.

Surface Water Drainage

It is generally anticipated that surface water flows from the proposed development would be routed to the north and discharge to the re-aligned Niddrie Burn. This is the current outfall for the drainage for Phase 2

In order to better understand the proposed site, surrounding environs, impact of adjacent potential developments and the surface water drainage design parameters required, a meeting was held with Alvin Barber, City of Edinburgh Council Flooding Officer, on 19 July 2012.

At this meeting it was confirmed that any proposed discharge into the Niddrie Burn would be limited to the lesser of the following:

- CEC's standard assumed 'greenfield' runoff rate of approximately 4.5 litres / second/ hectare; or
- An actual rural runoff calculation (Q2) for the site concerned.

A calculation has therefore been carried out, based on IH 124 Rural runoff method, for the proposed site using WinDes Micro-drainage. This calculation determined that the pre-existing 2 year discharge would be 4.2 litres / second/ hectare.

It should therefore be assumed, until further information is available on the site, that the discharge should be based on the lesser 4.2 litres / second/ hectare value. Considering an approximate development site area of 39.4 ha, a discharge limit of 165.5 litres/ second is produced

Given a basic understanding of the existing topography of the proposed development site, it is considered possible to serve the site with closed pipe systems to fall by gravity to the existing detention basins.

In line with the statutory requirements of General Binding Rules 10 and 11 of the Water Environment (Controlled Activities)(Scotland) Regulations 2011 (as amended) and the treatment standards set out in CIRIA 697 'The SUDS Manual', flows would be routed to proposed Sustainable Urban Drainage Systems (SUDS) providing attenuation and treatment within the site curtilage. Thereafter flows would pass through proposed SUDS features in public amenity areas prior to discharge either direct to the Niddrie Burn or via the existing basins serving BioQuarter Phase 2 and eventual discharge to the burn.

The existing BioQuarter basins are understood to be an unadopted private drainage system with maintenance remaining the responsibility of the developer (Scottish Enterprise). As a general rule, above ground SUDS features would be better vested with either the local authority or Scottish Water for maintenance purposes.

CEC have stated that they would consider the design criteria set out in 'Sewers for Scotland 2nd edition' (Scottish Water) as a starting point for any detailed discussions on adoption of SUDS measures. These criteria require any proposed basin to incorporate various requirements including a 3.5 m wide access track, etc.

SUDS Strategy

Surface Water Treatment

Treatment is a SEPA requirement in accordance with Regulatory Method (WAT-RM-08) for the regulation of urban drainage:

'In terms of SEPA's remit, however, the main regulatory SEPA driver for SUDS is clearly to protect water quality, and through construction of retrofit SUDS, to begin to achieve improved water quality, and reduce the length of polluted waters downgraded as a result of urban drainage impacts. For new developments, SUDS aim to protect water quality, and that includes groundwater. Where groundwater pollution is identified as a risk, then appropriate SUDS such as lined SUDS to prevent groundwater pollution should be used.'

'In addition, the requirement under the Water Framework Directive for SEPA to achieve good ecological status means that SEPA has a stronger role in preventing hydrological impacts from runoff to watercourses as well as protecting water quality.'

SUDS should be designed in accordance with CIRIA C697 The SUDS Manual, providing the appropriate levels of treatment; two for road runoff and one for roof runoff, and follow the SUDS principles of treatment train surface water management.

SUDS features can be in the form of source control. Features such as filter drain/beds, swales, bio-retention zones and permeable surfaces, which provide the first level of treatment, should be developed and implemented for the development.

Site control features, which could include swales and other linear SUDS features, will provide the required second level of treatment where this is not provided in source control.

As noted previously, it is possible that thereafter flows may either be conveyed to direct outfall into the Niddrie Burn or via the existing basins serving BioQuarter Phase 2 and eventual discharge to the burn. In the former scenario a third level of treatment, if required, would be provided by underground storage (filter blanket).

Surface Water Attenuation

In general terms, attenuation should be designed to ensure that flows arising from all rainfall events, essentially up to the 200-year event, are attenuated on site and then released at a rate no greater than the agreed discharge limit.

The architect (Allan Murray Architects Ltd) has provided assumed areas for BioQuarter Phases 2-4 as follows:

- Overall Site Area: 393,939m²;
- Buildings (roofs): 118,277m²;

- Green roofs (assumed): 11,828m²;
- Main access roads: 23,690m²;
- Access road area: 5,770m²;
- Car parks/paving/hardstandings: 92,101m²;
- Soft landscape: 154,101m²

The hardstanding area within the site therefore totals 239,838m². The green roof figure has been discounted to allow robust attenuation calculations while the required volume may reduce as detail is confirmed.

An allowance of 10% has been assumed for the soft landscape contribution into the on-site drainage systems. The soft landscape area is 154,101m² and therefore the contribution of this area will be based on an effective hard area of 15,410m².

This produces an overall effective hard area of 255,248m² which has been used as the contributing area in attenuation calculations.

Attenuation design modelling has been completed for the 30 year and 200 year return period storms, including a 10% allowance for climate change, using the potential discharge limit, i.e. 165.5 l/s. Maximum storage volumes for both scenarios are presented in the table below:

Return Period (years)	Climate Change Allowance (%)	Discharge Limit (l/s)	Storage volume required (m ³)
30	10	165.5	7,981
200	10	165.5	13,356

Runoff from the upper slopes to the south is not quantifiable at this stage but will need to be taken account of in the final design. It may be possible to design a land drainage system that can tie-in to the existing BioQuarter land drainage system, assumed to outfall to either the Niddrie or Magdalene Burn. This will need to be checked and any issues addressed during the detailed design of a drainage scheme for the site.

Provision of this volume of attenuation by means of a series of SUDS and attenuation features, will ensure that the downstream flow is limited to the agreed rate of discharge. The concept of how this may be achieved is indicated on our sketch drawing number 1074-SK-002.

It is anticipated that permeable paving could be provided within surface car parks, paved areas and hardstandings. Swales, bio-

retention zones and filter trenches could be located adjacent to roads, and integrated within the landscape strategy. These would constitute source control SUDS.

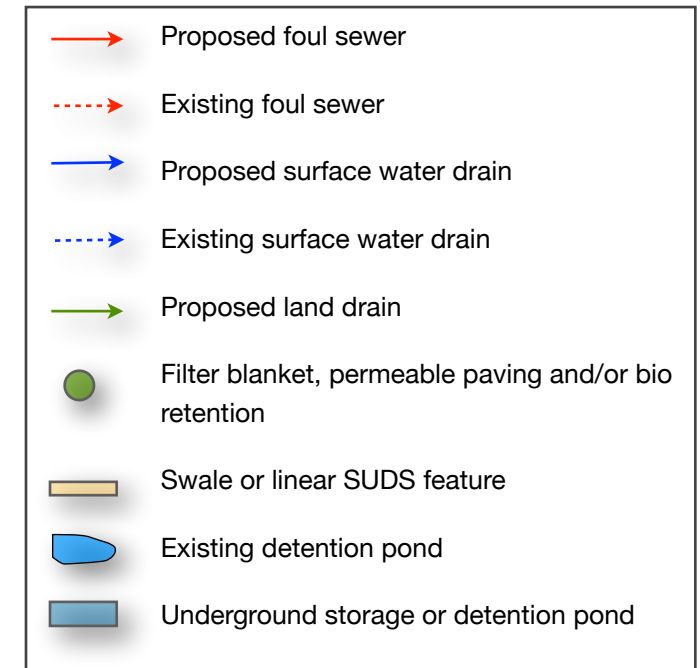
Site control measures will also be utilised, providing further attenuation volume, and could include swales, other linear SUDS features or underground storage.

Drainage and SUDS proposals for development of the Edmonstone Estate site to the south of the BioQuarter Phase 4 site have been reviewed as part of this study. The preliminary design carried out by Fairhurst, on behalf of Sheratan Limited, indicates a surface water network draining to a single detention basin. The flow is shown as being attenuated to the 1 in 2 year pre-development greenfield runoff rate. It will be for the developer of this site to ensure that they drain to the natural catchment. Consequently attenuation calculations for the BioQuarter Phase 4 site have not included flows from this development.

Conclusions

In conclusion, it is considered that an appropriate and adequate drainage system can be designed to serve the proposed development site and that there are suitable outfalls routes for both foul and surface water.

Formal connection applications to Scottish Water and further discussions with City of Edinburgh Council



1074-SK-002 – SUDS Strategy

Appendix 1 - Technical Information

Air Quality

Introduction

This section provides a summary of the existing air quality data available from CEC and air quality information on the Scottish Air Quality Website to gain an understanding of the existing air quality issues in the vicinity of the site. A review of potentially sensitive receptors which may be sensitive to changes in air quality as a result of the proposals has also been undertaken. The findings of this desk based assessment have been used to identify the potential constraints and opportunities to the proposed development. Consultation has also been undertaken with CEC and Midlothian Council (MC).

Review of Baseline Information Local Air Quality Management

City of Edinburgh Council's review and assessment of air quality

The CEC has completed four rounds of the review and assessment process. As a result of these assessments CEC has declared three Air Quality Management Areas (AQMAs), for the likely exceedence of nitrogen dioxide (NO₂) air quality objectives due to emissions from road traffic. No AQMAs are located in close proximity to the proposed development site. The nearest AQMA is the Central AQMA designated due to breaches of annual and hourly NO₂ air quality objectives and is located in the city centre approximately 5.5km northwest of the proposed development site.

Midlothian Council's review and assessment of air quality

The MC boundary is approximately 0.4km east of the Phase 4 site eastern boundary. MC has completed and published three rounds of the review and assessment process.

As a result of these assessments MC has declared one AQMA at Pathhead due to potential future exceedences of particulate matter (PM₁₀) air quality objectives. The Pathhead AQMA is not located in close proximity to the site; it is approximately 11km southeast from the southeast border.

Existing Air Quality

The proposed development site is located in a suburban area where air quality is mainly influenced by emissions from road transport. To the south west of the site the A7, Old Dalkeith Road passes close to the site.

Review of industrial processes provided in the CEC and MC review and assessment reports and the Scottish Environmental Protection Agency (SEPA) website indicates that there are no industrial pollution sources that will significantly influence local air quality.

Consultation with CEC and MC

Consultation was undertaken with the appropriate Environmental Health Officers at both CEC and MC who confirmed that they do not have any current concerns with respect to air quality and dust at or in the vicinity of the site proposed for development.

It was highlighted that planning permission in principle (11/00174/PPP) has been granted by MC for a 'Zero Waste' site at Millerhill (Dalkeith) waste recycling and treatment facility at Millerhill approximately 2.4km northeast from the EBQ Phase 4 site. The proposals include an aerobic digestion facility, mechanical biological treatment and production of energy from waste plant. An air quality assessment was submitted as part of the planning application and the results indicated that "for a facility which is well designed and suitable mitigation measures (including setting appropriate stack heights for combustion sources) are incorporated into the design, there are unlikely to be any significant impacts on air quality".

CEC also noted that they have received odour complaints due to muck spreading activity in March 2012 from residents in the Gilmerton area to the south of the site.

Local Air Quality Monitoring Data

Automatic Monitoring Data

There are no automatic monitoring stations located within the immediate vicinity of the proposed development site. Concentrations of pollutants measured at the nearest two automatic monitoring stations and a monitoring station in a similar area (suburban background) are presented in Tables 1 and 2 below.

Table 1: Concentrations measured at CEC automatic monitoring stations

Pollutant	2009	2010	2011
AURN St Leonards FDMS (Urban background)			
Grid reference 326265 673129, approximately 4.5km south west from proposed development site			
Annual mean NO	24	31	25
Number of hourly mean NO >200µg/m	0	0	0
Annual mean PM	17	14	15
Number of 24 hour mean PM > 50µg/m	2	1	0
Annual mean PM	8	9	8
Number of 24 hour mean SO >125 µg/m	0	0	0
Number of 1 hour mean SO >350 µg/m	0	0	0
Currie High School TEOM (Suburban background)			
Grid reference 317595 667909, approximately 12.0km north west from proposed development site			
NO ₂	-	10*	-
Number of hourly mean NO >200µg/m	-	0	-
Annual mean PM	-	11	-
Number of 24 hour mean PM > 50µg/m	-	0	-
* Currie High School air quality monitoring station is not supported by the Scottish Government's data ratification programme and NO provisional VCM The PM ₁₀ corrected to provide a gravimetric equivalent using King's College Volatile Correction Model (VCM)			

Table 2: Concentrations at MC automatic monitoring station

Pollutant	2010	2011
Dalkeith (Roadside)		
Grid reference 333168 667337, approximately 4.3km south east from proposed development site		
Annual mean NO	24.9	21.0
Number of hourly mean NO 200µg/m	0	0
Annual mean PM	15.7	-
Number of 24 hour mean PM > 50µg/m	3	-

The automatic monitoring results show that there are no exceedences of the Air Quality Standard (AQS) annual mean objective level of 40µg/m³ NO₂ at any of the three monitoring locations for the years presented.

Concentrations of PM₁₀ meet the AQS annual mean objective of 18µg/m³ (to be achieved by 2010 for Scotland) at all three monitoring stations. The AQS annual average (proposed) objective level for PM_{2.5} in Scotland of 12µg/m³ was not exceeded at the St Leonards monitoring station.

The AQS objective for SO₂ concentrations are not exceeded at the St Leonards monitoring station.

Non-automatic monitoring station

CEC and MC have also undertaken diffusion tube monitoring across their areas for the pollutant NO₂. There are however no diffusion tubes located within the immediate vicinity of the proposed development site and only two tubes (within CEC's administrative area) within 3km of the site. Concentrations of NO₂ measured by diffusion tubes within 3km are presented below in Table 3.

Table 3: CEC NO₂ diffusion tube monitoring results (µg/m³)

Site	Approximate distance from site (km)	Grid reference	Site type	2010
Niddrie Main Rd	1.64km north west	328889, 671649	Roadside	32.5
Dalkeith Rd	2.79km north west	327231,671782	Roadside	27.8

The results show that neither of the two monitoring tubes exceeded the annual average AQS objective level of 40µg/m³.

Background Air Quality Data

Estimated background concentrations in the vicinity of the proposed development site have been presented below in Table 4 from the

Scottish Air Quality website and the DEFRA LAQM website, where estimated background concentrations of the pollutants included in the AQS have been mapped at a grid resolution of 1 x 1km grid squares for the whole of the UK.

Prior to April 2012 these estimates assumed that, with improvements in vehicle technologies and tighter controls on emissions to air, background pollutant concentrations would improve over time, which has since been found not to be the case, therefore revised background 2010 maps have been released. Both the Scottish Air Quality website and the DEFRA background concentrations are provided below.

Table 4: Estimated background concentrations (µg/m³)

Pollutant	Scottish Air Quality				Defra LAQM	
	2010		2012		2010	
	32950, 66950, 0	32950, 67050, 0	32950, 669500	32950, 67050, 0	32950, 669500	32950, 67050, 0
Oxides of Nitrogen (NO _x) (µg/m)	35.15	32.05	32.74	29.82	24.68	22.79
Nitrogen Dioxide (NO ₂) (µg/m)	20.12	18.64	18.98	17.55	16.94	15.84
Particulates (PM ₁₀) (µg/m)	13.36	14.80	13.12	14.56	13.76	15.17

The table above shows that for all years estimated background concentrations are below their AQS objective levels.

Identification of Receptors

Sensitive Locations

Sensitive locations are those where the public may be exposed to pollutants from the proposed development site. These will include locations sensitive to an increase in dust deposition as a result of on-site construction activities, or exposure to gaseous pollutants from exhaust emissions from construction site traffic and traffic associated with the proposed development, once it becomes operational.

Examples of locations that are sensitive to dust and particulate matter generated by construction activities are available in guidance published by IAQM1.

In terms of locations that are sensitive (both existing and proposed) to gaseous pollutants emitted from engine exhausts, these will include places where members of the public will be exposed to pollution over the period of time that they are present, and therefore

the most suitable AQS averaging period of the pollutant needs to be used for assessment purposes.

Consultation with CEC identified the following potential sensitive receptors to dust, particulate matter and vehicle emissions in the surrounding area:

- East Lodge, The Wisp;
- Cloverfoot Cottages, The Wisp;
- Edmonston Cottages, The Wisp;
- Home Farm (Scheduled Ancient Monument), The Wisp;
- Residential properties on Old Dalkeith Road;
- Hunter's Hall Public Park, north of the site;
- Residential properties at Danderhall;
- Residential properties at Niddrie;
- Residential properties at Craigmillar; and
- Residential properties at Greendykes.

A review of local aerial photographs and mapping data found that of these the key [human] sensitive receptors for construction impacts will be the residential area located immediately south of Old Dalkeith Road which are within 20m of the site boundary. With regards to ecological receptors, there are no relevant statutory designated sites located within the immediate vicinity of the proposed development site that are considered sensitive to air quality.

Summary of Potential Impacts

The local air quality issues in the vicinity of the proposed development have been discussed with the appropriate EHOs at CEC and MC to identify all potential air quality issues which are summarised below.

Construction Phase: Dust

During the construction phase, activities undertaken on the development site may cause dust and particulate matter to be emitted to the atmosphere. If transported beyond the site boundary, dust can have an adverse impact on local air quality.

Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust therefore, is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause 'soiling' and discolouration. This may result in complaints of

nuisance through amenity loss or perceived damage caused, which is usually temporary.

The smaller particles of dust (typically less than 10µm in aerodynamic diameter) are known as particulate matter (PM10) and represent only a small proportion of total dust released. As these particles are at the smaller end of the size range of dust particles they remain suspended in the atmosphere for a longer period of time than the larger dust particles, and can therefore be transported by wind over a wider area. PM10 is small enough to be drawn into the lungs during breathing, which in sensitive members of the public could cause an adverse reaction. As a result of this potential impact on health, standards and objectives for PM10 are defined in the AQS and Regulations.

Significant increases in dust and PM10 deposition levels can also affect sensitive vegetation by blocking stomata, reducing photosynthesis and plant growth.

Sensitive locations (e.g. nearby residential properties within the vicinity of the site) may experience adverse impacts during construction if effective mitigation is not employed.

Construction Phase: Road Traffic Emissions

Exhaust emissions from construction vehicles will have an impact on local air quality both on-site and adjacent to the routes used by these vehicles to access the site. The construction phase of the development will require vehicles to bring materials to and from the site. Construction traffic usually has a high percentage of Heavy Goods Vehicles (HGVs) and may cause temporary elevated concentrations of pollutants along the designated construction routes. The main pollutants of concern for road traffic are generally considered to be NO₂, PM10, CO and C₆H₆. Of these pollutants, emissions of NO₂ and PM10 are most likely to result in exceedences of the relevant air quality standards or objectives in urban areas.

Operational Phase

It is not anticipated that industrial emissions will be a constraint to the development.

The main source of emissions in the vicinity of the proposed development and which is likely to increase, is from road traffic.

Once construction has been completed the traffic generated by the development will have a permanent effect on local pollution concentrations, both on and around the proposed development site.

Emissions of NO₂ and PM10 are most likely to result in exceedences of the relevant air quality standards or objectives in urban areas. The EBQ is however located in a suburban area and estimated background concentrations suggest that air quality standards are not currently exceeded.

In addition, the cumulative impacts of other potential developments in the vicinity of the development site such as the Millerhill 'Zero Waste' site and proposed residential development (up to 888 units) at Greendykes Road are also likely to increase vehicle emissions in the local area adding to those generated by the local development.

Information regarding the proposed development is currently at outline stage and therefore the potential for odours from restaurant facilities and fumes and odours from laboratory facilities are not known. However, it is likely that with the implementation of suitable filters and exhaust ducts that the odours and fumes will be insignificant.

Broad Masterplan Parameters

Environmental Opportunities

The design of the masterplan for the proposed development can be developed in such a way as to minimise the increases in road traffic by provision of public transport and encouraging other alternate modes of transport (e.g. walking and cycling) and minimising the impact in increase of traffic through appropriate road junction design.

The masterplan concept has recognised this and provides for good access routes throughout the site, which would be anticipated to prevent queuing and congestion of traffic both across the development site and along the local road network, to reduce elevated vehicle emission rates generated at low speeds. The masterplan concept has been developed in close co-ordination with SKM as transport consultant, with careful consideration given to safe pedestrian and cycle routes throughout the development and to the wider area, to encourage the use of public transport and reduce the need for private car journeys. Consideration has been given to safe access on public transport to transport interchanges.

The risk of exposure of high air pollutant concentrations to proposed sensitive receptors can be minimised by careful design of the masterplan by placing any residential areas away from the main arterial roads i.e. the A7. It is not anticipated that the proposed development itself will generate any significant emissions with the exception of associated vehicle emissions. The most sensitive areas of development should be sited away from any areas where vehicles will accumulate across the site.

Further Study Required for Planning Application(s)

The EHO at CEC was consulted regarding their requirement for an air quality assessment and the preferred methodology for any future assessment of impacts on local air quality that would be required to support a planning application. They felt that detailed information regarding the development would need to be confirmed prior to them providing a view on their preferred methodology.

Given the size of the development site with potential car parking spaces of between 1833 and 3083, it is likely that a qualitative construction dust assessment and an air quality assessment including detailed dispersion modelling of road traffic emissions for the operational phase of the proposed development will need to be undertaken to support a future planning application.

Noise

Introduction

This section considers the potential risks and effects on and from the phase 4 development site with regards to noise and vibration. The assessment evaluates the likely baseline conditions relating to noise and vibration across the proposed development site and the likely effect on and from existing and future sources on noise- and vibration-sensitive receptors. Consideration has been given, not only to the broad criteria that would be required for the proposed uses within the EBQ Phase 4 development site, but also specific assessments that should be undertaken as development progresses.

Review of Baseline Information

The site is bound to the south-west by the A7 road, to the immediate north-west by the EBQ Phase 2 and 3 sites, to the far north-west by the EBQ Phase 1 site, to the south-east by Edmonstone estate and to the north-east by existing open fields.

Local Authority Consultation

The CEC Environmental Health Department has confirmed that noise and vibration considered qualitatively at the masterplan stage would be appropriate, with detailed applications within the site including more in-depth studies, during which appropriate parameters would be defined as and when planning applications are proposed.

Baseline Noise

The ambient noise across the site is considered likely to be determined by road traffic on the A7.

