elgin south | masterplan

Contents:

1.0

vision

Vision

The vision for Elgin South has been driven by a desire to create a fully accessible, high quality adaptable community which will be seen to 'fit into the landscape' setting whilst promoting a sports and healthy living lifestyle for all. The design process has acknowledged the key constraints and opportunities inherent in this landscape with the Masterplan tailored to create a development form with a unique sense of place as its form and key characteristics have been designed in response to the specific opportunities and constraints inherent across this land holding with reference also taken from the broader historic environment of Elgin and Moray beyond.

The Masterplan for Elgin South is planning for the long term growth of the city and therefore, must be seen to be adaptable, to evolving policy, market and community conditions, with a need to deliver a broad range of new homes. Elgin South will, as it evolves, be seen as a coherent community consisting of 3 No. distinct village forms drawing upon traditional Scottish settlement planning references and set within a landscape-led masterplan offering:

- a new urban edge and enhanced countryside interface to the south of Elgin
- an outward looking development form
- 2,500+ new homes
- a new state of the art Moray Sports Centre
- a broad range of additional ancillary and community facilities including opportunities for a range of commercial uses as well as sites for two new primary schools and a new cemetery for Elgin
- extensive formal and informal sports, recreation and leisure facilities
- enhancement of the woodland structure across the site
- nature conservation and enhancement
- integration and enhancement of the Linkwood Burn river corridor to act as a focus to the Landscapes of Elgin South and the overall masterplan
- design references taken from historic Elgin and Moray to add to the sense of place and connectivity to the existing community
- a fully accessible and integrated community with a legible, traffic calmed road network giving priority to the pedestrian and cyclist where appropriate

The key components of the Masterplan will be designed to complement each other to create a fully coherent development form which respects its setting and delivers the key objectives of Government policy, in the form of *Scottish Planning Policy, Designing Streets* and *Creating Places* as well as the objectives of The Moray Local Development Plan and Supplementary Guidance. (Section 2.0)

Adoption of the six qualities of successful places is acknowledged as being key objective to delivering this vision:

- Distinctive
- Safe and Pleasant
- Easy to Move Around
- Welcoming
- Adaptable
- Resource Efficient

Integral to this approach will be the delivery of a new state of the art Moray Sports Centre which will be designed to the highest standards as a key reference point within the masterplan. In consultation with Sports Scotland and other national bodies it will be built to provide for an extensive range of indoor and outdoor facilities for use by all the community, within Elgin and across Moray.

Visual connectivity with the established community has also been recognized as an important factor in place making and in this regard the Masterplan emphasizes the role played by 'town marks' in giving legibility.

In this instance Linkwood Distillery has been identified as a key feature within the existing landscape and the Masterplan acknowledges this by identifying view points to the distillery across the master planning area and from the Core Path network to the south.

The Masterplan recognizes that Elgin South can be delivered utilising existing infrastructure in the area with new roads, paths and links created as required and as the development unfolds. The new road hierarchy will therefore be built around the A941 as well as Linkwood Road and Birnie Road, with improvements made as necessary and by agreement with the Moray Council. Within the development form the road hierarchy will be designed to emphasise the 'street scene' whilst accommodating public transport services and alternative modes of transport.
Traffic calming will be designed into the road network with the road hierarchy planned to slow traffic naturally and to ensure the avoidance of any 'retro-fitting in the future. Where appropriate and by agreement with the Council, priority will be given to the pedestrian and cyclist.

The Elgin South Masterplan is seeking to deliver a high quality vision for the expansion of Elgin that will reflect the ambitions of The Moray Council and all those that will be involved in making this a successful place to live.

2.0

policy context

Policy Context

Moray Local Development Plan 2015

The masterplan has been produced in response to policies in the Moray Local Development Plan 2015. The plan is up to date having been adopted on 31st July 2015. The masterplan covers an area of land designated in the plan for the strategic expansion of Elgin as "LONG 2 South".

This new Moray Local Development Plan is the first to be prepared in Moray under the new process introduced by the Town and Country Planning (Scotland) etc Act 2006. The Local Development Plan replaced the Moray Structure Plan 2007 and Moray Local Plan 2008, and provides a single forward planning document that presents a vision and spatial strategy for directing growth in Moray for the next 10- 20 years.

Supplementary Guidance

The Plan is supported by supplementary guidance which provides extra detail on some of the policies and proposals. Supplementary guidance forms part of the development plan and has that status for decision making. The current suite of Supplementary Guidance covers;

- Affordable Housing
- Accessible Housing
- Climate Change
- Housing in the Countryside
- Trees in Development
- Urban Design

Once finally approved the masterplan will also be supplementary guidance.

Strategic Environmental Assessment

Supplementary Guidance can be subject to Strategic Environmental Assessment (SEA). The Council has prepared an SEA Screening Report for the masterplan area and has come to the view that an SEA is not required because the masterplan is unlikely to have any significant environmental effects. This has been submitted to the SEA Gateway.

National Planning Policy and Guidance

The Local Development Plan 2015 and the related supplementary guidance specifically acknowledge and draw on key National Planning Policy and Guidance as follows;

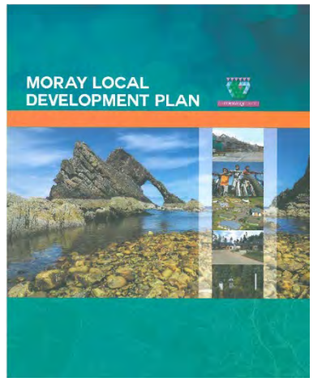
- Scottish Planning Policy
- Designing Streets
- Creating Places

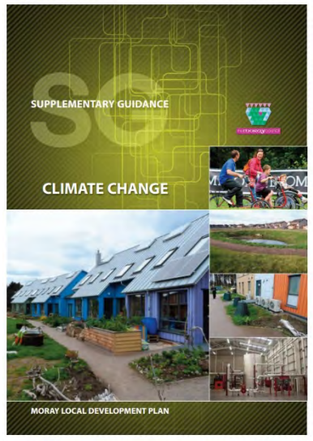
In addition Elgin is specifically referred to in Scotland's Third National Planning Framework as a "diversifying town" with The Elgin 'City for the Future' study noting the town's important role as a regional leader, providing a good range of services. Its vision is to stimulate business development, diversification and innovation.

Planning Policy Context Table

Given the alignment and currency of the Local Development Plan and supplementary guidance with National Planning Policy and Guidance a table has been produced assessing the masterplan against relevant policies from the plan and key elements of the supplementary guidance. The table is set out in appendix to the masterplan.

The table concentrates on relevant policies from the plan and the supplementary guidance on Urban Design and Climate Change which are considered to provide the most relevant guidance related to the overall concepts and principles of the masterplan. Supplementary guidance on Affordable Housing, Accessible Housing and Trees is considered more applicable to the detailed proposals for the individual phases. However under the related policies it is confirmed that the key requirements for 25% affordable housing and 10% of the balance for accessible housing will be addressed in the detailed proposals for the individual phases.





3.0

site appraisal & context

Site Appraisal & Context

3.1

General Context

The settlement of Elgin currently functions as the administrative and commercial centre for Moray. The city originated to the south of the River Lossie on the higher ground above the flood plain. The settlement now straddles the river corridor having seen it expand out from the historic core both to the north and south, including New Elgin.

The A96 trunk road, which connects the cities of Inverness and Aberdeen, runs through Elgin providing links with communities across Moray