This is confirmed by the data presented in the submitted environmental statements for adjacent land parcels. Ambient noise levels are likely to be high on land immediately adjacent to the A7. Land portions further away from the A7 are likely to experience much lower noise levels. Further towards the centre of the site, the ambient noise climate is likely to be relatively low and determined by a combination of road traffic on the A7 and local activity associated with the adjacent land parcels.

Assuming development is designed and built in accord with current good practice, noise generated by development on the EBQ Phases 1, 2 and 3 is likely to be minor and intermittent. This is evident from the Phase 1 site by the submitted environmental statements for the adjacent land parcels.

There are no significant noise generating developments (NGDs) surrounding the EBQ Phase 4 development site.

Baseline Vibration

Upon review of the surrounding area there are no railway lines or industrial processes that might be expected to cause significant or measurable vibration levels.

The road surface and likely distance between road traffic and building occupants suggests that vibration from road traffic would not be expected to cause a nuisance.

Given the new design of buildings within EBQ Phases 1, 2 and 3, associated vibration generating activities or equipment would be expected to be suitably isolated so as not to contribute significantly to the vibration exposure across the EBQ Phase 4 development site.

Based on the above review, vibration levels across the EBQ Phase 4 development site are, therefore, not expected to be significant.

Identification of Receptors

Noise-sensitive receptors would typically comprise, in ascending order:

Sensitivity	Description	Example of noise-sensitive receptor
High	Receptors where people or operations are particularly susceptible to noise	<ul style="list-style-type: none"> Residential, including private gardens where appropriate Quiet outdoor areas used for recreation Conference facilities Theatres/Auditoria/Studios Schools during the daytime Hospitals/residential care homes Places of worship
Medium	Receptors moderately sensitive to noise, where it may cause some distraction or disturbance	<ul style="list-style-type: none"> Offices Bars/Cafes/Restaurants where external noise may be intrusive Sports grounds when spectator noise is not a normal part of the event and where quiet conditions are necessary (e.g. tennis, golf, bowls)
Low	Receptors where distraction or disturbance from noise is minimal	<ul style="list-style-type: none"> Buildings not occupied during working hours Factories and working environments with existing high noise levels Sports grounds when spectator noise is a normal part of the event Night Clubs

Vibration-sensitive receptors would also follow a similar grading.

Nearby existing and proposed receptors highly sensitive to noise and vibration are understood to be as follows:

Sensitivity	Nearby noise-sensitive receptor
High	<ul style="list-style-type: none"> East Lodge, The Wisp; Cloverfoot Cottages, The Wisp; Edmonston Cottages, The Wisp; Home Farm (Scheduled Ancient Monument), The Wisp; Hunter's Hall Public Park; Residential properties at Danderhall, Niddire, Craigmillar, Greendykes (existing and proposed) and on Old Daleith Road The Royal Infirmary Edinburgh Hospital; Castelbrae Community High School; Healthcare facilities on Phase 2 adjacent, including those within the NINE development and the SCRM development; The proposed new care village and care home to the east; The new private hospital to the east

Additional office facilities within the adjacent land parcels, including those within the NINE and SCRM developments should all be considered as having a medium sensitivity to noise and vibration during daytime hours.

Of the receptors nearby that are considered to be highly sensitive to noise, the residential properties immediately adjacent to the site on Old Dalkeith Road are considered to be the closest and worst case with respect to impact from construction activities.

Summary of Potential Impacts

The specific effects that have been considered are presented below and have been divided into the construction and operational development phases.

The considered construction phase effects are:

- Construction noise effects on current noise-sensitive receptors in the vicinity of the site; and
- Construction vibration effects on current vibration-sensitive receptors in the vicinity of the site.

The considered operational phase effects are:

- Changes in local road traffic noise levels resulting from use of the proposed development, and the effect of these changes on local noise-sensitive receptors;
- The effect of noise from fixed plant items and commercial operations on current and proposed noise-sensitive receptors.

Factors to be considered when designing the development are:

- The effect of the current local noise environment on proposed noise-sensitive aspects of the development, e.g. residential apartments, offices, and healthcare facilities.

Construction Noise

Construction noise has the potential to affect the surrounding noise-sensitive receptors. Given the separation distance, the worst case noise impacts are likely to comprise construction activities close to the western boundary impacting on noise-sensitive receptors within the EBQ Phase 2 development site and construction activities close to the southern boundary impacting on noise-sensitive receptors on Old Dalkeith Road.

With appropriate management practices and monitoring of noise levels during critical phases, it is likely that noise can be controlled to an acceptable level.

Construction Vibration

Construction activities close to the site boundaries have the potential to result in perceptible vibration within nearby vibration-sensitive surrounding properties. The reasonable separation distances between the EBQ Phase 4 development site and surrounding vibration-sensitive receptors should ensure that the likelihood of significant vibration effects during significant vibration-generating activities, such as piling (if applicable), is low.

With appropriate management practices and monitoring of vibration levels during critical phases, it is likely that vibration can also be controlled to an acceptable level.

Noise Exposure on Proposed Development

Noise-sensitive developments adjacent to the A7 road are likely to require specific external building fabric acoustic specifications to ensure appropriate internal noise levels.

External road traffic noise levels are likely to require careful consideration of the location of any outdoor amenity areas where these are proposed near to the A7.

With appropriate site design, noise exposure on proposed development can be controlled to acceptable levels.

Changes in Local Road Traffic Noise

Given the type of development proposed on the EBQ Phase 4 site and the likely existing road traffic activity in the area considered, it is unlikely that a significant change in road traffic noise would occur from vehicles associated with the EBQ Phase 4 development site alone. In conjunction with other development in the surrounding area,

particularly development proposing high numbers of residential properties, the cumulative change in noise has the potential to increase road traffic noise levels in the surrounding area.

Noise Impact from Fixed Plant and Commercial Operations

Noise from fixed plant, such as air cooled chillers, air-handling units and extract fans, and commercial operations, such as service yard activity and warehouse processes, all have the potential to affect surrounding noise-sensitive receptors.

Fixed plant noise can be sufficiently mitigated through design and noise from commercial premises is typically controlled through a combination of management processes and design features.

Broad Masterplan Parameters

The following sections detail suitable outline criteria or standards that would be applicable to the development with the Phase 4 site. It is expected that during detailed application stage, noise and vibration effects should be considered using the latest available and most appropriate standards, guidance documents, codes of practice and local authority requirements.

In establishing relevant criteria for assessment, consideration should be given to current planning requirements. Planning Advice Note 1/2011 outlines current overarching government aspirations for planning applications where noise or vibration should be considered. Further guidance on the assessment of noise is provided in the Technical Advice Note: Assessment of Noise.

The following standards, guidance documents and codes of practice provide the current most appropriate methods of assessment for noise and vibration, considering current planning requirements.

Construction Noise and Vibration

Any noise and vibration from construction sites should adhere to the requirements of the Environmental Protection Act 1990 and The Control of Pollution Act 1974.

Assessment of construction noise should be undertaken in accordance with BS5228-1: 2009 'Code of practice for noise and vibration control on construction and open sites. Noise', with the assessment criteria selected from Annex E and agreed by the local authority. Where criteria are not defined, appropriate criteria from Section E.2 of Annex E should be used.

Assessment of construction vibration should be undertaken in accordance with BS5228-2: 2009 'Code of practice for noise and vibration control on construction and open sites. Vibration', with the assessment criteria selected from Annex B and agreed by the local

authority. Where criteria are not defined, construction vibration should be controlled within buildings accommodating high or medium vibration- sensitive receptors to ensure continuous normal activities do not exceed 1mm/s (Peak Particle Velocity, PPV) in any axis to limit disturbance and at no point should any activities exceed 10mm/s PPV in any axis to limit building damage.

Noise Exposure on Proposed Development

External Noise

It should be ensured that noise within outdoor amenity areas is below the level that may be regarded as likely to cause 'serious annoyance' as defined in World Health Organisation 1999 document 'Guidelines for Community Noise'.

Residential

Residential dwellings should be designed and built to ensure compliance with the internal noise criteria as defined in BS8233: 1999 'Sound insulation and noise reduction for buildings – Code of practice', with 'reasonable' or 'good' criteria selected as per the guidance from local environmental health. Sound insulation in residential dwellings should comply with requirements within The Building (Scotland) Regulations in its current form.

Unless specified by the operator or the local authority, new hotels should be designed and built to comply with the relevant criteria in BS8233: 1999 and the requirements within The Building (Scotland) Regulations in its current form.

Healthcare

Unless specified by the end-user or the local authority, new healthcare buildings should be designed and built to comply with criteria outlined in the Scottish Health Technical Memorandum 08-01: Acoustics.

Educational/Teaching Facilities

New buildings used for educational or teaching purposes should be designed and built to comply with the Scottish Government's School Design: Optimising the Internal Environment, which currently refers to use of the criteria outlined in Department for Education and Skills document Building Bulletin 93 (Acoustic Design of Schools).

Offices

Unless specified by the end-user or the local authority, new offices should be designed and built to comply with the latest available British Council for Offices guidelines and/or the relevant criteria in BS8233: 1999.

Sports Facilities

Any sports facilities on site should be designed and built to comply with appropriate Sport Scotland guidance.

Changes in Local Road Traffic

Where required by the local authority, or where road traffic movements are anticipated to change by 25% or more, an assessment of the noise impact from changes in road traffic should be undertaken following the principles of the Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 HD 213/11 – Revision 1 ‘Noise and Vibration’.

Noise Effects from Fixed Plant

The noise effect from fixed plant should be assessed in accordance with BS4142: 1997 ‘Method for rating industrial noise affecting mixed residential and industrial areas’, with the excess over background set in accordance with the requirements of local environmental health. Where not defined, the rating level should be limited to ensure the likelihood of complaints is of marginal significance as defined in the standard.

Noise Effects from Commercial Operations

Noise from commercial operations should be reviewed and controlled to ensure compliance with the relevant internal and outdoor amenity noise criteria either as specified in the section Noise Exposure on Proposed Development or as previously agreed with local environmental health.

Further Study Required for Planning Application(s)

At the detailed planning application stage for each development within the EBQ Phase 4 development site, consultation with local environmental health should be undertaken to establish any specific criteria.

As a minimum, to mitigate the noise and vibration effects on the surrounding area, an assessment in accordance with the broad masterplan parameters as outlined above, or as agreed by local environmental health, should be undertaken for the following effects:

- Construction Noise and Vibration;
- Changes in Local Road Traffic;
- Noise Effects from Fixed Plant;
- Noise Effects from Commercial Operations.

Ecology and Biodiversity

This report focusses on the land identified for the proposed Phase 4 development, comprising abandoned arable fields, woodland strips and an area of parkland. Planning permission has already been granted for development on Phases 2-3.

Review of Baseline and Identification of Receptors

The habitat resource of the land is simple; tall ruderal, woodland strips and parkland with scattered trees. In addition, there is a short length of defunct hedgerow in the north west of the land.

There are two areas of woodland that are barely large enough to be described as woodland. Tree species found in both areas include oak, ash, hawthorn, elder, maple and sycamore. In the roadside woodland yew is present but absent elsewhere. Trees reach a maximum height of 25 metres and are primarily multi-stemmed. There is evidence of recent cutting back on the woodland edges. There is fire damage to some trees on the south boundary.

Holly and snowberry are locally dominant in the shrub layer. Bramble is occasionally found. The field layer is limited to nettle, rosebay willow-herb, thistle, and locally-dominant ivy. There are a few trees stumps which suggest the area has been managed historically. There are clearings amongst the trees, dominated by nettle and rosebay willow-herb. The ground under yew trees is bare. There is evidence of public use in this area in the form of litter, footpaths and small fires.

The woodland between the two fields has a dense shrub layer, including holly, regenerating ash, brambles, and young elder. The field layer has areas of locally dominant colt's foot and tall ruderal species such as thistle. The woodland habitats on the site have very local habitat value.

The most significant species associated with the woodland is Himalayan Balsam (*Impatiens glandulifera*) which is colonising the north boundary of the central woodland strip and appearing elsewhere across the land. This is a particularly invasive alien plant species.

Former arable fields comprise the most of the site. Species-poor tall ruderal habitat, dominated by docken, rosebay willow-herb, thistle, ragwort, Yorkshire fog and cock's foot, covers this land, indicating the nutrient rich character of the soil. The habitat is very common and has very local value.

The northeast of the proposed development site is parkland with scattered trees. The fields have a history of intensive grazing and are improved grassland. The tree cover comprises specimen trees, including Sycamore, Ash, Elm, Horse Chestnut and Lime. The condition of the trees is variable from good to damaged and poor. Grazing has been abandoned for some time and the habitat is now nutrient rich neutral grassland/tall ruderal mosaic. This habitat has a local value and has been managed as parkland since the first series OS maps were produced in the mid nineteenth century.

The parkland habitat is being colonised by Himalayan balsam. The species has arrived at Edmonstone within the last three years but already stands extend 30m into the parkland habitat from woodland to the east.

There is a defunct hedge in the northwest of the site comprising unmaintained hawthorn with occasional trees and a vegetated strip characteristic of neutral grassland. Linkages of this habitat to similar

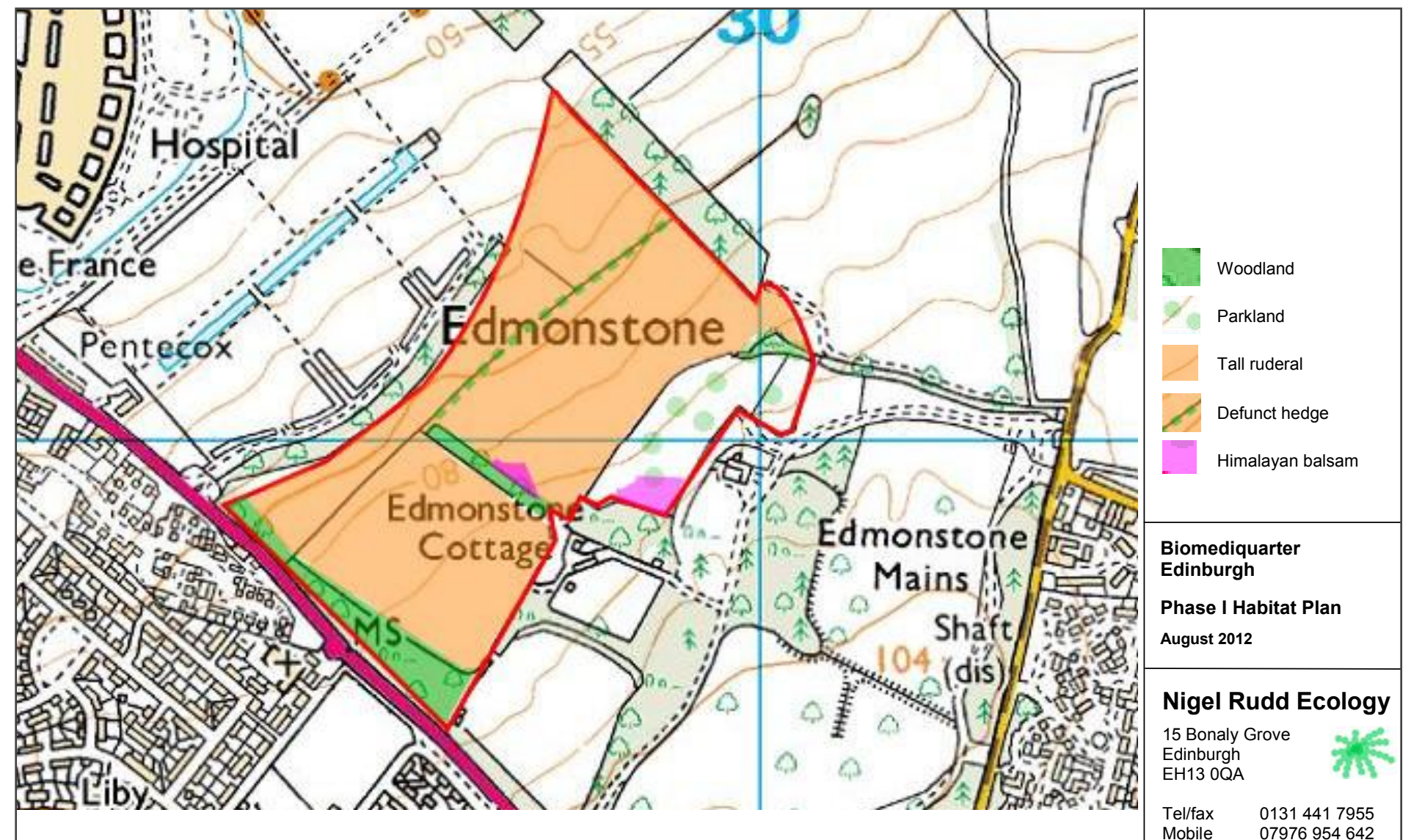
resources have been broken by recent development operations and poor maintenance of the hedge as a consequence of arable, rather than grazing, land use.

The Edmonstone Estate Local Biodiversity Site (LBS) is the most significant ecological receptor potentially affected by the proposals. Edmonstone Estate LBS covers 38ha.

The designated site is summarised as, 'an estate consisting of a mixture of woodland, grassland and arable habitats that support a few locally notable species.'

No notable habitats have been recorded on the estate.

The locally notable species are not specified in the schedule for the site but TWIC data suggest that they are grassland species; pendulous sedge (*Carex pendula*), crested hair grass (*Koeleria*



The Edinburgh BioQuarter Masterplan

macrantha) and creeping thistle (*Cirsium arvense*) found in the south-east of the LBS outside the proposed site boundary.

The LBS designation supersedes designation as an Urban Wildlife Site as a consequence of redrafting Scottish Planning policy. The site is designated because of the extent of semi-natural habitat it supports. The habitat resource is in itself unexceptional and there is no evidence of protected species using the land.

Development of the proposed EBQ site would only result in the loss of low value habitats with minimal impact on the Edmonstone Estate LBS.

The site was assessed in 2006. At this time there was no evidence of Himalayan balsam on the land. The plant is now well established and, unless controlled, will spread with a consequent significant deterioration of site biodiversity. The species is not controlled in Scotland but it is imperative that the species is controlled within the LBS if the status of the site is to be maintained.

There is no evidence of European and nationally protected species using the site. There is limited potential for bats to roost in trees in the woodland belts. Few of the trees have defects that would provide roost opportunities. It is possible that bats forage along the edge of the tree belts.

There are no badger setts on or near the proposed development land and no signs were found of badgers using the land.

There are no records of protected species using the land even though the land is a designated wildlife site.

Summary of Potential Impacts

Ecological impacts of development as proposed are:

- Loss of semi-natural habitat; woodland, tall ruderal, parkland scattered trees and a short length of defunct hedgerow.
- Loss of habitat elements of Edmonstone LBS.
- Eradication of an invasive plant species.
- Biodiversity enhancement of the land.

The woodland habitats that will be lost are species poor and simple in structure. They are colonised by two particularly vigorous alien plant species; Himalayan balsam and snowberry. There is evidence of 'leisure' use of the woodlands in the form of litter, clearance of vegetation and fire sites. Loss of the woodland habitat will have a minor impact as the habitat value is very local, the habitat is degraded and degrading further as a consequence of alien plant species colonisation.

Tall ruderal habitat loss will be extensive. This is a secondary habitat that has arisen from abandonment of arable farmland. The habitat has very local value, is species poor and temporary progressively moving to scrub and species-poor woodland if left un-managed. Loss of the habitat will have a very minor impact.

Parkland scattered trees is a longstanding habitat and the most important habitat on the land because of its age. The habitat is species poor and has a simple structure. Grazing, which has maintained this habitat, has been abandoned causing a decline in value. In addition, the habitat is being invaded by Himalayan balsam, if left unchecked this will result in considerable biodiversity degradation of the habitat, which would spread to other habitat types.

Loss of defunct hedgerow will remove a small area of shrub habitat and occasional trees. The habitat is unmanaged and has been this way for some time. Particular value attaches to hedges because of the links they provide between semi-natural habitat resources. Hedge habitat on the land is fragmented because of poor management and recent construction work. Loss of the hedgerow would have a minor impact.

Woodland and parkland habitat loss described above comprises change of use of areas of the Edmonstone LBS. The boundary of the LBS was set down in 1999 when the site was designated a Scottish Wildlife Trust Urban Wildlife site. The boundaries of the site are set down to include land not in arable production. The designation did not involve preparation and implementation of a management plan. The semi-natural habitat resource has not been managed and is in decline in terms of biodiversity. There are extensive areas of rhododendron and increasing areas of Himalayan balsam within the LBS which are causing decline of the biodiversity value of the LBS. Loss of the un-managed habitat will have a minor impact on local biodiversity.

The overall potential impact of development as proposed will represent a minor impact on local biodiversity.

Development will include construction of new buildings set in a designed landscape. Development of this nature has the potential to provide for enhancement of biodiversity opportunity on the land as identified in NPPG 14. There is scope for introduction of appropriate native species tree and shrub planting and the establishment of herbaceous and grassland planting that promotes invertebrate into the new landscape resulting in increase in species and habitat diversity. There is opportunity for minor positive impact as a consequence of development thereby mitigating the impact of semi-natural habitat loss.

As well as the potential for creating new bio-diverse habitat there is opportunity to ensure that the newly-created resources are brought under management for enhancement of biodiversity. In addition to new planting new nest sites and refuges can be incorporated into the development that will assist threatened species survive

Development affords the opportunity to remove Himalayan balsam from the land, drawing attention to its presence such that the initiative might encourage similar work on adjoining land. Removal of the species from the land represents a minor positive impact. It is probable that Scotland will follow England and Wales in adding this species to the list of controlled species set out in Schedule 9 of the Wildlife & Countryside Act 1981 as amended. If this happens, removal of the species from the land would have a significant positive impact.

Broad Masterplan Parameters

Development of ecologically low value land incorporating biodiversity enhancing measures will build on provisions set out in recent development proposals for land in the north.

Detailed design proposals can include elements which set a template for the approach to development of land to the south which leads to enhancement of the Edmonstone LBS.

Further Study Required for Planning Application(s)

A number of surveys have been carried out over the land since 1999, drawing similar conclusions to those presented above. The site is simple in structure, species poor and the habitats present unexceptional. No protected species are resident on the site. The findings of the surveys have led to the conclusion that the land can be developed as proposed without an adverse effect on the Edmonstone LBS.

Irrespective of the above, each planning application must be determined on its merits. Ecological issues can change significantly if protected or controlled species colonise the land and it will be necessary to undertake habitat and species surveys to inform the forthcoming applications.

Further survey work should include: habitat mapping; protected species surveys (bats and badgers) and controlled species surveys (giant hogweed, Japanese knotweed and Himalayan balsam).

Ground Conditions

Introduction

This section considers potential risks and impacts on the proposed masterplan development, associated with ground conditions, contamination and groundwater. It comprises a desk-based review of relevant available information, and a review of factors which have been or should be considered in the masterplan concept and future more detailed design process.

Review of Baseline Information

A desk study has previously been undertaken by Goodson Associates (2007), comprising a review of historical mapping, geological mapping, and data on industrial permits at and around the site. This was followed by an intrusive site investigation also undertaken by Goodson Associates (2008). These reports have been reviewed and an independent desk study has been undertaken to identify any potential concerns which may affect the masterplan development.

Site History

The site has historically been undeveloped greenfield land, with some woodland. No evidence of former structures or development on the site has been identified.

Historical land uses in the surrounding area have predominantly comprised greenfield land and woodland, with isolated properties such as farm houses. Some minor industrial uses such as smithies, mills and a coal depot were present in the wider area, but not immediately adjacent to the site. There has also been evidence of mining and quarrying in the vicinity, with a shaft present approximately 250m to the southwest of the site, and quarries from around 250m away. More substantial coal mines were located at Niddrie, more than 500m away from the site to the east and northeast.

Residential development of the surrounding area began in around the 1940s and continued through to the 1990s. The development of the RIE to the northwest of the site began in the 2000s, and there has been subsequent development within the EBQ Phase 2 area immediately to the northwest of the site.

Contamination

No current or historical contaminative land uses have been identified on or in the immediate vicinity of the site.

The Goodson Associates 2008 site investigation did not identify any contamination or ground gas concerns.

Additional desk studies and intrusive investigations have been undertaken by Environ and Faber Maunsell on adjacent land parcels, and these have identified no contamination or ground gas concerns.

Geology

The superficial geology underlying the site is indicated to be glacial till, which is expected to typically comprise stiff sandy clay with cobbles and boulders. This was confirmed by the site investigation works. The depth to rockhead was found to be 0.7m to 3.3m below ground level.

The bedrock geology is indicated to comprise the Hopetoun Group of the West Lothian Oil Shale Formation, made up of mudstones, siltstones, sandstones and some thin coals and oil shales.

Groundwater

The till deposits underlying the site are expected to be very weakly permeable, although there may be irregular lenses of more permeable sands and gravels. Site investigation results indicated little groundwater in the upper 3m below ground level.

The bedrock is likely to be moderately permeable, with flow generally in fissures and discontinuities.

The Goodson Associates 2008 site investigation did not identify any groundwater contamination concerns.

Mining

Information from the British Geological Survey and the Coal Authority indicates no record of mining beneath the site, nor any mine entries within the site boundary. Previous investigations by Mason Evans Partnership in 2003 also did not identify any mine workings beneath the Phase 4 EBQ site, nor any evidence of historical quarrying. It is known that limestone quarrying and mining occurred in the wider area, in addition to coal mining, however based on the available information and previous investigations, there is no evidence to suggest there was historical surface or shallow underground mining at the site itself.

Identification of Receptors

The principal receptors identified are:

- Future site users, staff and residents;
- Future site building structures and services; and
- Construction workers during development.

Other potential receptors include neighbouring land users and residents, and groundwater beneath the site. However, these are considered to be less sensitive given that the underlying geology is expected to be weakly permeable, therefore limiting the potential for migration of any contamination which may be present.

Summary of Potential Impacts

Given the absence of historical development on the site, there are no concerns with respect to known sources of contamination which could affect the masterplan or which have required specific consideration in the masterplan concept development.

No significant potentially contaminative land uses have been identified in the close proximity. Therefore, again there are no concerns regarding contamination migrating onto the site, which have required specific consideration in the masterplan concept development.

Contamination-related risks to site users, staff and residents, site structures and services, and construction workers, are all considered to be low.

Broad Masterplan Parameters

No concerns relating to ground conditions, contamination or mining have been identified which have required specific consideration in the development of the masterplan concept.

Further Study Required for Planning Application(s)

It is not considered that any further detailed study would be required in order to progress planning applications for specific parcels of land within the site, although an updated site walkover would be good practice to confirm current site conditions.

Targeted intrusive investigations to confirm ground and ground gas conditions, and allow suitable design of foundations and services, may need to be undertaken prior to construction of structures or services at the site, depending on the specific locations and proposed building/infrastructure footprints, and whether the previous site investigation data can be relied on and is sufficient for the particular area being developed. Any such further investigations could likely be undertaken as a condition to planning consent.

Archaeology and Cultural Heritage

INTRODUCTION

The specific objectives of the cultural heritage study were to:

- identify the cultural heritage baseline;
- consider the study area site in terms of its archaeological and historic environment potential;
- present a suite of mitigation measures agreed with the City of Edinburgh Council.

APPROACH TO THE ASSESSMENT

The assessment has been conducted in accordance with the Institute for Archaeologists Code of Conduct (IfA 2010) and Standard and Guidance for Archaeological Desk-based Assessment (IfA 2008).

Desk-based assessment

Up-to-date information was obtained from appropriate sources on the locations of cultural heritage sites with statutory protection and non-statutory designations either within or in the vicinity of the proposed development. Details of the locations and extents of Scheduled Monuments, Listed Buildings, Historic Gardens and Designed Landscapes within the study area were obtained from Historic Scotland. Data was provided in a digital GIS format.

Information on the character and condition of known archaeological sites and monuments within the study area was obtained from the online PastMap resource maintained by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) and Historic Scotland (<http://jura.rcahms.gov.uk/PASTMAP/start.jsp>), and from the National Monuments Record of Scotland (NMRS).

Vertical aerial photographs held by the Royal Commission of Ancient and Historical Monuments of Scotland (RCAHMS) were consulted. Sorties dating from 1946 to 1961 were available for inspection.

Ordnance Survey maps and other early maps held by the Map Library of the National Library of Scotland were examined, to provide information on sites of potential archaeological significance and on historic land-use changes.

Bibliographic references were consulted to provide background and historical information. No attempt was made within the remit of this study to conduct detailed historical analysis.

The Scottish Palaeoenvironmental Database (<http://xweb.geos.ed.ac.uk/~ajn/spad>) which records the distribution of

known palaeoenvironmental sites within Scotland and the online Historic Land-Use Assessment Data for Scotland maps, maintained by the RCAHMS (<http://www.rcahms.gov.uk/>) were consulted. No information relevant to the study area was found.

Field Survey

A reconnaissance field survey of the site (RCAHMS Level 1) was undertaken in July 2012 to locate all visible cultural heritage sites, monuments and features, both those identified during the desk-based assessment and those previously unrecorded, and record their character, extent and current condition. Cultural heritage site locations (and where appropriate their extents) were logged using a Mobile Mapper GPS Navigation system accurate to around 10m. Identified sites were recorded on pro-forma monument recording sheets and by digital photography.

Consultation

Meetings were held with the City of Edinburgh Council, Archaeology Service (CECAS) on 13th and 28th August 2012 to discuss the cultural heritage implications of development within the EBQ Phase 4 Area. The mitigation measures presented below were agreed at that meeting.

ARCHAEOLOGICAL POTENTIAL

Twelve sites of archaeological interest were identified within the EBQ (Fig. CFA 1). Full details of these sites are presented as Appendix CFA1 (site identifier numbers from the appendix are used where relevant in the following text). Many of the sites lie within areas which have been tested by archaeological evaluations (Cook 2004a, 2004b), excavations (Kirby 2005a, 2005b, 2009) and watching briefs (McCarthy 2008).

Details of sites located within that part of the Supplementary Guidance proposal that lies beyond the boundary of the EBQ are presented in Appendix 2 and depicted on Fig. CFA 1, (site identifier letters from the appendix are used where relevant in the following text).

The archaeological potential of that portion of the Phase 4 area which has yet to be evaluated can be judged using this information in conjunction with the NMRS records for archaeological sites in the wider vicinity of the Biomedical Quarter Area.

There is limited evidence of prehistoric activity within the wider area. To the north a number of cist burials (NT 37 SW 45) were recorded during the mid-19th century, whilst to the immediate east a series of cropmarks visible on aerial photographs, which are believed to represent an enclosed settlement of prehistoric date (E), have been

protected as a Scheduled Monument (Index No. 6038). A probable fort (A), the north-eastern part of which is visible on aerial photographs, is located to the east of the scheduled settlement. Trial trenching (Johnson 2007) failed to identify any remains of the fort in the area to the south of the cropmark which had suffered considerable disturbance as a result of mining activity. Further remains of the fort may be preserved to the west of The Wisp road. No remains of prehistoric origins were discovered by the intrusive investigation elsewhere within the Biomedical Quarter Area; thus, it seems unlikely that remains of this era would be preserved in that part of the Phase 4 area that has yet to be evaluated.

A Roman road (12) crossed the Phase 4 area. The route of the Roman Road is suspected to have followed the line of the A7. However, it is suspected that the curve around the Edmonstone Estate may be a later alteration to the route of the original Roman Road, which would perhaps have run on a straighter alignment, as shown on Fig. CFA 1.

Craigmillar Castle and gardens are located to the north-west. The Castle is Category A Listed and the Castle and gardens are protected as a Scheduled Monument (No. 90129). The gardens are also designated as an Inventory status Garden and Designed Landscape. An archaeological evaluation (Cook 2004a, 2004b) was carried out within the south-western part of the Biomedical Quarter Area, due to its proximity to Craigmillar Castle (Cook 2004), but no significant archaeological remains or deposits were recorded. It remains possible that features associated with Craigmillar Castle are preserved in the unevaluated area at the northern edge of the Phase 4 area.

To the south-east lie the remains of Edmonstone House (E) and its associated structures, including a dovecot (D), boiler house, icehouse (F), stable block (G), and the east and south lodges (C & J) both of which are now Category B Listed (Index Nos 49518 and 49589). Edmonstone House (E) is known to have been in existence since at least 1248 when it became the property of the Edmonstone family. The footings of the House were revealed by evaluation in 2006 (Will & Radley 2006), whilst other features were explored by a more extensive evaluation in 2008 (K; Francoz 2008). During the 17th century both the Edmonstone Estate and the adjoining Niddrie House (NT 37SW 28.0) estate (to the north) were owned by the Wauchope family. A range of features which relate to the garden and designed landscape associated with Edmonstone House have been recorded, including ha-has and boundary walls (1, 2, 5 & H). The remains of a barn or farmhouse (3), a possible patch of rig and furrow (6), and a well (4) may also be part of the Edmonstone Estate. At present, the results of various phases of work in the EBQ have not yet been amalgamated to form a coherent account of the

Edmonstone Estate. However, it is possible that remains are preserved within the Phase 4 area which will be of importance in developing just such a coherent account, and thus help in updating the account of the garden and formal grounds of Edmonstone House as outlined in the Edinburgh Survey of Gardens and Designed Landscapes chapter on Edmonstone (McGowan 2007).

The Edmonstone Estate lands were exploited by mining (McCarthy 2008). There is some direct evidence from a watching brief (10) that this mining may have had 16th or 17th century origins. It is probable that further remains related to mining are preserved within that part of the Phase 4 area that has not yet been evaluated.

A tramway (7) recorded on the 2nd Edition Ordnance Survey Map is related to the Niddrie Pits to the north-east of the Biomedical Quarter Area. The route of the tramway is now used as a footpath.

A range of footpaths (brown dotted lines on Fig CFA1) that were first recorded on the 2nd Edition Ordnance Survey Map are still in use today.

Two short linear features that were recorded as cropmarks on aerial photograph (9) are of uncertain date.

KEY EXTERNAL CULTURAL HERITAGE RECEPTORS

Several sites with statutory and non-statutory designations are present within 500m of the boundary of the EBQ (Appendix 3).

An enclosure, recorded as a cropmark at Home Farm, is protected as scheduled monument (6038). A number of listed buildings (48686 and 48687) lie within the Thistle Foundation Conservation Area. The Category A Listed Wolmet House (14184) lies to the east of the Biomedical Quarter Area and the Drum Garden and Designed Landscape lies to the south of the A7 between Danderhall and Moredun. No significant changes to the baseline settings of these sites are anticipated to arise from the development proposals within the Biomedical Quarter Phase 4 Area.

At a meeting with CECAS, the setting of Craigmillar Castle was discussed, with particular regard to views towards it from the Edmonstone Estate. The possibility of visual links between Edmonstone House and Arthur's Seat and the site of Niddrie Marischal House was discussed.

There must have been a good view from Edmonstone House towards Craigmillar Castle and Niddrie Marischal House at the time of Roy's survey in 1747-55, when the grounds appeared to extend only a short distance down Edmonstone Ridge to the north-west of the House. James Knox's map of 1816 first shows walls along the lines

of the ha-ha that was recorded by excavation (2), but also shows that the House was enclosed within woodland. Woodland is shown on the 1855 Ordnance Survey map and on all subsequent editions. However, it is possible that the upper stories of the House provided long range views north-westwards towards Craigmillar Castle and Arthur's Seat and northwards towards Niddrie Marischal House.

MITIGATION

A programme of archaeological mitigation works will be carried out prior to development. All work will be conducted to relevant Institute for Archaeologists Standard and Guidance Documents (Archaeological Field Evaluation, Archaeological Excavation, and Archaeological Watching Brief). The mitigation measures will be presented for approval by the planning authority in one or more Written Schemes of Investigation (WSIs), and carried out prior to and during construction, as appropriate. The WSIs will make provision for further excavation, post-excavation analyses and dissemination of the results of the mitigation works, as well as for archiving of the project materials and records, as appropriate.

A suite of mitigation measures are required by CECAS for the Phase 4 area.

1. Design mitigation

- The area to the south of the wall (5) around the northern side of Edmonstone House is to remain undeveloped, to preserve the immediate setting of the site of Edmonstone House and its associated structures.
- The known historic walls and ha-has are to be retained as far as is possible within the development footprint and, where appropriate, walls are to be repointed and repaired. Those walls and ha-has that cannot be retained are to be recorded to an appropriate standard.
- Views from the site of Edmonstone House and its immediate environs towards Craigmillar Castle, Arthur's Seat and the site of Niddrie Marischal House are to be retained. The key views from Edmonstone Estate, as shown on the indicative masterplan within the main report are considered sufficient to meet this requirement.

2. Archaeological mitigation

- The remains of Home Farm (3) are to be excavated, unless they can be preserved in situ.
- Where it is not possible to retain the known historic walls and ha-ha, these features are to be subject to an appropriate programme of archaeological recording.

- A 10% trial trenching evaluation of areas not yet explored archaeologically is to be carried out. Metal-detector survey of the same area is to be conducted.
- A programme of community engagement during archaeological and historical works is to be maintained.
- Relevant publications are to be produced. It is suspected that such publications will be focussed on the historical and archaeological evidence for mining and other uses of the Edmonstone Estate. The publications must synthesise the results of earlier phases of archaeological work within the Edinburgh BioQuarter and on Edmonstone House. Both popular and academic publications are required.

3. Management plan for the Supplementary Guidance Area

- A management plan will be required for the cultural heritage sites, including the scheduled prehistoric settlement site (Index no. 6038 (B)), that are located within that part of the Supplementary Guidance Area that lies beyond the boundary of the EBQ.

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Aerial Photographs

Sortie	Date	Frame Run	Scale
58/4488	23/6/1961	F21 34-45 & F22 34-45	1:5,000
106G/SCOT/UK11	15/04/1946	7089-7091	1:10,600
106G/SCOT/UK119	20/06/1946	5110-5115 & 5140-5146	1:10,000
106G/SCOT/UK14	15/04/1946	5277-5281	1:10,000
CPE/SCOT/276	23/08/1947	5450-5452 & 5117-5119	1:10,000
58/RAF/1097	22/04/1953	F22 0060	1:10,000
CPE/SCOT/299	21/09/1947	5001-5005 & 5022-5025	1:10,000

APPENDIX CFA1: Cultural heritage assets within the proposed development area

No	Name	Type	NMRS	Source	Description
1	Edmonstone Estate	Boundary Walls		Field survey	The boundary wall of the Edmonstone estate runs along the Old Dalkeith Road edge of the site. The wall is approximately 2m in height and is built of sandstone rubble with mortar binding. It runs from 329609 669639 to 329076 670112
2	Edmonstone Biomedical Centre	Ha-ha	NT27SE 5937	NMRS	Two ha-ha walls and two field boundary walls were recorded during an evaluation in 2005. A subsequent excavation was undertaken to establish the relationship between the ha-ha walls and the field boundaries which ran perpendicular to them. The walls were found to pre-date the ha-ha, with recent stonework added or inserted at the points where the boundary walls met the ha-ha walls (Kirby 2005a, 2005b, 2009).

No	Name	Type	NMRS	Source	Description
3	Edinburgh, Old Dalkeith Road, Edmonstone House, Home Farm	Farmhouse, Farmstead	NT37SW 408	NMRS; Historic maps; Field survey	<p>The NMRS records the site of Edmonstone House, Home Farm. They state that this location is suspected to have also been the site of the stables, but the Survey of Gardens and Designed Landscapes (City of Edinburgh Council 2007) states that this assumption is incorrect.</p> <p>The 1st Edition Ordnance Survey map (Edinburghshire, Sheet VI, 1853, 62 to 1 mile) depicts a complex of buildings at this location and annotates a Threshing Machine.</p> <p>An earlier survey (Olesky 2007) recorded that remains of a barn associated with the Edmonstone Home Farm were partly extant. The western wall of the barn was recorded as upstanding, and three internal divisions could be discerned. It was noted that the ground surrounding the site, especially to the west had been disturbed, and that the interior of the building had been filled with rubbish.</p> <p>The current field survey found that all that remains of the barn is a pile of stone rubble, which has become heavily overgrown.</p>
4		Well		Historic maps; Field survey	<p>The 1st Edition Ordnance Survey map (Edinburghshire, Sheet VI, 1855, 6" to 1 mile) depicts a well at this location.</p> <p>No remains of the well could be located by the field survey. The area lies in an area of grassland, and the footpath, which is depicted to the south of the well on the 1st Edition Ordnance Survey map remains in use.</p>

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No	Name	Type	NMRS	Source	Description
5	Edmonstone House	Ha Ha; Walls		Historic maps; Field survey	<p>The 1st Edition Ordnance Survey map (Edinburghshire, Sheet VI, 1853, 6" to 1 mile) depicts a probable ha-ha which lies within the grounds of the Edmonstone Estate.</p> <p>Field survey identified the upstanding remains of the ha-ha running in a north-east to south-westerly direction. The wall survives in good condition to a maximum height of 1.2m, with the walls being approximately 1m in width. The ha-ha forms a substantial piece of landscaping and at its widest is approximately 15m wide, and has trees and shrubs growing on top of it. Towards its south-western end (at 329669 669737) a large entranceway approximately 8m wide was noted. A gate stoop remains in position on the north-eastern part of the wall, but no gate remains. On the south-western side of the entrance a set of stairs makes it possible to access the top of the ha-ha terrace. Another gateway (at 329733 669903) also retains its gate stoops but no gateway is present. Further to the north-east of this, a continuation of the ha ha wall features a square tunnel feature which is may have allowed movement of small livestock, such as sheep through the ha-ha boundary.</p> <p>A previous field survey (Olesky 2007) identified two walls running in a north-west to south-east direction, connecting with this ha-ha wall. The current field survey failed to identify the more northerly of these two walls which lies within a heavily overgrown woodland shelter belt. The more southerly of the walls survives at the edge of an area of woodland. It survives in a poor state as a stony bank, at the edge of the area of woodland and is a maximum of 0.4m in height.</p> <p>A driveway is recorded on the early Ordnance Survey coverage running along the northern, uphill side of the linear woodland that links with the ha-ha (2)</p>
6	Edmonstone Home Farm	Rig and Furrow (possible)		Aerial Photographs	Possible rig and furrow cultivation is visible on aerial photographs dating from 1947 (Frame 5023 CPE/SCOT/UK299). The presence of rig and furrow was confirmed by excavation in 2008 (Francoz 2008; see item K in Appendix 2 for more detail on the excavations).
7	Niddrie Pits	Tramway; Footpath		Historic maps	The 2nd Edition Ordnance Survey map (Edinburghshire, Sheet IV.SW, 1895, 6" to 1 mile) depicts a tramway running across the site. The tramway is related to the Niddrie Pits to the north-east. The 3rd Edition Ordnance Survey map (Edinburghshire, Sheet 1909, Sheet IV.SW, 6" to 1 mile) no longer depicts a tramway, but depicts a footpath following the same course. The footpath continues to be depicted on modern cartographic sources. It runs from 329756 670683 to 329133 670158.

No	Name	Type	NMRS	Source	Description
8	Edmonstone Estate	Boundary Wall; Ha-ha		Field survey	A previous field survey (Olesky 2007) identified a length of boundary wall running on a south-west to north-east orientation from 32988 67025 to 32960 67002. The remains of the wall are fragmentary, but stonework can still be seen in places. The height of the ground to the south-east of the wall compared with that to the north-west suggests that the wall might be best understood as a ha-ha wall.
9	Edmonstone Estate	Cropmark site (possible)		Aerial photographs, Field survey	<p>A possible cropmark site was identified by a previous archaeological study of the area (Olesky 2007). The faint cropmark is visible on an aerial photograph taken in 1973. The cropmark comprises two short parallel lines which are aligned north to south.</p> <p>No upstanding features corresponding with this cropmark were identified on the ground by either the previous or the current field survey.</p>
10	Mining remains	Archaeological traces of mining		Excavation	A suite of mining remains, including coal mining pits and linear prospection gullies, were discovered during an archaeological watching brief conducted in 2008 (McCarthy 2008). Finds from the features suggest a 16 or 17 th
11	Pentecox	Coal Depot; Weighing machine		Historic maps	A coal depot is depicted on the 2nd Edition Ordnance Survey map (Edinburghshire, Sheet IV.13, 1895, 25" to 1 mile). The coal depot is not marked on later editions of the Ordnance Survey map. The location now lies within Phase 1 of the Biomedical Quarter development.
12		Roman Road (suspected route of)	(NT 37SW 1145)	NMRS	The suspected route of a Roman Road runs through the area. Part of the road may have been revealed in evaluation at the eastern side of Edmonstone Estate (Francoz 2008 ; see item K in Appendix 2), although the excavator acknowledges that, in the absence of dating evidence, a medieval or later origin is equally possible.
	Brown Dotted Lines	Footpaths		Historic maps	<p>The 1st Edition Ordnance Survey map depicts several footpaths which traverse the site.</p> <p>Field survey found that a number of these footpaths remain in use today.</p>

APPENDIX CFA2 – Cultural heritage assets within the extent of the Supplementary Guidance proposal

No	Name	Type	Status	NMRS / SMR No.	Source(s)	Description
A	Woolmet	Fort; Railway, Coal Pits; Colliery		MEL8547 (NT37SW 57)	NMRS; Excavation	The NMRS records the location of cropmarks which lie approximately 450m SW of Caulcoats steading which indicate the north-eastern half of a probable fort measuring at least 130m by 100m within two ditches set approximately 12m apart. A trial trenching evaluation was carried out in 2007 (Johnson 2007) in an area to the immediate south of the recorded cropmarks. Six trenches were excavated but revealed no remains of the fort which, it is suggested, must have been destroyed by the industrial activity in the area.
B	Woolmet	Enclosure	Schedule d Monume nt	NT37SW 189	NMRS; Inventory	The NMRS record the location of this enclosed settlement which is believed to be of prehistoric date, and which is visible as cropmarks on oblique aerial photographs. The site is defined by a narrow ditch, c.2-3m wide, forming an oval enclosure which is c.60m north to south by 40m east to west. There are no definite signs of an entrance or of any internal features, although they may survive as buried archaeological features. The site is designated as a Scheduled Monument (Index No: 6038).
C	East Gate Lodge, Edmonstone House, Old Dalkeith Road	Gate Lodge; Gates	Category B Listed Building	MEL9844 (NT37SW 407)	SMR; NMRS; Inventory	The East Gate Lodge and Gates of Edmonstone House are designated as a Category B Listed Building (Index No. 49519). The inventory describes them as follows: Gates: Late 18th century. Coped ashlar walls and panelled, corniced gatepiers; vehicular gate to centre, pedestrian gate to right. Spear-headed curved iron gates, 2-leaf to centre, single to pedestrian entrance. Lodge: 2-storey 2-bay random rubble lodge with barge-boarded eaves to gables and dormers. Central brick stack. Graded grey slates.

No	Name	Type	Status	NMRS / SMR No.	Source(s)	Description
D	Dovecot, Edmonstone House	Dovecot		NT37SW 47	NMRS	The NMRS record the location of the dovecot at Edmonstone which is described as being made from the ingles of a 16th or 17th century house, a chimney of rough-cast rubble, in two stages, with moulded cope, on a stack, with a pyramidal finial. A small semicircular arched window is present in the lowest stage of the western gable; above it in the second stage are openings for pigeons. A round-arched entrance opens into the dovecot, in the eastern gable; above it is a large arched window. These give the gable the semblance of a small Norman church, with two buttresses on the southern wall. The building is 16'3 1/2 " long. There are 366 nest holes, and the stone roof is barrel-vaulted. A field visit by the Ordnance Survey in August 1975 recorded that the western wall of the dovecot had fallen out below the chimney, leaving the dovecot in a dangerous state, but that it was otherwise as previously described.
E	Edmonstone House	Mansion House		NT26NE 70	NMRS	An archaeological evaluation (8 trenches) undertaken in 2006 in the footprint of the former mansion house revealed substantial remains and foundations, indicating that there had been a number of phases of building, with extensions added to the original mansion core. The substantial foundations of the house were recorded as well as a number of stone-lined culverts or drains and numerous ceramic and iron pipes. The other trenches which were excavated within the grounds did not uncover any remains of archaeological significance (Will & Radley 2006)
F	Ice-House, Edmonstone House	Icehouse		NT26NE 71	NMRS	The NMRS records the Icehouse. It is described as being situated a few yards east of the ruined stables. The entrance is in a curved retaining wall which faces north. The floor of the ice pit is cup-shaped and the ceiling is domed, forming a globe-shaped cavity, partly under and partly above ground. A cone-shaped mound of earth is heaped over the chamber (Robertson 1953).
G	Edmonstone Estate	Stable block			Maps, Field survey	The stable block survives as an upstanding structure.

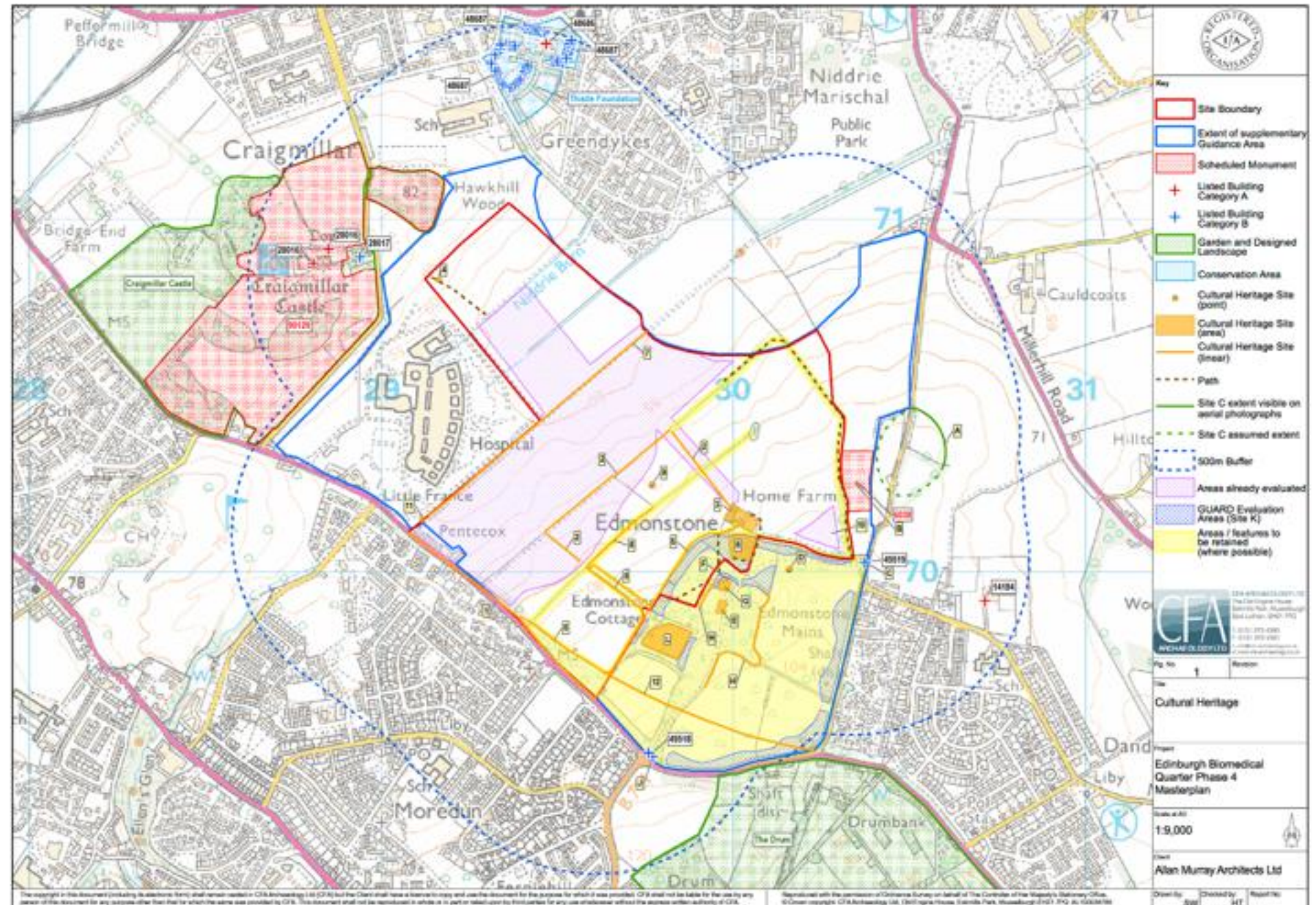
The Edinburgh BioQuarter Masterplan

No	Name	Type	Status	NMRS / SMR No.	Source(s)	Description
H	Ha-Ha; Edmonstone House	Ha-Ha; Garden Feature		NT36NW 133	NMRS	The NMRS records the location of a ha-ha in the gardens of Edmonstone House, which was revealed in survey and excavation undertaken in 2008 (Francoz 2008).
J	South Lodge and Gates, 545 Old Dalkeith Road, Edmonstone House	Gates; Gate Piers; Gate Lodge	Category B Listed Building	NT26NE 195	NMRS; Inventory	<p>The NMRS record the location of the South Lodge and Gates of Edmonstone House, which are designated as a Category B Listed Building (Index No. 49518).</p> <p>The Inventory describes them as follows: Gates: Late 18th century. Corniced droved ashlar quadrant walls with rosettes to frieze. Fluted frieze with rosettes to corniced, panelled ashlar piers, surmounted by iron lamp holders. 2-leaf spear-headed curved iron gates. Lodge: 2-storey 2-bay rendered stone lodge with barge-boarding and bracketed eaves, probably incorporating earlier fabric. Corniced door surround; barge-boarded dormers breaking eaves. Central stone stack with cylindrical cans.</p>

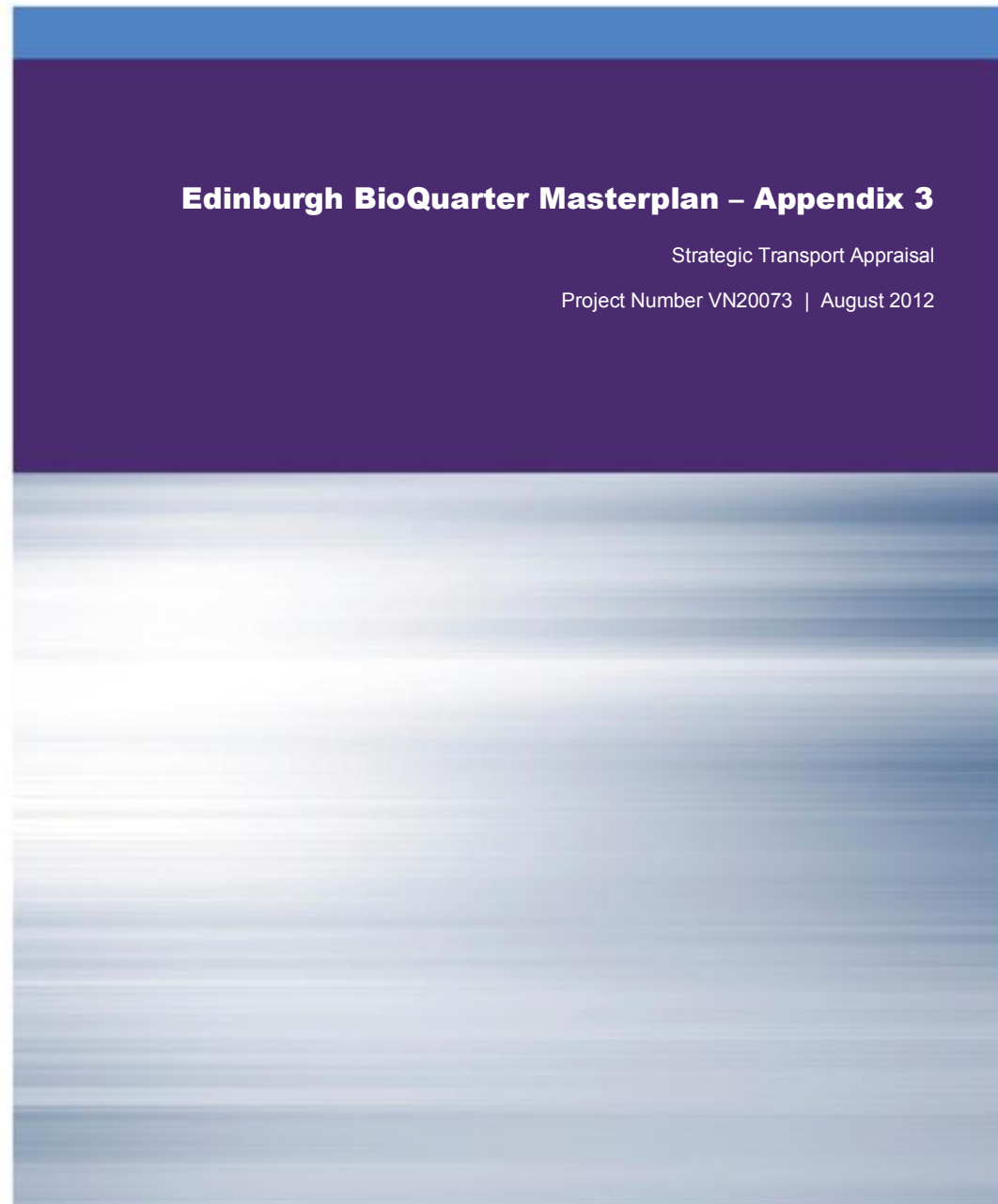
No	Name	Type	Status	NMRS / SMR No.	Source(s)	Description
K	Edmonstone House	Evaluation		NT26NE 70	NMRS	<p>A survey and evaluation were undertaken in 2008 (Francoz 2008). The construction, character and condition of upstanding components of the designed landscape were recorded, including an unconsolidated ha-ha (H) to the east of the extant stable block (G); a stone built culvert; a series of wells; and a sunken wall running north to south in the south-eastern quadrant of the estate. Ninety-six trenches were excavated. The foundations of a possible boiler house to the west of the estate's walled garden (L) were uncovered. A possible soak-away was found to the north-west of the stable block, and the upper part of a stone-built culvert was recorded in the north-western quadrant of the estate.</p> <p>Numerous features, structures and deposits related to mining were found to be concentrated in the eastern part of the estate. Other modern uses of the landscape included demolition deposits and made ground surfaces, resulting from the construction of the ha-ha and estate boundary walls.</p> <p>No evidence for prehistoric or medieval activity was found, although on the E side of the estate three trenches revealed a possible Roman road. A Roman road might be expected in this area, representing either the continuation of Dere Street, or a major spur from it leading on to the Forth-Clyde isthmus. However, no dating evidence was recovered and the remains were badly disturbed by both recent ploughing and mining. Further investigation would be required to confirm the date and route of the road.</p>
L	Edmonstone Estate	Walled garden		NT26NE 70	NMRS, Maps	The walled garden survives as an upstanding, ruinous walls.

APPENDIX CFA3: Key cultural heritage receptors within 500m of the boundary of the proposed development area

No	Name	Status	Easting	Northin g
6038	Home Farm, enclosure 300m ENE of	Scheduled Monument	330352	670263
90129	Craigmillar Castle, Castle and Gardens	Scheduled Monument	328742	670783
14184	Danderhall Miners' Club, Woolmet House Gateway and Boundary Wall	Category A Listed	330715	669917
28016	Craigmillar Castle And Dovecot, Craigmillar Castle Road	Category A Listed	328807	670875
48686	Niddrie Mains Road, Thistle Foundation Estate, the Robin Chapel (Inter-Denominational) with Entrance Gates and Gatepiers	Category A Listed	329469	671498
28017	Craigmillar Castle Road Craigmillar Castle Dairy	Category B Listed	328940	670892
48687	Niddrie Mains Road, Thistle Foundation, 1-11 (inclusive nos), 14-18 (inclusive nos) Queen's Walk, 1-19 Chapel Court and 1-23 (inclusive nos) West Court and Covered Walkways	Category B Listed	329329	671414
49518	545 Old Dalkeith Road, Edmonstone House, South Gates and Lodge	Category B Listed	329772	669475
49519	100 The Wisp, Edmonstone House East Gates and Lodge	Category B Listed	330374	670027
	The Drum	GDL	330226	668959
	Craigmillar Castle	GDL	328638	670798
	Thistle Foundation	Conservation Area	329427	671445



Transport Appraisal



Edinburgh BioQuarter Masterplan

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1. Context

1.1 Background

SKM Colin Buchanan (SKM CB) was appointed by Scottish Enterprise, The University of Edinburgh, NHS Lothian and Alexandria Real Estate (collectively 'The Client') to prepare a Strategic Transport Appraisal (STA) to support the Edinburgh BioQuarter Masterplan designed by Allan Murray Architects (AMA).

The Edinburgh BioQuarter (EBQ) currently consists of a mixture of existing, permitted and planned development as follows:

1.1.1 Existing

- Royal Infirmary of Edinburgh (RIE)
- Queens Medical Research Institute (QMRI)
- Edinburgh University's Medical School (Chancellor Building);
- Scottish Centre for Regenerative Medicine (SCRM)
- Building on Plot 9

This development is already in place and operational, with associated travel demand on the transport network.

1.1.2 Permitted but not built

- Phases 1 to 3 of the EBQ (incorporating SCRM and building on Plot 9 which have been built)
- Royal Hospital Sick Children (RHSC)
- Department of Clinical Neuroscience (DCN).

Permitted but not yet built development has planning permission with obligations established to deliver the required supporting infrastructure.

1.1.3 Planned

- Ph4 of EBQ

Ph4 is the only new piece of development within the masterplan area which does not yet have planning permission.

The EBQ Masterplan is to be promoted through the City of Edinburgh Local Development Plan (LDP) process, supported by a Masterplan and Supplementary Guidance (SG). This STA will accompany the Masterplan and inform the preparation of the SG.

Phase 4 is the only new trip generator for assessment within the STA. Traffic activity associated with the existing developments in the EBQ are accounted for in the baseline traffic assessment and trips associated with those developments which have planning permission but are not yet built are addressed as committed development.

The EBQ is a long term development, to be built out over a 20-30 year period, with each element requiring detailed planning consent to proceed. The Masterplan and SG will define the

context and framework within which detailed applications will be developed, providing sufficient flexibility in acknowledgement of the implementation timescales. The SG boundary extends beyond the masterplan boundary to consider the physical context of adjoining areas and connections, addressing space and movement between the EBQ and planned or developed areas.

1.2 Other supporting transportation studies

SKM CB prepared the EBQ Transport Study in 2010, addressing a number of outstanding requirements relating to transport from the 2004 Phases 1 to 3 planning permission within the context of the overall EBQ. The study was also intended to provide information to support the planning applications for the new hospital developments, phase 4 expansion land and the wider EBQ area.

In discussion with both the City of Edinburgh Council and Transport Scotland it was agreed that the 2010 EBQ Transport Study should be used as the basis of this Strategic Transport Appraisal to identify the key transport considerations to be addressed within the EBQ Masterplan and SG accompanying the emerging Local Development Plan.

In parallel The City of Edinburgh Council (CEC) has commissioned a study to examine the transport infrastructure implications associated with emerging and planned development, with a view to understanding the cumulative effects and requirements for the LDP.

It is expected that the EBQ Transport Study, the CEC study and STA will together guide the development of the EBQ Masterplan through the SG and future planning applications for Phase 4.

2. Existing transport conditions

2.1 The study area

The geographic extent and physical context of the EBQ are shown in Figure 2.1, covering all existing and permitted elements of the EBQ and areas which could be developed as part of Phase 4. Note that the SG boundary extends beyond development phase boundaries and the masterplan boundary to establish setting and connections.

The existing EBQ Transport Study area extends beyond this, encompassing the A7 corridor between Sheriffhall Roundabout (trunk road) to the south of the site and Cameron Toll Roundabout to the north (see Figure 2.2). Transportation infrastructure and all key junctions along this corridor have been examined in the study, with recommendations provided on infrastructure upgrades or revision requirements relative to development. CEC and Transport Scotland (TS) have confirmed that the extent of the area studied in the EBQ Transport Study is acceptable with respect to considering the potential effects of the EBQ Masterplan.

2.2 Travel demand

Travel survey data has confirmed that the existing EBQ currently supports an excellent sustainable travel culture with high walk, cycle and public transport mode shares for trips to and from the area. This is further supported by careful proactive management of parking provision. These existing achievements provide a platform on which to improve and encourage sustainable travel patterns for existing, committed and planned development.

The EBQ currently generates around 2,000 person trips in the morning peak and 1,500 in the evening peak. The majority of car trips at the EBQ are currently associated with the RIE, accounting for a mode share of 57%. This equates to around 1,100 vehicle trips in the morning peak and 800 in the evening peak. The bus mode share is significant at 29%.

2.3 Existing access

Large parts of the EBQ are established and fully operational, with the University of Edinburgh and NHS Lothian generating significant movement in the area. As such, the EBQ already benefits from transportation infrastructure.

Pedestrian and cycle infrastructure exists within the EBQ site, linking with the external network and providing shared foot/cycle paths of a generous width throughout. Existing cycle parking facilities on site are of a good quality but are oversubscribed. Cycle lanes are provided in both directions along the majority of the A7 corridor between Cameron Toll and Ferniehill Road. Junctions in the vicinity of the EBQ site are provided with advanced cycle stop lines to promote safe cycle passage.

The EBQ is currently served by over 50 buses per hour (2-way flow) at peak times, with direct services to Midlothian and much of Edinburgh. For those areas not served by direct services, there is opportunity to interchange in the city centre. Services include a mixture of through services and buses which terminate at the RIE, with generous bus shelter provision in close proximity to the RIE and UoE main building entrances.

The EBQ has 3 vehicular access points from the A7 Old Dalkeith Road. A northern access via Little France Crescent and the southern access via Little France Drive form a loop serving the RIE, QMRI and Chancellor's Building. The 3rd access is further south and will serve Phases 1 to 4 of the EBQ. It currently serves the building which has been completed on Plot 9. Access to the EBQ for those travelling by car is also good with respect to proximity to the local and strategic road networks. However, the A7 corridor (Old Dalkeith Road), which provides access to the EBQ, currently operates at or close to capacity, with 2-way flows exceeding 1,700 vehicles in the morning peak and 1,600 in the evening peak in the vicinity of the EBQ, resulting in delays and queuing during morning and evening peak periods. The implementation of committed development will place this corridor under further pressure and it is expected that transport interventions will be required to accommodate committed and new development.

Opportunities to create significant additional vehicle capacity on the corridor are limited by constraints at Cameron Toll, Sheriffhall and along the length of the corridor. Cameron Toll roundabout and Sheriffhall roundabout form the northern and southern ends of the A7 corridor considered in the EBQ Transport study. It therefore follows that public transport intervention will be key in supporting increased travel demand on the corridor.

Both junctions at Sheriffhall and Cameron Toll are currently under significant pressure from traffic demand, although alterations to Sheriffhall following the opening of the Dalkeith Bypass have seen an improvement in the operation of the junction. The A720 Edinburgh City Bypass has been identified in the Strategic Transport Projects Review to receive targeted road congestion / environmental relief schemes. Sheriffhall Roundabout is specifically identified for improvement. However, no committed improvement scheme for Sheriffhall existed at the time this study was prepared.

There are around 1,780 parking spaces currently shared by the RIE and University. At present the majority of car parking spaces are subject to parking charges, with The University controlling around 80 spaces using parking permits. The area of parking known as Car Park B provides 815 spaces which are shared between University/hospital staff and visitors. This car park will be closed to facilitate the delivery of the RHSC and DCN. New parking, totalling around 1,176 spaces, has been created on Plots 14-16 of Phases 1 to 3 to replace this and to accommodate further demand generated by the RHSC and DCN.

Additional parking is provided for the SCRM and building on Plot 9.

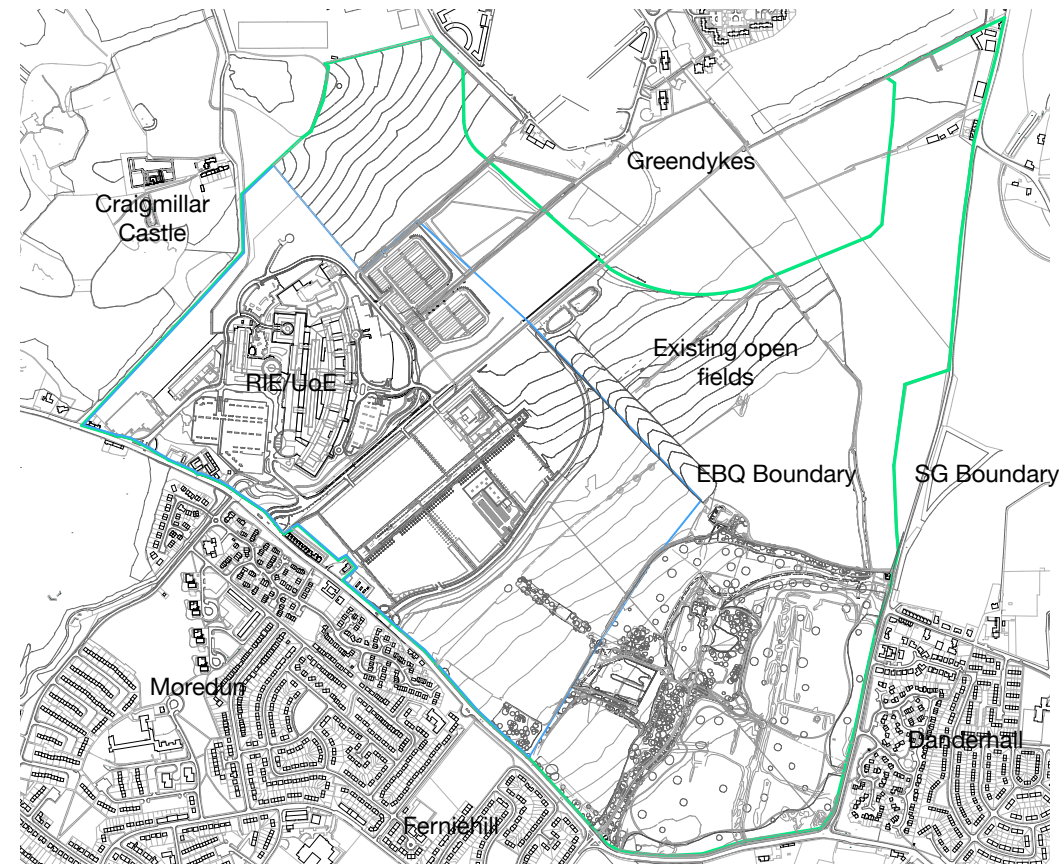


Figure 2.1 – Geographical extent and context of EBQ

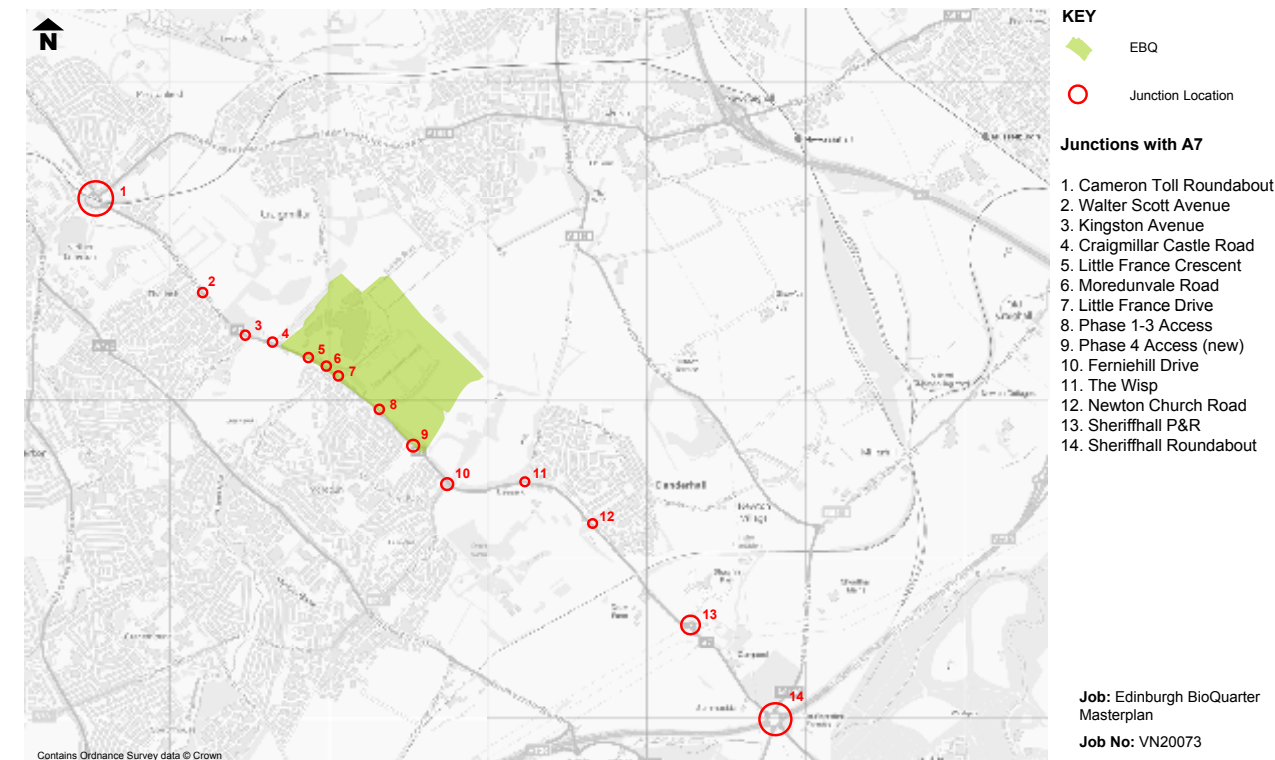


Figure 2.2 – A7 corridor and key junctions

3. Permitted and planned development

3.1 Permitted development within the EBQ

Planning permission currently exists for 137,470 sq m GFA of biotechnology uses on phases 1 to 3 of the EBQ. A Masterplan was approved in 2004 which provided details of the site access and internal road layout, bus routes, pedestrian and cycle routes. Parking is to be provided across the site at either 1 space per 55 sq m GFA or 1 space per 2 employees whichever is the lower. Four plots covered by this permission have been developed as follows:

- Plot 5 – Scottish Centre for Regenerative Medicine
- Plot 9 – Developed by Scottish Enterprise
- Plots 14 and 16 – Developed as car parking under a separate planning permission.

The RHSC and DCN have planning permission to proceed and will be located immediately adjacent to RIE on the area currently designated as Car Park B.

3.2 Other planned/permitted development

A number of developments with planning permission in the wider area were taken in to account in the EBQ Transport Study including:

- Shawfair – 4,000 homes, 70,000m² offices and 25,000m² warehousing;
- Edmonstone Estate private hospital, care home and care village;
- Craigmillar Masterplan Developments – 650 flats plus 6,050m² supermarket; and
- Greendykes Expansion – 810 new homes

For the purposes of the Transport Study it was assumed that all planned and committed developments will be completed by 2022, although it is recognised that the economic downturn could slow progress and completion.

A further 1,000 houses across south east Edinburgh are being considered in the ongoing Local Development Plan process. The EBQ Transport Study was prepared in advance of this potential allocation being identified and therefore does not specifically take account of it. Both CEC and Transport Scotland are comfortable that the level of demand considered in the EBQ Transport Study is sufficient to inform this stage in the planning process.

4. Future transport conditions

4.1 Travel demand

Analysis indicates that in the 2022 base + committed development scenario, the public transport mode share to the RIE and EBQ Phases 1-3 will be 45% in the morning peak and 33% in the evening peak. The addition of EBQ expansion will result in an increased public transport mode share of 46% and 35% in the morning and evening peak respectively.

The expansion of the EBQ could generate approximately 1,049 extra inbound public transport trips in the two hour morning peak and 861 outbound trips in the evening peak over the committed 2022 scenario. Assuming a bus with 80 seats and 75% occupancy, this equates to an additional 18 inbound and 15 outbound buses in the 2 hour morning and evening periods respectively.

The distribution of trips to and from the site is similar in both the committed and committed + EBQ expansion assessments. Both morning and evening peak results show that while car trips are generated across a wide area of the city, public transport trips are concentrated closer to primary public transport routes. The origin of private vehicle trips highlights a significant level of demand from areas close to the Edinburgh City Bypass, suggesting that it may be appropriate to consider an orbital bus route linking these areas with the EBQ site. Currently bus routes are focused on the A7 radial route to and from the City Centre and Midlothian.

Previous modelling work indicates that a high level of public transport demand is generated between the EBQ site and the Greendykes / Craigmillar, Gorgie / Dalry and Leith Walk areas. This supports the need for the new Public Transport Link (PTL) between Craigmillar / Greendykes and the Royal Infirmary / Edinburgh BioQuarter which is currently being implemented.

The EBQ Transport Study uses vehicle trip rates approved through the planning process for Phases 1 – 3 to estimate potential trip generation for Ph4. The study assumes that Ph4 represents 117,071m² of new GFA, which is less than could actually be located within the Ph4 development area, thought to be able to accommodate around 140,000m².

The analysis presented in the EBQ Transport Study suggests around 1,200 people trips in each of the morning and evening peaks associated with Ph4 (117,071m²) floor space. This equates to just under 700 2-way vehicle trips in each of the morning and evening peaks.

The planning permission for EBQ Phases 1-3 identifies further infrastructure needed to accommodate associated movement as these phases are implemented. The EBQ Masterplan provides an opportunity to review existing and planned infrastructure in the context of current and emerging development in the area, establishing key principles for the overall masterplan. This will ensure that new infrastructure is relevant, sustainable and efficient.

4.2 Pedestrians and cyclists

The EBQ will support a wide variety of journey types on foot and by bicycle, with commuters, people travelling between different elements of the EBQ and leisure trips expected. There are

various barriers within the existing developed and developing areas which need to be overcome if the EBQ is to become truly permeable on foot and by bicycle, particularly when considering travel between the various elements of the EBQ. These barriers include established/planned traffic routes and landscape features. The masterplan establishes key principles of access throughout the masterplan area, recognising synergy and identifying locations where barriers can or need to be overcome.

A new public transport link (PTL), linking Little France Drive to the Greendykes area will also facilitate walking and cycling trips and will create a new and convenient route from densely populated areas to the east. The masterplan recognises the importance and amenity value of the green spaces between the EBQ development and areas to the east/north and south. A network of paths are proposed here to support the creation of 'New Meadows', expected to encourage travel to the EBQ by foot and bicycle and also general leisure activity. Figure 4.1 presents an illustrative layout of how connections could be provided.

4.3 Public transport links

Planning permission exists for the new PTL and is currently under construction. Once completed, this route will be for public transport, pedestrians and cyclists only. Expected completion is around October 2012, providing a key and direct public transport link between the EBQ and areas to the east. Infrastructure associated with Phases 1-3 includes a link from the PTL into the Phases 1-3 development area, with the potential to extend this further to serve Ph4. Figure 4.1 shows the locations of the PTL and adjoining routes.

At present, those wishing to travel by bus from the Craigmillar/Niddrie area to the EBQ, are required to use a service which travels to Cameron Toll and then back out to the EBQ. This is somewhat convoluted and therefore unattractive to existing/potential users.

In time it is hoped that this public transport link would be developed to accommodate an extension to the Edinburgh Tram. Work on the development of this extension was halted at the end of 2004 due to the unavailability of funding. However, with the developments taking place in the EBQ and Craigmillar there is a longer term aspiration to realise the tram line and various safeguards of land are provided for in the approved Masterplan for phases 1 to 3 of the EBQ. The EBQ Masterplan incorporates these tram safeguards.

The development of the RHSC and DCN will result in the existing bus route which passes the RIE on its western side being severed. This is essential to support the clinical adjacency required by the RHSC/DCN and existing RIE facilities. As a result, buses will be diverted around the existing perimeter road, with new stops provided at the university buildings and a new hub on the southern side of the hospital. The hub will be split into 2 operational areas to cater for passenger boarding/alighting terminating and through bus services and also to allow buses to layover. Figure 4.2 shows the new route and hub locations. Locating the hub in this new location brings it closer to the wider EBQ area, supporting future expansion. The EBQ Transport Study provides a high level public transport strategy, which shows how bus routes and hubs might be developed in the future to support demand associated with Phases 1-3 as it is implemented and also with Ph4. An extract from this strategy is presented in Appendix A, revised to represent Illustrative Scheme 3 from the AMA Masterplan as an example. The hub

relocation associated with the RHSC and DCN is compatible with the high level public transport strategy in the EBQ Transport Study, although further review should be undertaken at the detailed design stage to confirm this. The EBQ Masterplan further supports public transport access by promoting suitable links between the RIE, Phases 1 -3 and Ph4.

The construction of the Waverley Railway Line has approval through the Waverley Railway (Scotland) Act and subject to funding this will become operational. The Waverley Railway Line will see the introduction of a new station at Shawfair approximately 1.5 km to the south and east of the EBQ. Ministers remain committed to the target project delivery date of December 2014.

4.4 Parking

Car parking for Ph4 will be provided in line with CEC standards, supported by detailed people trip generation and mode share analysis. Allowance should be made for up to 1 space per 60m² GFA for the life sciences element of Ph4, with appropriate provision elsewhere to cater for other uses. The exact nature, location and distribution of parking will be determined through the design and planning process, with key principles established in the masterplan.

Locating provision within parking structures, as opposed to widespread surface parking, would provide the opportunity to reduce the parking footprint, minimising associated land take and dominance. This would also make managing parking easier and create concentrated footfall along defined routes, which could support other land uses and mixes of development e.g. retail and cafes.

When locating parking structures, consideration will be given to the operational aspects to avoid conflict with other users, minimise congestion and promote convenience.

4.5 Traffic impact

Travel demand associated with hospitals is complex because of the various staff shift patterns, visiting hours and outpatient clinics. This combined with demand generated by other development can combine to create exaggerated demand peaks which need to be carefully managed, balancing essential car use with sustainable travel objectives and parking management. The EBQ Transport Study provides a comprehensive assessment of EBQ impact, taking account of existing, committed and planned activity. It has been agreed with CEC and Transport Scotland that the level of information provided in the study is sufficient to support the EBQ Masterplan at this stage in the planning process, recognising that further detailed work will be undertaken to support future planning applications for Ph4.

The results of junction assessments clearly indicate that improvements will be required at all junctions along the Old Dalkeith Road corridor between and including, Craigmillar Castle Road and Ferniehill Road. Preliminary designs for these measures have been prepared to facilitate detailed analysis and provide an indication of the physical extent. These designs and the assessments are available in the EBQ Transport Study.

Analysis highlights that the requirement for these improvements is not wholly attributable to the expansion of the EBQ, with most junctions needing to be mitigated because of existing traffic and committed development.

The transport modelling has confirmed the findings of the Scottish Government’s Strategic Transport Projects Review (STPR) and the need for a strategic intervention at Sheriffhall to resolve existing operational issues and accommodate committed development in the area. The EBQ Transport Study provided a threshold assessment, which reviews the change in traffic volumes at Sheriffhall associated with Ph4. On the basis that the Shawfair project was included as committed development, it was assumed for this assessment that Sheriffhall had been upgraded to a grade separated junction. The results presented in the EBQ Transport Study suggested little change in traffic volumes at Sheriffhall as a result of Ph4, indicating that traffic may be expected to disperse across the network. This assessment also retained Millerhill Road as an operational arm of the junction, which is proposed to be closed in association with Shawfair.

Further work has therefore been undertaken to examine the approximate level of Ph4 traffic which could be expected to use Sheriffhall, assuming Millerhill Road is closed. Table 4.1 below presents a summary of combined Base plus Committed traffic flows measured against combined Base plus committed plus Development flows. Note that this comparison was undertaken manually and therefore does not predict any re-routing of background traffic. Development traffic was proportioned across each arm using Base plus committed traffic flows.

Table 4.1: Summary of Base + Committed against Base + Committed + Development traffic flows

Entry arm	Morning Peak Hour Flows				Evening Peak Hour Flows			
	B+C	B+C+D	Diff/Dev Flows	% Difference	B+C	B+C+D	Diff/Dev Flows	% Difference
A7(N)	960	973	13	1%	1116	1407	291	21%
A720(E)	2796	2928	132	5%	1966	1970	4	0.2%
Old Dalkeith Road	835	874	39	5%	617	618	1	0.2%
A7(S)	897	939	42	5%	890	892	2	0.2%
A720(W)	2014	2109	95	5%	2712	2717	5	0.2%

Assumptions

- * Base + committed traffic flows have been extracted from the VISUM model and assume grade separation of Sheriffhall Roundabout and that the A6106 Millerhill Road is closed.
- * The VISUM model provides traffic flows over 2 hour peak periods. A flat profile exists over both peaks and therefore traffic flows have been halved to provide hourly peak traffic flows.
- * EBQ Phase 4 development traffic flows have been taken from the approved Transport Strategy
- * EBQ Phase 4 development traffic flows have been distributed through Sheriffhall roundabout based up turning movements in the baseline scenario (B+C)

As can be seen above, the maximum increase in approach flow on any given arm as a result of Ph4 occurs in the evening peak on the A7 (North). The Ph4 traffic volume is estimated to be 291 vehicles, representing a 21% increase in overall flow on that approach. This does not take account of re-routing of existing traffic, so it is possible, as suggested by earlier modelling work, that the net impact may be less than this. Nevertheless, it is expected that the EBQ Ph4 will be required to contribute financially, in scale and kind with the level of associated impact, to measures aimed at improving the operation of the Sheriffhall junction in the event that the scheme cannot be fully funded by central government. It is anticipated that any such scheme, and contribution mechanism, would be coordinated by Transport Scotland with the policy framework set out in the Strategic Development Plan.

4.6 Interventions

Transportation interventions have been identified within the EBQ Transport Study, aimed at accommodating existing, committed and planned travel demand. The EBQ has already evolved since the identification of these measures, with the award of planning permission for the RHSC/DCN and completion of SCRM and Building 9. Given the expected long implementation timescales associated with the EBQ (20-30 years), it is essential that interventions and infrastructure requirements are monitored to avoid the implementation of inappropriate or obsolete measures. The EBQ and surrounding areas will continue to evolve over this time period. In order to facilitate this, an infrastructure implementation matrix has been developed which sets out measures required to accommodate travel demand, attaching responsibilities, timescales, process, triggers and indicative costs. This matrix is very much an evolving document which needs to be reviewed and revised as required to reflect any key changes that might influence travel or infrastructure demands. Key changes may include, but not be restricted to the following:

- Development aspirations
- Masterplanning work
- Economic climate
- New development or infrastructure which influence the area
- Policy changes
- Funding mechanisms

The implementation matrix is presented in Appendix B which provides a detailed overview of infrastructure. The broad aims of the interventions can be summarised as follows:

- Accommodate travel demand generated by the wider EBQ;
- Link the various elements of the EBQ;
- Further encourage travel by sustainable modes to reduce car trips;
- Increase public transport capacity and demand by providing additional high frequency services which reach the appropriate catchment;
- Create additional capacity for vehicles along the A7 corridor by modifying junctions to increase capacity and increasing the number of lanes in each direction to create capacity between junctions, including the EBQ site access junctions;
- Sufficient on-site parking to accommodate demand and avoid overspill parking; and
- strategic intervention at Sheriffhall to address current operation issues, committed and planned development in the area.

In addition to the measures presented in the implementation matrix, it is expected that Transport Scotland will lead and either fully or part fund a scheme to upgrade Sheriffhall Roundabout, in line with the STPR commitment. This is required to address existing operational issues and also to accommodate committed and planned development. Discussions with Transport Scotland have confirmed that there is currently no specific scheme for the upgrade and no mechanism in place to allow the calculation of developer contributions towards a scheme in the event that central government funding is not available to fully fund the scheme. This is because it is not yet known exactly which developments or development allocations will be included. It is acknowledged that EBQ Ph4 will add traffic to the Sheriffhall junction and that if there is insufficient government money to fund the scheme in total then a contribution towards mitigation will be required, in line with the level of associated impact. This impact will be established in

greater detail at the planning application stage and will need to be considered in the context of wider development aspirations and activity and the availability of central government funding.

5. Conclusions

The original EBQ Transport Study provides a comprehensive review of the travel demands and infrastructure requirements associated with the EBQ and the AMA masterplan. This STA demonstrates how that study, which was prepared 2 years prior, relates to the EBQ masterplan and other relevant documents, with a view to establishing Supplementary Guidance through the Local Development Plan process for further development at the EBQ. CEC and Transport Scotland have confirmed that the EBQ Transport Study is sufficient to support the EBQ masterplan and SG at this stage in the planning process. The STA summarises potential travel demand and impact, also establishing key access and parking provision principles.

Detailed Transport Assessments will be required to support planning applications for new EBQ development, prepared within the context of the EBQ masterplan and SG. These assessments will include people trip and mode share assessments, parking analysis and traffic impact analysis.

Allowance should be made for parking provision of up to 1 space per 60m² of life sciences development, which is in line with council standards and will be supported by detailed analysis.

An implementation matrix has been established which identifies infrastructure requirements associated with the EBQ and wider area. This matrix is an evolving document which needs to be updated regularly to reflect changes in development and infrastructure status. Ownership of the matrix needs to be established to provide a robust framework for guiding infrastructure requirements and future planning applications.

It has been acknowledged that the Sheriffhall roundabout needs to be upgraded to address existing operational difficulties, committed development and planned development. It is understood that Transport Scotland may lead the delivery of this upgrade through either full or part funding from Central Government (in line with the STPR) and collection of developer contributions. An up to date scheme and mechanism for this has yet to be established. Cognisance will need to be taken of the EBQ Transport Study, STA, the cumulative infrastructure requirements study being undertaken by CEC to inform their LDP and other neighbouring authorities' LDP work.

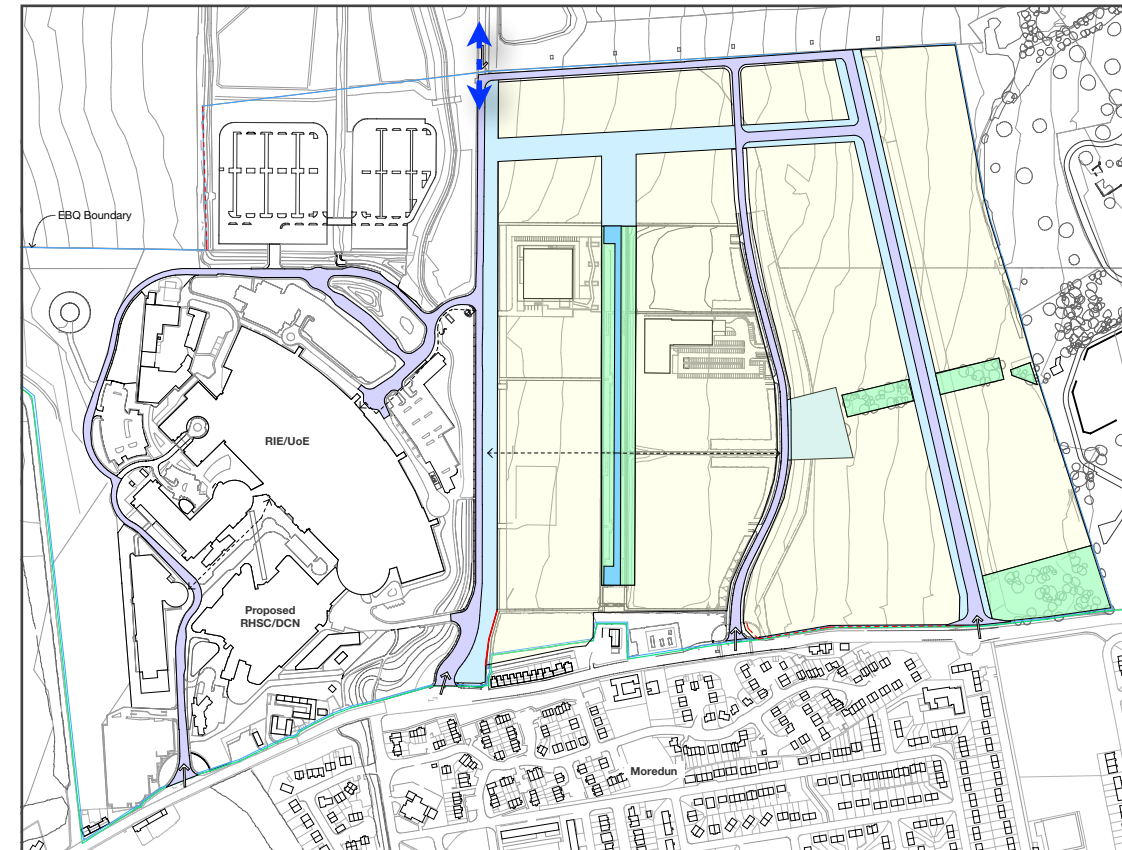


Figure 4.1 – Location of new PTL route

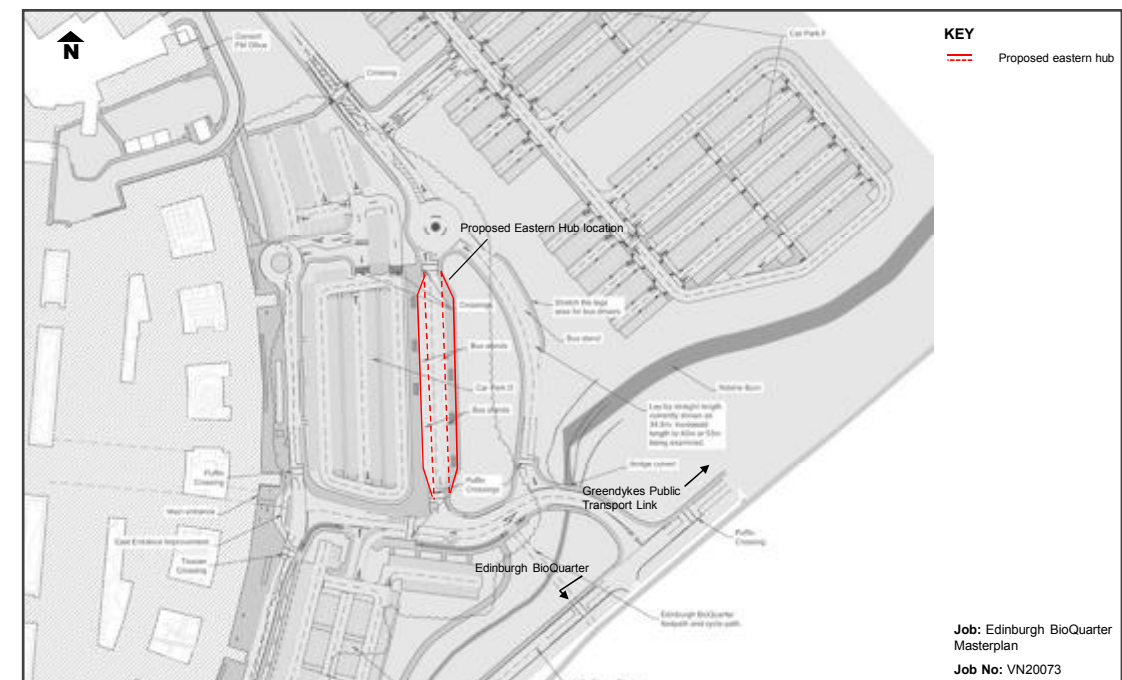
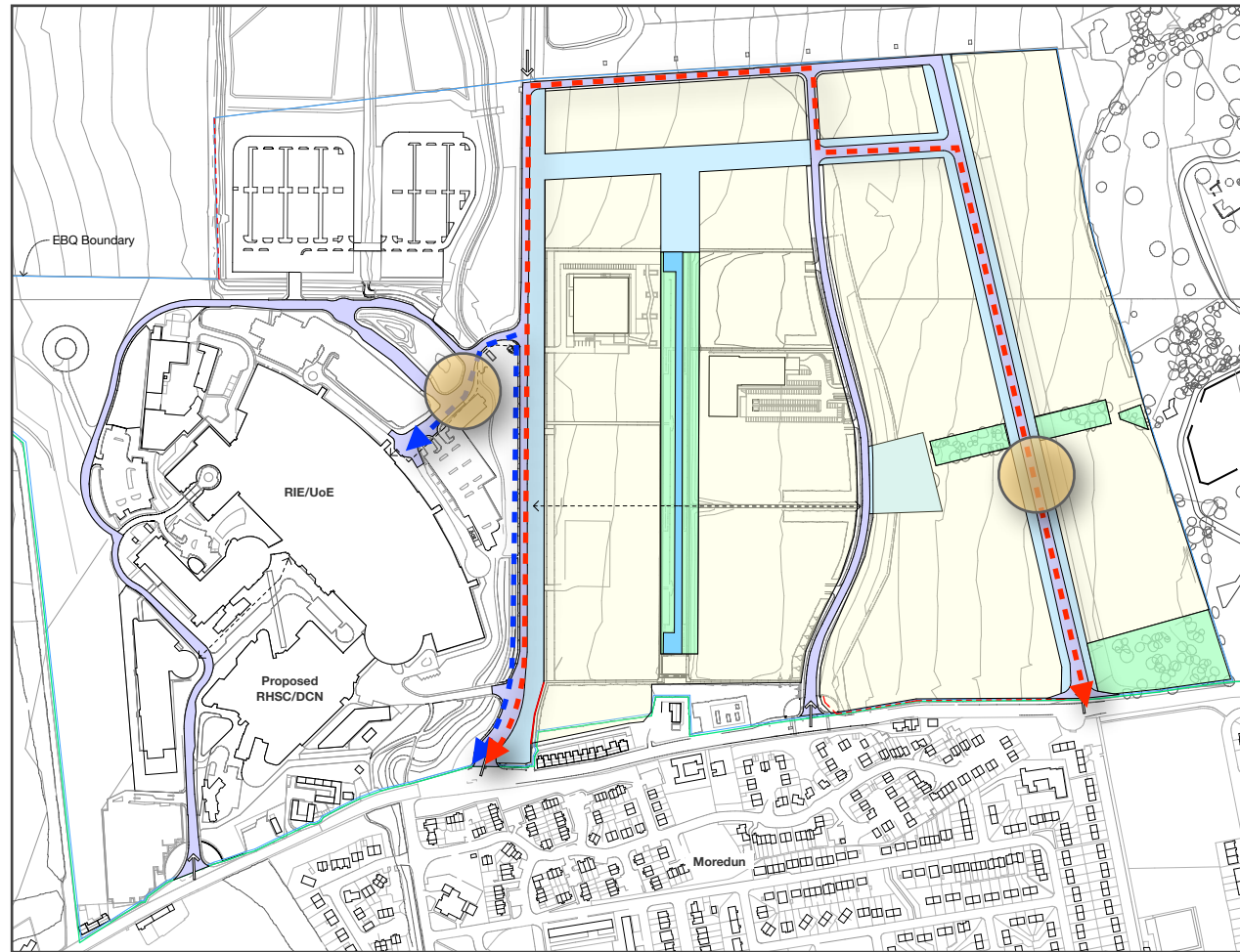


Figure 4.2 – proposed RIE bus hub

Image abstracted from Arup's Overall Proposed Road Layout, June 2013, drawing ref 20131:RCP:95:001






-  Hub location
-  Through bus route
-  Terminating bus route

Figure A.1 – Long term bus access strategy

EBQ Infrastructure Implementation Matrix

Number	Infrastructure Measure	Description	Delivery Term Start	Trigger	Status	Process	Cost indicator	Location	Obligation
Pedestrian and Cycle Measures									
1	Upgrade connection to shared use path by providing alternative to steps.	Rear of RIE, at path to Craigmillar Castle.	short	RHSC/DCN	Incomplete	Planning	Medium	On/off	New
2	Provision of further cycle parking.	To be provided in association with RHSC/DCN and Phases 1 - 3.	short	Delivery of RHSC/DCN/Ph1-3	Incomplete	Planning	Low	On	New/existing
3	Provision of various internal formal crossing points at RIE.	To facilitate access between buildings, bus stops and car parks	short	RHSC/DCN	Incomplete	Planning	Low	On	New
4	Provide controlled crossing just north of SCRM development on Little France Drive	Scheme designed in detail, requires safety audits, taking account of PTL. Only required when PTL or Little France Drive is extended northwards	short	PTL/Little France Drive	Incomplete	S56	Low	On	New
5	Ensure Phase 4 is designed to facilitate pedestrian and cycle movement.	Phase 4 layout has to be compatible with Phases 1 – 3 layout and external network to maximise accessibility for pedestrians and cyclists.	short	Award of masterplanning contract	Incomplete	Planning	Low	On	New
6	Provision of Drop-Kerbs.	3. A7 / Little France Mills Junction.	short	Good practice/ATAP	Incomplete	ATAP/Capital Works Programme	Low	Off	New
7	Provision of Drop-Kerbs.	4. Private Driveways between Little France Drive and BioQuarter access.	short	Good practice/ATAP	Incomplete	ATAP/Capital Works Programme	Low	Off	New
8	Provision of Drop-Kerbs.	1. A7 / Moredunvale Road Junction.	short	Good practice/ATAP	Incomplete	ATAP/Capital Works Programme	Low	Off	New
9	Provision of Drop-Kerbs.	2. A7 / Craigmillar Castle Road Junction.	short	Good practice/ATAP	Incomplete	ATAP/Capital Works Programme	Low	Off	New
10	Trim overgrown bushes / shrubbery.	Southern side of A7 between RIE vehicle access points.	short	Good practice/ATAP	Incomplete	TBC	Low	Off	New
11	Enhance cycle provision on Old Dalkeith Road.	Identified in ATAP. Review to be carried out by September 2011 and works April 2013.	short	ATAP	Incomplete	TBC	Low	Off	New
12	Investigate new designated cycle route to link existing facilities.	Between A7 and A772, linking radial routes.	short	ATAP	Incomplete	TBC	Low	Off	New
13	Re-route existing pedestrian routes from crossing on A7 at Moredunvale Road.	Required to accommodate construction of RHSC/DCN building.	short	RHSC/DCN	Incomplete	Planning	Low	Off	New
Public Transport Measures									
14	Relocate existing public transport hub to accommodate RHSC/DCN development	Required to support the RHSC/DCN development. New hub to be relocated at eastern entrance supported by supplementary stops within site.	short	closure of existing bus route	Incomplete	Planning	High	On	New
15	Provide new bus laybys/stops to serve RHSC and QMRI building.	Required to support RHSC/DCN development, will depend on new public transport access arrangements	short	closure of existing bus route	Incomplete	Planning	Medium	On	New
16	Establish bus access route to support new public transport access arrangements associated with RHSC/DCN.	Options include existing loop road around rear of RIE building or completion of Ph1-3 link road/Little France Drive	short	closure of existing bus route	Incomplete	Planning	High	On	New
17	Create bus route through EBQ Phases 1 – 3 area.	Relies upon completion of internal loop road to north of Plots 12/13 - Take cognisance of RHSC/DCN progress and arrangements	medium	Completion of loop road to north of Ph1-3	Incomplete	RCC	High	On	New
18	Establish an additional public transport hub to serve the southern portion of Phases 1 – 3 and Phase 4	Permanent location will be influenced by layout of Phase 4. Medium term location could be anywhere on southern section of Phases 1 – 3 loop road	medium	Completion of loop road to north of Ph1-3 and occupation of Ph1-4	Incomplete	Planning	High	On	New
19	Give consideration to providing a public transport route through Phase 4 to link with new access junction and minimise diversion for buses.	A short route through the site would encourage buses to enter the site, maximising access to public transport for Phase 4 users. This would need to be considered in the masterplanning process.	short	Award of Ph4 masterplanning contract	Incomplete	Planning	Medium	On	New
20	Increase bus provision for DCN/RHSC/Phases 1 - 3	Subject to review of available existing capacity and emerging demand. Assuming the same level of demand generated by RHSC/DCN and Phase 4 would suggest the need for up to 18 additional inbound services in the morning 2 hour peak hour period and 15 in the evening 2 hour peak period.	short	Delivery of RHSC/DCN/Ph1-3	Incomplete	Consultation	Medium	On	New
21	Increase bus service provision for Phase 4	Subject to review of available capacity at the relevant time. High level model suggests up to 18 additional inbound services in morning peak and up to 15 inbound for the evening peak.	long	Delivery and occupation of Ph4	Incomplete	Consultation	Medium	On	New
22	Establish bus service requirements on PTL which serve EBQ, Greendykes, Craigmillar etc	The PTL is a committed scheme and the high level model suggests significant demand between EBQ and these areas.	short	Completion of PTL and generation of demand	Incomplete	Consultation	Medium	Off	New
23	New orbital route	To cater for demand in those areas not currently served by direct links including Wester Hailes, Oxbgangs, Fairmilehead, Buckstone, South Morningside, Liberton, etc. Consider in tandem with PTL potential.	short	EBQ Demand/PTL	Incomplete	Consultation	High	Off	New
24	Extend existing westbound bus lane on Old Dalkeith Road.	Proposed via SEEBPS Phase 1 update (previously 2 separate schemes which have been combined). Bus lane to be extended back to Sir Walter Scott Avenue.	short	SEEBPS	Incomplete	Planning	Low	Off	New
25	Bus lanes on Old Dalkeith Road at flood defences and Inch Park	Proposed via SEEBPS. Original schemes amended and combined, potential remains for implementation of full scheme medium to long term.	medium	SEEBPS	Incomplete	Planning	Medium	Off	New
26	Segregated busway on Old Dalkeith Road	Proposed via SEEBPS. Route to run between Cameron Tool and RIE, other low cost schemes have now been proposed but this remains a potential longer term scheme.	long	SEEBPS	Incomplete	Planning	High	Off	New
27	Provide bus lanes where possible between RIE and Sheriffhall P&R	Proposed via SEEBPS, specific scheme dependent. Alternative option for segregated route.	long	SEEBPS	Incomplete	Planning	High	Off	New
28	Monitor South East Edinburgh Tram Line/A7 public transport intervention	Indicative high level model test suggests people travelling the EBQ would use the tram or equivalent. Feasibility of this intervention was subject to CEC/TIE study. Study concluded that scheme would offer benefits, but in reality it will be long term delivery	long	CEC progress	Incomplete	Consultation	Low	Off	New

Traffic Measures										
29	Revise Phases 1 – 3 junction to create 2 northbound lanes and a right turn flair lane. Widen the carriageway to provide a left turn slip and 2 southbound lanes. Pedestrian facilities also need to be revised.	These improvements are required before the junction can operate as a signal controlled junction. There may be an opportunity to open in the short term, subject to traffic loading, as a priority junction, also subject to temporary layout revision. Bus route choice in short term may impact on requirements	medium	Occupation of Ph 1-3/bus routing	Incomplete	RCC	Medium	On/off	New	
30	Provide new junction on Old Dalkeith Road to access Phase 4.	To be of a standard similar to that of the proposed revised Phases 1 – 3 junction.	long	Build out of Ph4	Incomplete	RCC	Medium	On/off	New	
31	Create new drop-off/pick up facilities to accommodate RHSC/DCN development	Required to support the RHSC/DCN development. It is proposed to locate this at the existing western RIE entrance.	short	RHSC/DCN	Incomplete	Planning	Medium	On	New	
32	Modify/remove Little France Drive/Little France Crescent junction	Required for RHSC/DCN project. Through route to be severed, Little France Crescent from Little France Drive will become blue light access only. Signals to be removed completely or retained in some form to improve access for blue light vehicles.	short	RHSC/DCN	Incomplete	Planning/RCC	Low	On	New	
33	Complete Phases 1 – 3 loop road	Needed to access southern Phases 1 – 3 plots from Little France Drive and facilitate bus route. May be required in short term to allow vehicle access to Plot 9 if Phases 1 – 3 junction issues cannot be resolved in time, also possible requirement for bus access associated with RHSC/DCN impact	short	Bus access requirements for RHSC/DCN and/or build out of Ph 1-3	Incomplete	RCC	High	On	Existing	
34	Modify Little France Drive/Old Dalkeith Road junction	Lengthen right turn lane from Old Dalkeith Road to Little France Drive to accommodate Phases 1 – 3 partial build out and RHSC/DCN. Shared responsibility.	short	RHSC/DCN and Ph1-3 build out	Incomplete	S56	Low	Off	New	
35	Remove hatched area to south of Little France Drive, rationalise layout between Little France Drive and Phases 1 – 3 junction to create 1 lane southbound, 2 northbound and cycle lanes.	Needed to increase capacity and help manage interaction between junctions	medium	Occupation of Ph 1-3	Incomplete	S56	Low	Off	New	
36	Convert Craigmillar Castle Road/Old Dalkeith Road junction to signal control and link operationally with Little France Crescent signal junction	Identified in the Phases 1-3 Transport Assessment. Needed to support committed development and allow further development of EBQ. Not associated with RHSC/DCN or Phase 4.	short	RHSC	Incomplete	S56	Medium	Off	Existing	
37	Investigate methods for managing demand at Moredunvale Road / A7 junction.	Need to achieve no-net detriment is likely to be associated with RHSC/DCN development - further measures may need to be considered for additional EBQ development	short	RHSC/DCN	Incomplete	Planning	Low	Off	Existing	
38	At Little France Drive increase capacity of left turn flare by creating full lane width for entire length and modifying flare on Old Dalkeith Road northern approach.	Needed to increase capacity and help manage interaction between junctions	short	RHSC/DCN and Ph1-3 build out	Incomplete	RCC	Medium	Off	New	
39	Moredunvale Road, no suitable physical mitigation measures identified.	Need to reduce flows on Moredunvale Road, through modal shift or physical measures to prevent through traffic rat-running. Works possibly required beyond RHSC/DCN works depending on outcome	medium	Committed development + EBQ	Incomplete	TRO/RCC	Medium	Off	Existing	
40	At Ferniehill Road junction with Old Dalkeith Road, create two northbound and southbound ahead lanes at stop line, continuing northbound through junction on Old Dalkeith Road to Phase 4 access.	Delivery of these improvements would offer significant operational benefits, particularly in the morning peak, but delivery relies upon 3 rd party land.	medium	Committed development + EBQ	Incomplete	RCC/Land acquisition	High	Off	Existing	
Parking Measures										
41	Implement and maximise parking on Plots 14-16	Needed to support RHSC/DCN development, accommodating relocated Car park B and new spaces.	short	Closure of Car Park B	Has planning approval, construction almost incomplete	Planning	High	On	Complete	
42	Close car park B at RIE	To allow construction of RHSC/DCN to begin.	short	Construction of RHSC/DCN	Incomplete	Planning	Low	On	New	
43	Improve efficiency of existing RIE car parks through adjusted management, signing or other appropriate measures.	Analysis suggests spare capacity in some areas and oversubscription in others. Spare capacity needed to accommodate RHSC/DCN demand.	short	Implementation of RHSC/DCN	Incomplete	Internal	Low	On	New	
44	Provide parking for Phases 1 – 3 at a maximum rate of 1 space per 55m ² GFA.	The delivery of this parking will depend on the balance of space usage in each plot. Parking could be delivered centrally in a multi-decked car park or on a managed plot by plot basis. It may be necessary to reduce building size to accommodate parking on a plot. The preferred location for a multi-storey car park would be on plots 14 to 16	short	Build out of Ph 1-3	Ongoing	Planning	High	On	Existing	
45	Provide parking for Phase 4 at an appropriate rate.	Assuming Phase 4 permission is granted at maximum 1 space per 55m ² , 2,129 spaces could be provided. This level of provision would require another multi-storey car park to the south of the EBQ	long	Build out of Ph 4	Incomplete	Planning	High	On	New	
Travel Plan Implementation										
46	Appoint over arching EBQ travel plan coordinator to implement EBQ travel plan.	The travel plan produced for this study is an overarching document for the entire EBQ.	short	Ongoing	Ongoing	Consultation	Low	On	New	
47	Review and monitor travel behaviour, travel demand and infrastructure requirements.	The mechanism for this is presented in the EBQ travel plan	short	Ongoing	Ongoing	Consultation	Low	On	Existing	
48	Consider implementing a business travel network	Creates a business-to-business network which enables companies and occupiers to share best practice and promote the rationale for travel plans and smarter travel choices.	short	Ongoing	Ongoing	Consultation	Low	On	New	

Appendix 2: Pre-Draft Consultation Reference Documents

Summary of Masterplan Consultation Process

The Edinburgh BioQuarter (EBQ) Masterplan was the subject of extensive consultation throughout its preparation in 2012. The Consultation Draft Masterplan was informed by regular meetings with City of Edinburgh Council (CEC) Planning, Transport and Environment officials. The supporting Transport Statement and Environment Studies, in particular, were the subject of separate discussions between the individual specialists from both the EBQ team and CEC.

Externally, consultation with the Key Agencies was prioritised, with a round table meeting convened with representatives from Transport Scotland, Scottish Natural Heritage (SNH), SEPA, Historic Scotland, Architecture and Design Scotland (A+DS) and CEC on 27 June 2012. A note of the meeting is attached. In summary, the main focus from SNH was in relation to the Edmonstone Estate ridge and the “New Meadows”. Reference was made to the environmental studies being undertaken as part of the Masterplan and CEC committed to consult further with the Key Agencies once the Masterplan was submitted to CEC.

Following the Key Agencies meeting a separate Design Workshop was requested by A+DS and this took place on 1 August 2012 at Building Nine. A+DS responded with a letter dated 14 August 2012 setting out its position in relation to the emerging Masterplan. A copy is attached. In summary, A+DS confirmed its support for the BioQuarter as a national and strategic project, representing the first involvement for A+DS under a new protocol between the Key Agencies in relation to a number of Enterprise Area sites in which the Key Agencies will be involved. A+DS considered that robust delivery mechanisms should be put in place to unlock many of the aspirations brought forward in the Masterplan.

The connectivity aspirations and pedestrian permeability included within the Masterplan was supported, the latter being described as “a critical part of the Masterplan aspirations”. The higher density urban approach, moving away from the business park model, was supported and a design code approach was recommended. The exploration of the implications of building heights relative to topography, exploring the potential for taller buildings as appropriate, and taking cognisance of the harsh Scottish climate should be built into the Masterplan as it develops.

Three formal consultation events were arranged in August 2012. The first of these took place in Building Nine located on the BioQuarter site and took the form of a briefing of key stakeholders from the local community, including ward councillors, community councils and other community representatives and activists. A note of the meeting is attached. Issues arising from the meeting included traffic generation and car parking, improving accessibility to the overall area and the mix of uses.

In addition to the general consultation session, two specific public exhibitions were held within the nearest local communities, Craigmillar and Moredun. The Craigmillar exhibition took place on 21 August 2012 at the White House on Niddrie Mains Road and the Moredun exhibition took place on 22 August 2012 at Moredun Library on Moredun Park Road. Full details of attendees are provided on the attached schedule and a copy of the invitations to the exhibitions, and feedback form, are also attached.

The EBQ Masterplan was amended in the latter part of August 2012 to take account of the responses to the consultation processes undertaken in the June to August period. The Masterplan was submitted to CEC for its consideration on 4 September 2012.

At CEC Planning Committee on 5 December 2013 the non-statutory masterplan for the EBQ was approved for formal consultation by CEC. Consultation was carried out between 6 January and 28 February 2014. As part of the consultation over 500 letters and e-mails were sent to members of the public, community councils and stakeholders, including neighbour notification of surrounding properties. Two public drop-in events were held to discuss the proposals with the communities in Craigmillar (Monday 13 January) and Moredun (Wednesday 15 January). Six responses were received during the consultation period and the main changes have been incorporated into this finalised masterplan. This masterplan will be read in conjunction with the Supplementary Guidance approved by Planning Committee on 5 December 2013.

Masterplan Consultation – Summary Schedule

EVENT	DATE	ATTENDEE NUMBERS	FEEDBACK RECEIVED?
Key Agencies (SNH, SEPA, Historic Scotland, Transport Scotland, CEC Planning)	27 June 2012	11	Yes
Councillor/Community Council briefing	1 August 2012	34	No
Architecture & Design Scotland	1 August 2012	11	Yes
Councillors on-site presentation	16 August 2012	c.30	No
Transport Scotland/CEC Transport	August 2012	n/a	Yes
CEC Flooding & Jacobs re the Niddrie Burn	August 2012	n/a	Yes
CEC Structures/Bridges	August 2012	n/a	Yes
Scottish Power	August 2012	n/a	Yes
SEPA Hydrologist	August 2012	n/a	Yes
Scottish Water Horizons	August 2012	n/a	Yes
CEC Environmental Health re Noise	August 2012	n/a	Yes
CEC Archaeology	August 2012	n/a	Yes
White House, Craigmillar	21 August 2012	25	See below
Moredun Library	22 August 2012	53	See below

Community Events – Summary Overview

EVENT	DATE	ORGANISATION	COMMENT OVERVIEW	COMMENT DETAIL
Community briefing	1/8/12	Individual	Negative	Existing landscape inappropriate. Wind-related issues will be created by the layout of the development as proposed.
Craigmillar	21/8/12	Individual	Positive	Interested in links with local schools in Craigmillar/ Niddrie – potential workforce. In favour of mix of uses.
Craigmillar	21/8/12	Individual	Neutral	Depends very much on what will eventually be built. Uses should be in keeping with theme of life sciences; a training ground for scientists should be built with good training facilities.is being built
Moredun	22/8/12	Individual	Positive	New change needed. Fast food outlets needed.
Moredun	22/8/12	Individual	Positive	Swimming pool and shopping centre needed.
Moredun	22/8/12	Individual	Positive	Play parks needed.
Moredun	22/8/12	Individual	Positive	New shops, greenery, housing all needed.
Moredun	22/8/12	Individual	Positive	New park and shopping needed.
Moredun	3/9/12	Individual	Negative	Buildings too close to Old Dalkeith Road; noise from construction activity; poor design of buildings so far; parking problems; jobs will not be provided for locals; no more retail; CCTV usage of concern (acknowledgement issued)
Moredun	29/8/12	Individual	Neutral	Potential for use of part of the area as a demonstration permaculture forest garden (holding response issued)
Moredun	10/9/12	Individual	Negative	Change in the character of area from rural to urban unwelcome; parking ‘dumped’ on local residents; no need for further expansion with phase 2/3 only a third full; improvements to Old Dalkeith Road urgently needed; development up to Old Dalkeith Road completely unnecessary;
N/A	12/9/12	Midlothian Council (Andrew Ralton, Economic Development Officer		Requesting information (link to website provided)

**Edinburgh BioQuarter
Key Agencies Group Meeting Notes, 27 June 2012**

Location: CEC Waverley Court, East Market Street, Edinburgh
Attendees: Linda Hamilton (LHH) CEC Planning DEpartment (CEC)
David Given (DG) CEC
Hamish Bell (HB) CEC
Lisa Hannon (LH) Scottish Enterprise (SE)
Andy Carswell (AC) Alexandria Real Estate (ARE)
Alexander Fairweather (AF) Allan Murray Architects (AMA)
Kenny McNally (KMcN) AMA
Paul Scott (PS) Scott Hobbs Planning (SHP)
Claire Carr (CC) SKM Colin Buchanan (SKM)
Jenny Hazzard (JH) WSP
Drew Miller (DM) WSP
Johnny Cadell (JC) Architecture & Design Scotland (A+DS)
Virginia Sharp (VS) Historic Scotland (HS)
Mike Shepherd (MS) Scottish Natural Heritage (SNH)
Carolyn Clark (CC) SNH
Angela Burke (AB) SEPA
Jonny Moran (JM) Transport Scotland (TS)

Distribution: As above plus: Fiona Maclean, University of Edinburgh; Iain Graham, Lothian NHS; Colin Christison, Scottish Water

Item **ACTION**

1. Introduction

Note: AMA had issued an information pack in advance of the meeting to give the attendees an overview of the project.

- 1.1. AF gave an overview of the scheme development and explained that the intention was to reach agreement over the Environmental Studies which were to be provided to support the Supplementary Guidance (SG) application for the development of the BioQuarter.
- 1.2. PS highlighted that the scheme was being developed as a partnership between CEC and the EBQ partners, and not as a Planning Application, taking advantage of the recently revised status of Supplementary Guidance. He then provided some background to the discussions which have taken place between the Edinburgh BioQuarter (EBQ) clients and the CEC Planning Department. This has resulted in agreement that an SG application will be prepared in parallel to the development of the LDP to help inform the ongoing development of the masterplan for the BioQuarter.
- 1.3. AMA explained the high-level nature of SG meant there was still considerable flexibility over the form of development, and illustrated a few alternative design approaches which had led to the formation of a few key Design Principles.
- 1.4. It was noted the hospital was integral to the future development of the BioQuarter. The need for a strong relationship between the RIE and adjoining sites had been highlighted by studies of competitors to the BioQuarter who were proving attractive to Life Science companies by their strong links to hospitals.
- 1.5. AMA highlighted the need to improve the use of the adjoining parkland (referred to as the New Meadows) to the benefit of all adjoining communities, and showed sketch proposals suggesting a form of development. This is still to be agreed with the CEC Parks and Leisure Department.
- 1.6. The ongoing developments at Greendykes and Craigmillar were noted as having a major impact on the area, especially in terms of the volume of people expected to use the new transport and pedestrian routes to the RIE and New Meadows.
- 1.7. AMA explained their proposal to integrate the proposed Tram Line 3 within the road of Little France Drive. This enables the building line to be pulled forward and gives a more urban edge to address the main entrance of the RIE, which is to be relocated to the SE side once the site for the Royal Hospital for Sick Children developed.
- 1.8. AMA showed a number of key views which have been analysed using a 3d model to show the impact of the Phase 4 development in relation to the massing of the existing approval for Phases 2 & 3 and the massing implied by the LDP description for BUS 1b. It was acknowledged the development of these comparative views are still under development.
- 1.9. The proposed realignment of the Green Belt was explained as a way to form a more defensible edge, correcting a discrepancy between the tree belt which was consented under the 2004 masterplan and the line of BUS1b.
- 1.10. AMA said they had provided indicative accommodation schedules to cover a few scenarios which CEC were intending to use for their ongoing transport review. SKM said that a Transport Study had been undertaken a few years ago, which would provide a 'fit for purpose' assessment for the proposed development. SKM to discuss this further with TS.

SKM

**Edinburgh BioQuarter
Key Agencies Group Meeting Notes, 27 June 2012 continued**

Item (previous number in brackets) **ACTION (Date Due)**

2. **Environmental Studies**
 - 2.1. AMA explained the Illustrative Masterplan covered the EBQ and adjoining CEC land, which was seen as being part of the BioQuarter 'brand'. The extent of the SG is greater than the Illustrative Masterplan, to fit into CEC's overall Proposed Plan.
 - 2.2. It was noted the area will also be subject to a Strategic Environmental Assessment as part of the LDP process. JH and CC summarised the scope of the Environmental Studies which had been agreed in principle with CEC.
 - 2.3. It is intended that the Environmental Studies are restricted to the Phase 4 land. Phases 2 & 3 are excluded as they had already been assessed within the 2004 masterplan. If any changes to the 2004 quantum are proposed then the relevant studies will need to be updated.
 - 2.4. WSP explained that their Noise/Air Quality assessment was not going to be quantitative, instead it would provide a baseline of known data and provide broad parameters for areas of improvement. CEC asked that the 'worst case scenario' be considered to enable this to be useful for subsequent submissions. **WSP**
 - 2.5. SNH noted the relationship between the buildings and the tree line at the Edmonstone Estate ridge was important. AMA said the buildings needed to be 20m high, enabling 3 stories plus a plant zone as per international precedents for Life Science buildings. They did, however, feel it was possible to do this without breaching the tree line.
 - 2.6. SNH said the New Meadows was important to the whole of Edinburgh and that Parc had recently received a grant to forward the design of this area. AMA agreed to be available to liaise with Parc to progress this aspect of the design. **AMA**
 - 2.7. AMA acknowledged some trees within Phase 4 were part of a Local Nature Reserve within the current Local Plan and highlighted the additional planting they were proposing to compensate for their removal.
 - 2.8. The need for an EIA was discussed. It was agreed that adequate studies needed to be undertaken at this stage to ensure that suitable Conditions could be applied to subsequent Planning Applications, to handle any mitigation which may be required. However the long development period for the masterplan (potentially 10-30 years) meant that assessments carried out now may be irrelevant when the site is submitted for planning, and this strategy allowed the assessment to be kept up to date with the current regulations.

3. Any other Business

- 3.1. SE confirmed the Enterprise Zone encompassed Phases 2, 3 & 4, but excluded the existing UoE sites.
- 3.2. It was agreed that a procedure was required to cater for the payment of contributions, to avoid the initial Planning Approvals bearing all the costs. CEC to review this in due course. **CEC**

4. Conclusion

- 4.1. It was acknowledged that the ongoing consultation would be more limited than a full EIA. Each of the consultants are to arrange meetings as required and to include AMA & CEC in their correspondence. **WSP SKM**
- 4.2. A+DS suggested they have a design forum to review the proposals in more detail, as a round table discussion of various topics. AMA agreed to arrange a date towards the end of July 2012. **AMA**
- 4.3. It was agreed the masterplan would be circulated by CEC to the consultees after it was issued to them by AMA. The consultation period is still to be confirmed by CEC, but was expected to be around 4-6 weeks to accommodate the timeframe for the Local Plan. **CEC**
- 4.4. AMA agreed to circulate the contact information for the consultants (appended to these notes for ease of reference). **AMA**



14th August 2012

Alexander Fairweather
Allan Murray Architects Ltd
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Edinburgh
EH11 1SJ

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Architecture and Design Scotland (ADS) is a non-departmental public body of the Scottish Government, incorporated under the Companies Act 1985 as a private limited company. Company No. SC267875.

Dear Alexander,

Project Reference: EA01 – Edinburgh BioQuarter Masterplan – Edinburgh – Scottish Enterprise / Alan Murray Architects Ltd - City of Edinburgh Council – LDP stage/SPG:

Our thanks to you and your colleagues for taking part in the Design Forum workshop on the 1st August 2012 at Building 9, Edinburgh BioQuarter. We hope you found the session to be useful, and that all of the arrangements in connection with it were satisfactory both prior to and during the day.

As indicated when we met, we now enclose a Workshop Advice Note with our comments on the project as a record of the event. We hope you will find this helpful as the designs develop further, and would be grateful if you would forward a copy of this to other members of the Project Team.

We note that the project is not in the public domain. A+DS will normally suspend publication of our comments until a planning application is submitted, or upon agreement of the various contributing parties to its issue. We can confirm that in this instance, therefore, it is not our intention to publish the attached advice note at this time; however we do reserve the right to publish our views in advance of the criteria above being satisfied should all or part of our views subsequently be brought into the public domain.

We trust our input has been of assistance, and we value your feedback. We would therefore be grateful if you or another member of the project team could find a few minutes to complete our online feedback survey. We are particularly keen to learn how comments are assisting with the development of design proposals and their passage through the planning system. The survey can be accessed via the following web link:- <http://www.surveymonkey.com/s/ProjectTeam2011and2012>.

A letter in similar terms has been sent to City of Edinburgh Council. We will be requesting similar feedback from their planning department asking them to advise us at an appropriate stage how our comments have assisted in the planning process.

If you have any queries with regard to the Advice Note, or wish to discuss the project further, please contact the undersigned.

Yours sincerely

Johnny Cadell
Design Adviser: Design Forum

Encl.

Workshop Advice Note - Restricted

Project Reference	EA 01 – Edinburgh BioQuarter [Mixed Use Masterplan – incorporating Biomedical research, Office, Residential, Parkland] Little France, Edinburgh
Client	Scottish Enterprise, University of Edinburgh, NHS Lothian, Alexandria Real Estate Equities Inc.
Lead Designer	Allan Murray Architects
Planning Authority	City of Edinburgh Council
Planning Status and Ref.	LDP stage: Strategic Masterplan for adoption as Supplementary Design Guidance
Workshop no. in series	[01] 01/08/12
Previous workshop(s)	[none]
Current Stage:	Briefing [–] Intermediate [x] Appraisal [–]

Venue:
Building 9 at Edinburgh BioQuarter, Little France, Edinburgh EH16 4TJ



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Introduction

In January 2012 the Scottish Government announced that the Edinburgh BioQuarter is designated as an Enterprise Area. Enterprise Areas have been identified for their national economic benefit, their ability to stimulate sustainable business, job creation and their deliverability. The Edinburgh BioQuarter site is described as the flagship site in Scotland, offering opportunities for manufacturing, research and development activities.

The Edinburgh BioQuarter [EBQ] Masterplan is a strategic planning document being prepared by Allan Murray Architects for the Edinburgh BioQuarter Partnership [EBQP] to inform supplementary planning guidance by the City of Edinburgh Council.

The boundary identified by Scottish Government for the Edinburgh BioQuarter Enterprise Area has been extended beyond the consented BioMedi park masterplan to include land owned by the University of Edinburgh and the NHS [the area also includes the Edinburgh Royal Infirmary and the site of the proposed Royal Hospital for Sick Children]. The planning implications for the EA status applies to the wider area. The current masterplan study area now also now includes strategic parkland to the east.

The project is being supported by A+DS as a National and Strategic Project. Our involvement arises from A+DS role on the newly established Scottish Enterprise led Key Agencies Group [KAG] Enterprise Areas Sub-Group. This group provides a framework for joint working between the national agencies, mostly statutory consultees. The SE Enterprise Areas Sub-Group aims include ‘demonstrating good practice in the design development and delivery of projects’ and ‘demonstrating how a design-led approach to problem solving can achieve wider benefits’.

The EBQ will be the first involvement for A+DS under a new Protocol between the Key Agencies and the first of a number of Enterprise Area sites in which we will be involved. A test case key agencies

‘workshop’ meeting was held on 27th June 2012. This meeting discussed the EBQ with a presentation by Alan Murray Architects, involving A+DS, City of Edinburgh Council and other agencies, hosted by CEC. This workshop gave rise to the offer of the 1st August 2012 Design Forum.

Workshop Scope

The aims of the workshop were to consider the emerging urban design proposition and the scope and coverage of the intended masterplan document. The workshop was informed by a site visit including views of the wider masterplan area from the upper floor of Building 9 and by a walk-over of the immediate context.

Workshop Outcomes

The need to reflect the existing masterplanning consents and planning history of the area in preparing the current masterplan were discussed and understood. The overall ambition and narrative of the project was thoroughly demonstrated and the masterplan as presented appears to include aspirations which are convincing and laudable. The Panel supported the collective endeavours of the Clients to re-visit previous and individual plans at this time in order to ensure that the very best solution is achieved.

Following discussion and debate, the following areas were identified for further consideration:

1. It is imperative that robust delivery mechanisms are put in place to lock in the ideas being put forward and hence to guide proposals for individual sites as they arise. The views and influence of other major stakeholders such as Consort, Alexandria and NHS, not present at the meeting, are fundamental and need to be managed as an integral part of shaping the development and in realising the potential of the masterplan area.
2. This delivery mechanism will require that all the various stakeholders sift and define the hierarchy of values and critical elements of the masterplan to establish optional, desirable, negotiable, and non-negotiable elements, including any transferrable assets, to achieve a unified vision. Consideration of the implications for extant and future planning consents would allow clarity in exercising these consents to a common purpose.
3. The masterplan proposal is founded on connectivity between the various parts of the EBQ, the city, and the wider landscape. This connectivity should not only be physical, by way of routes being proposed, but also relative to the response of adjoining sites to the opportunities being created; nuanced design of each edge condition whether to park/hospital, landscape or road. Conviction to, and the tangible delivery of, the masterplan intent will allow such responses to be made.
4. The mechanism to test the deliverability of the masterplan aims might include an initial project which would ideally address the issues around Little France Drive and the infrastructure proposed there. Creating pedestrian linkages across the Niddrie Burn and Canal to the Edinburgh Royal Infirmary and proposed Royal Hospital for Sick Children site to the research accommodation is described as a critical part of the masterplan aspirations.
5. The realities of funding and practicalities of delivering new pieces of infrastructure required to achieve the current aspirations – public parkland, pedestrian bridges, public spaces, and multi storey car parking, may require to be orchestrated through some common mechanism [S75 and S42 agreements were mentioned], as co-operation from the landowners appears unlikely, on its own, to be sufficient to provide certainty of delivery.
6. The masterplan concept promotes a departure from the business park model to create an area of much higher density and much greater diversity of land uses, (more similar to those found within the city), in order to create in the bioquarter commensurate activity and interaction. A design code could usefully set down specific requirements if such aims as building density, (particularly in light of the additional land take being sought), connectivity, frontage interaction, roofscape design, and cohesive urban form are to be achieved and maintained within the flexible typology / distribution intimated.

7. Exploration of the implications of building heights relative to topography and specifically defined view corridors could allow in some instances taller buildings in response to the desired mass, the creation of public spaces, and the enhancement of way finding.
8. The way in which the masterplan might respond to the realities of the harsh Scottish climate is not yet evident. Consideration might be given to the potential of built form to provide shelter from rain and prevailing winds along routes, and allow sunlight to penetrate into areas to create vibrant public spaces.

Next Stage

We would be pleased to offer a further workshop session to Development Partners, Planning Authority, and project stakeholders once the delivery discussions between the various site stakeholders are more developed, and once the design is therefore in a position to progress.

Workshop attendees:

Presenting Team

Alexander Fairweather	Director, Allan Murray Architects
Kenny McNally	Senior Associate, Allan Murray Architects
Paul Scott	Planning Consultant, Scott Hobbs Planning Limited
Lisa Hannon	Client, Scottish Enterprise
Fiona McLean	Client, University of Edinburgh

Local Authority

Linda Hamilton	The City of Edinburgh Council
David Givan	The City of Edinburgh Council
Kate Hopper	The City of Edinburgh Council

Other Agencies

Frazer McNaughton	Scottish Natural Heritage
Carolyn Clark	Scottish Natural Heritage

A+DS

Lead Panellist	Ric Russell
Panellists	Gordon Murray, Marc van Grieken
Head of Design Forum	Jill Malvenan
Design Advisor /	Johnny Cadell
Facilitator	
Design Advisor	Steve Malone [observer]

Illustrative Options

These illustrations are indicative sketches of the sort of density and city making that is being explored.

- 1. New connections could bridge the canal with more defined pieces of urban landscaping.
- 2. Routes which encompass semi-public space can make a clear distinction between entrances and amenities.
- 3. New green routes could encourage pedestrian connections between the RE/Life and Phase 2B and beyond. There are several options for how this could take place.
- 4. The precedent shows an avenue of mature trees along the edge of the urban park, setting the Quarter's character.
- 5. Photograph from suggested viewpoint (1) on the proposed route for Crugraigh Castle, Edinburgh Castle and Arthur's Seat.
- 6. Photograph shows the view into Arthur's Seat.
- 7. Photograph shows the view into Crugraigh Castle.
- 8. From the Flag, views to the Park of Fife are to be seen to the north east.

The Edinburgh BioQuarter is a joint venture between the GGP partners, who are:

- Scottish Enterprise
- NHS Lothian
- The University of Edinburgh
- Alexandria Real Estate Equities Inc.

Located at Life France in the south east of the city, the Edinburgh BioQuarter has been identified by the Scottish Government as an Education Zone, and by the City of Edinburgh Council as one of the top green areas of the city.

The ambition of the BioQuarter is to create a world class environment for the Life Sciences. The potential benefits of the Edinburgh BioQuarter to the city and to Scotland as a whole are highly significant in terms of the economy and job creation.

Phase 1 comprises the Royal Infirmary of Edinburgh and the University of Edinburgh Medical School and other research buildings (RE/Life). Phase 2B were approved in 2004 to accommodate a further 133,000sqm for Life Sciences and associated commercial development, where two buildings have been completed (The University's Scottish Centre for Regenerative Medicine and Building Fund). The new completed hospital for Children and Young People, and the Department of Clinical Neuroscience/Healthcare Planning consent and as to be located on Phase 1 and demonstrates the pressure for development on the Quarter as a whole. As in 2008, Scottish Enterprise purchased further land Phase 4 to the south east to allow the provision of further phases.

The GGP Partners are now developing a new Masterplan for the whole of the Edinburgh BioQuarter.

To fulfil the ambition of the BioQuarter to become one of the top Life Sciences destinations in the world, a new masterplan is being developed to make sense of the Quarter as a whole and to create a new and vibrant part of the city - the life of environment that will attract people to work in, visit in, and visit. It will complement the urban regeneration elsewhere in the part of the city, and enhance Edinburgh's network of green spaces with a new park and woodland.

Board 4

Existing Quarter with Adjacent Proposals

The Scottish Government promote better planning as one of its National Outcomes, encouraging the creation of "well-designed, sustainable places." These are "vital ingredients to the social, environmental and economic success of our cities." This is echoed in the City of Edinburgh Council's Strategy for Streets, at the heart of which is an imperative to create "good quality urban quality in a consistent manner across the city."

The purpose of the Masterplan is to create a cohesive whole, connecting the various parts of the Quarter together, and integrating it into its surroundings. It will create a coherent layout of streets, public spaces and amenities within a flexible structure that can adapt to unknown future requirements. Masterplans like this need to be capable of responding to growth, and be flexible enough to accommodate change.

A restriction boundary has been agreed which includes land owned by the partners, and the City of Edinburgh Council in title.

A more extensive Supplementary Guidance 'SD' boundary on site has also been agreed which includes land within the partner's ownership but which will be the owner for development that will be included in the Edinburgh Proposals Plan.

The design team consists:

Lead Designer & Masterplan:
Alan Murray Architects
Planning Consultant and Agency Advisor:
Scott Hobbs Planning
Transportation: SEM Urban Buchanan
Business and Engineering Technical Input:
WSP UK Limited
Landscape Design:
John Richards Landscape Architect
Archaeology: CHN Archaeology Ltd
Ecology: Nept Ecology

This is a public consultation on the ideas being developed for the masterplan. Please feel free to comment on the items provided, or get in touch at: edinburghbioquarter@scottishcouncil.gov.uk or by post to Scott Hobbs Planning, 25 Aisle Street, Edinburgh DG1 4WJ

Board 1

Proposed Green Belt Changes

We propose creating an urban edge that provides good definition for both the edge of the BioQuarter and the new urban park. This will help make the quarter easy to understand and use.

The Green Belt edge at the moment does not fully take this ambition into account, but it could do, with only small adjustments to the alignment of the edge onto the new Meadowbank. It is then possible to set out avenues of trees and perimeter walls within the park to define a path across the valley from Crugraigh Castle towards the Wisp and beyond. This will fundamentally reinforce the "green wedge" of the Green Belt eastwards and southwards.

Proposed Long Term Plans

Two further zones (Zone 4a and 4b) remain within the Green Belt.

Zone 4a represents land to the north east of the quarter which abuts the two existing NHS car parks, recently completed. In the long term, this land could be used as car parking accessed from the Life France Drive/the new Life Road. The car parking might be necessary for example, if there were any displacement of existing car parking, for example from the eastern edge of the RE where it might be desirable to create a new hospital access Life France Drive from a new pedestrian route within Phase 2.

The BioQuarter land (Site 4b) within the core of the Edinburgh Estate could be defined off with landscape reinforcement along the line of the existing ha-ha and estate walls. The existing driveway to the name of Home Farm could be upgraded to provide a minor vehicular access route to this site.

Proposed Nature Reserve Re-provision

By extending the south western edge of the BioQuarter out to Old Dalkeith Road, there would be the opportunity of the existing edge of the Nature Reserve zone. This site could be re-provisioned in a much more extensive form within the new Meadowbank, incorporating existing trees and shrub landscape.

The Process and the Next Stages

1. The TFG Partners and CDC have agreed an approach including working partnership with CDC in the preparation of its new Local Development Plan (LDP) for Edinburgh. The purpose of the consultation is to hear from local groups about their thoughts and ideas for the LDP. We will have these into account in preparing the Masterplan.
2. An Environmental Statement/Transport Statement will be prepared as part of the Masterplanning process, to consider the environmental, social, and the traffic and transport issues relating to the Masterplan proposal.
3. The Masterplan will establish the overall framework for the development of the GGP sites, and the two messages from it will be included in the LDP when it is prepared later this year. The main issue that will be considered by the LDP is the Green Belt locations in this location, and whether the changes proposed in this Masterplan are acceptable.
4. A set of Development Principles, setting out the land uses that are supported across the GGP sites, the size and height of buildings, and the location of roads, footpaths and open spaces will also be included as part of the LDP in the form of Supplementary Guidance. This, and the LDP itself, will be considered by the LDP, and this is currently scheduled to happen in early 2013.
5. No planning applications will be submitted at this stage in the process, but planning applications will be required before any buildings are allowed to be constructed. The consultation to be held in support of the Masterplan, the LDP and the Supplementary Guidance, but if there are issues from a particular organisation that would be located on the site in the new future, then a planning application could be brought forward for that building.

Board 5

Main Issues and Concepts

We have proposed some ideas for the development of the BioQuarter and these are presented graphically on this board. These include:

- creating a more urban environment
- creating a new urban park (the new Meadowbank, with woodland areas between the BioQuarter and the new Meadowbank)
- creating new links between the RE/Life and the rest of the BioQuarter
- creating new links between the BioQuarter and neighbouring parts of the city

Of particular importance is developing a coherent series of green spaces which could form an extension of Edinburgh's network of green spaces. The way these spaces are important as they link through and between them.

A Opportunity to create new frontage onto Life France Drive

The road and proposed train arrangement could be reworked to bring buildings forward closer to the hospital. Frontages could be aligned here, with extension of the street.

B Opportunity to create a new frontage onto the new Meadowbank

Buildings could present frontages onto the Meadowbank, with landscaped squares between.

A series of links could connect the BioQuarter with new Valley Parks for children and beyond.

C Opportunity to create a new edge to the Edinburgh Estate

Introducing a wall between the existing trees on the ha-ha wall which surrounds the estate. Different types of trees could address the edge such as lindenwood flowering.

D Opportunity to create a new urban park for the BioQuarter onto Old Dalkeith Road

Part of the existing stone wall and tree belt could be removed to allow building frontage and entrance to address Old Dalkeith Road.

Ethnographic Landscape Character Zones

1. A new route could connect the BioQuarter with the RE/Life. It could be aligned on a site of Crugraigh Castle. It could be predominantly pedestrian, but vehicle drop off on a shared surface is a possibility. A new urban bridge over the existing canal could connect the end to the south-east corner. It could connect small squares together.
2. A new route could connect the north-east portion of the BioQuarter to the RE/Life. It could be aligned on a site of Arthur's Seat. It could be predominantly pedestrian, but vehicle drop off on a shared surface is a possibility. It could connect small squares together.
3. A new road could connect the south-eastern portion of the BioQuarter to the RE/Life. It could be aligned on a site of Arthur's Seat. It could be predominantly pedestrian, but vehicle drop off on a shared surface is a possibility. It could connect small squares together.
4. A new valley path could connect the valley together. It could connect Crugraigh Castle Road and Greenbank Road to the Wisp, and beyond into the proposed lands for Shaver. It could be used to form a pleasant avenue (like, for example, South Meadow Walk).
5. A new street could be enhanced. Use to be reinforced, where possible Crugraigh Castle, Edinburgh Castle and Arthur's Seat. To the west, where opening towards the Park and Colinton Power Station. As a connecting node within the landscape, it links potential paths in various directions.
6. Edinburgh Home Farm site. Opportunity for a special building near the site of the current farm buildings.

Board 2

Edinburgh BioQuarter
Note of Public Consultation 1 August 2012, Building Nine, BioQuarter.

Date: Friday, 3 August 2012
Reference: EBQ-P01-120801M Consultation.pages

Session Questions

1. Trees were needed at Kings Buildings to help to break up the wind. It's very windy on the site, has a wind study been done?
A: Not yet.
2. Has the impact of the development on local roads been tested?
A: Recent study by SKM/Colin Buchanan looked at this in detail, taking in a much wider context.
3. Lot of accidents exiting from local side roads due to increased cars on Old Dalkeith Road – what is being done about road safety?
A: Could be part of a series of improvements which would be brought on by later Planning Applications.
4. What will the impact be on traffic on Craigmillar Castle Road and The Wisp due to the additional housing?
A: SKM study suggested limiting the traffic on these roads.
5. Limiting traffic on these roads is not going to improve links.
A: Improving links can be done for pedestrians, cyclists and by public transport as well as cars.
6. There will generally be more traffic – where will it go?
A: Traffic generated by the BioQuarter will largely use Old Dalkeith Road.
7. The RIE/UoE is not liked by residents as there are so many walls and barriers (and security guards), is the new area going to be any better?
A: It's not going to be designed as a 'Business Park'; intended to be part of the urban fabric, rather than isolated.
8. The use of the New Meadows is welcomed, but will the residential units on site compete with other developments – lots of Brown Field sites in Craigmillar that could be used first.
A: Not sufficient numbers to compete with other local centres; looking to integrate with the neighbours, not compete.
9. How are the houses on site going to be accessed?
A: From Old Dalkeith Road.
10. Are we going to provide staff parking for the RIE?
A: Parking will be managed for the new buildings; parking will not necessarily be charged for.
11. For some local residents the area is seen as suburban, rather than urban, and they expect to be able to park outside their houses.
12. LBP, how many people will be here? How many parking spaces will there be?
A: Development is planned for a 20-30 year period, unable to answer just now. Parking numbers will be in accordance with CEC guidelines, to be determined at the time of subsequent Planning Applications.
13. Same exercise was done for the RIE, so no confidence that they will be listened to this time.
14. What improvements are planned for Old Dalkeith Road?
A: Study shows need for local widening and junction improvements, some of which may be brought forward through the LDP.
15. This is the first time the Community Associations have heard anything about the proposed development and they have felt poorly consulted in the past.
16. Leave out the hotels and residential, so there will be more room for Life Science buildings, there would then be no need for the Green Belt to be affected. If this is a success the only way to expand is into the New Meadows.
A: This is a long term programme and the current layout is intended to cater for the foreseeable future.
17. Land within the Edmonstone Estate was earmarked for a Care Home, now looking to turn it into Residential, is the same thing going to happen here? Is this just a 'back-door' for developers?
A: Mixed-use is part of the ambition for the EBQ, the vision is based on what competitors are doing.

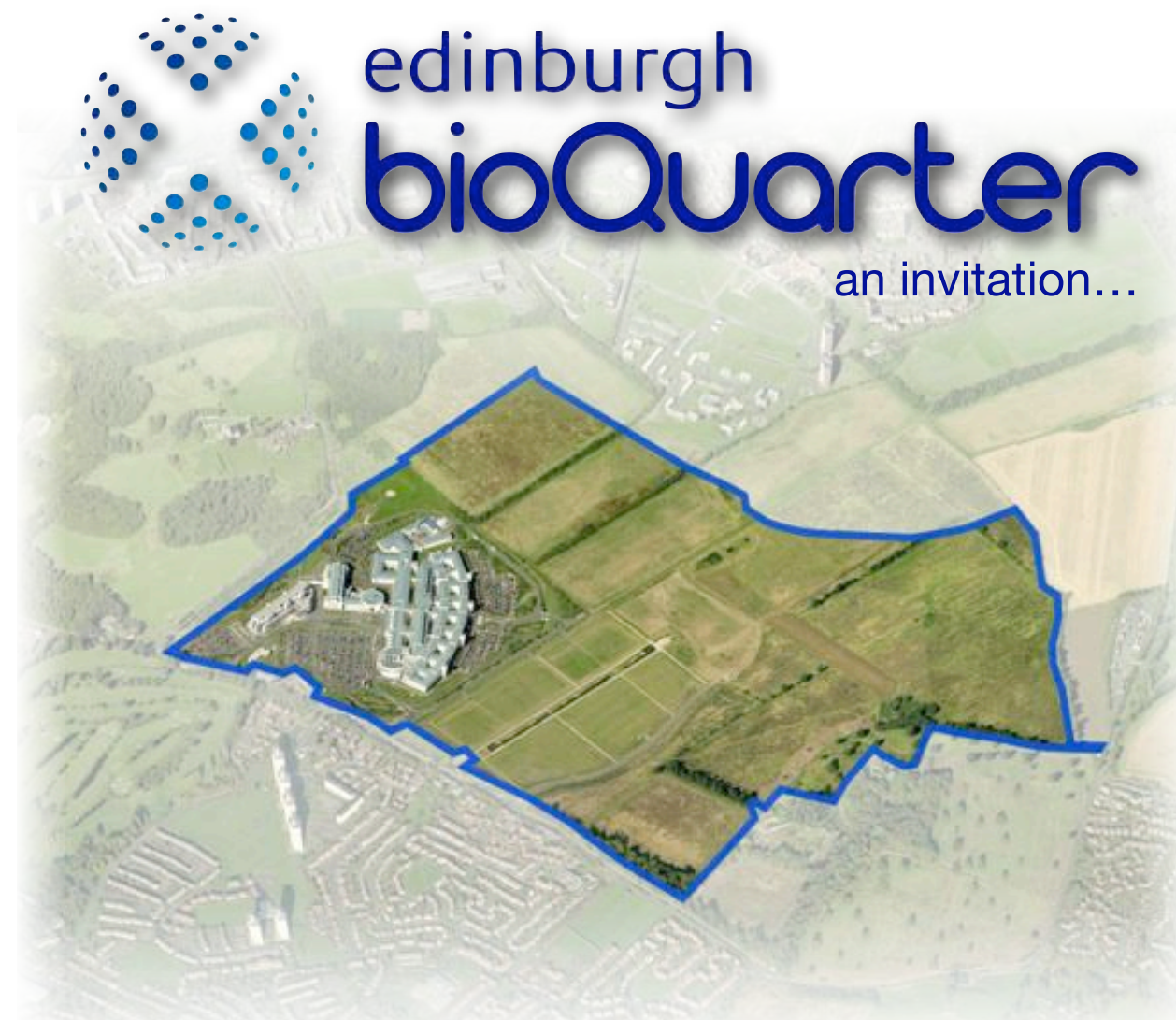
Edinburgh BioQuarter
Note of Public Consultation 1 August 2012 (continued)

Post-Session discussion

18. (KMcN) LBP said they were not aware the scheme was for such a long term development programme, and that they would not have been so concerned if they had known.
19. ...other notes to be added by other attendees...

AOB

20. It was agreed that the scheduled consultation on 7-9 August would not be held in the RIE, as this was unlikely to get a good attendance due to the cost of parking.
PS to liaise with representatives from Craigmillar and Moredun to arrange two separate consultation meetings.



**Scottish Enterprise, NHS Lothian,
The University of Edinburgh and Alexandria Real Estate**
would like to invite you to an exhibition outlining their draft Masterplan for
Edinburgh BioQuarter.

The Masterplan relates to the area outlined in blue above, and takes account of
existing and proposed developments by the BioQuarter Partners.

The exhibition will be on display on Tuesday 21st August 2012, at the White House,
72-78 Niddrie Mains Road, EH16 4BG.

Members of the project team will be in attendance from 5pm to 8pm and will be
happy to answer questions concerning the BioQuarter development.



Your feedback is important

Thank you for taking the time to read this leaflet. Full details of the exhibition material are available at www.edinburghbioquarter.com.

If you have any comments, please fill out the form below and return it to us at EBQ Team, Scott Hobbs Planning Limited, 7a Alva Street, Edinburgh EH2 4PH by Friday 7 September 2012. Alternatively, please email us your comments at: ebqconsultation@scotthobbsplanning.com

Here are some questions to prompt your response, but please feel free to provide comment on any other matter relating to the proposals.

Are you generally in favour of the concept for a more urban form of development at future phases of the BioQuarter?

Yes No

Comments _____

Are you generally in favour of the concept of the New Meadows?

Yes No

Comments _____

What uses (i.e. hotel, retail, housing etc.) do you feel would compliment the main Life Sciences uses at the BioQuarter?

In addition, please provide any general comments, below:



Scottish Enterprise, NHS Lothian, the University of Edinburgh and Alexandria Real Estate are considering the next phase of development at Edinburgh BioQuarter

This leaflet provides an introduction to the next phase of the BioQuarter development and provides you with an opportunity to comment on the masterplanning proposals



Edinburgh BioQuarter is a long-term development project aimed at creating a world class environment for the life sciences industry.

With the initial phases of development well underway, the development partners (Scottish Enterprise, NHS Lothian, the University of Edinburgh and Alexandria Real Estate) are considering the next phase of development at Edinburgh BioQuarter and are in the early stages of a Masterplanning exercise.

Existing Edinburgh BioQuarter

Initial phases of the BioQuarter include the Royal Infirmary of Edinburgh and The University of Edinburgh's Medical School and associated buildings (Phase 1), and The University of Edinburgh's Scottish Centre for Regenerative Medicine (SCRM) and Scottish Enterprise's BioIncubator (Building Nine) at Phases 2 & 3. This, and future development at Phases 2 & 3, have planning permission in principle for life sciences and ancillary commercial development.

Masterplan

Phase 4, the next phase of development, lies to the south east, between the existing and future development land at Phases 2 & 3, and the Edmonstone Estate. The Masterplan will relate to Phase 4 as well as the earlier Phases at the BioQuarter site, with a particular focus on connecting the wider site and integrating it with the surrounding established communities.

The Masterplan will include an illustrative layout demonstrating how the area could be developed in the future. It will consider land uses and quantities of floorspace, as well as access and key linkages.

The Masterplan will include a series of Development Principles with sufficient flexibility to accommodate the BioQuarter development over the long-term. It is hoped that the Masterplan will be approved by City of Edinburgh Council (CEC) in guiding future development within the existing and further Phases. The Development Principles will be prepared as formal Supplementary Guidance and once adopted by CEC, will sit alongside the Local Development Plan as part of the statutory development plan.

The Masterplan has now been prepared in draft, and this exhibition provides a Summary of the key concepts that have been developed.

Placemaking

The BioQuarter team is considering a more 'urban' form of development for future phases – quality public space and well-proportioned street with active ground floor uses.

'The New Meadows'

The open fields between the BioQuarter and Greendykes provide an opportunity to introduce a new urban park of a similar scale to the Meadows. The space could offer pleasant amenity, a safe urban network of paths and routes and enhance the quality of overlooking buildings.

August 2012 Exhibitions

Consultation exhibitions are taking place from 5pm to 8pm on Tuesday 21 August at the White House, Craigmillar and 5pm to 7.30pm on Wednesday 22 August at Moredun Library. These will be attended by members of the project team who will be happy to answer any queries in respect of the BioQuarter development.

Feedback

Your feedback on the Masterplan proposals is important to the project team preparing the Masterplan. The Masterplan must remain relevant over the long term, and be flexible enough to facilitate as yet unknown demands in the life sciences industry, and in the uses that support that industry. As a result it is not possible to fix the detail of development at this time, but we welcome your feedback on the general principles.

Details of how you can provide feedback to us are provided overleaf.

Density

A crucial ingredient of successful placemaking is to develop buildings at an appropriate scale. Like elsewhere in Edinburgh, the BioQuarter could include strong urban blocks and buildings of varying heights.

Uses

Whilst principally a location for the life sciences industry, the BioQuarter provides an opportunity for, and will undoubtedly be enhanced by, complementary uses, including some housing.

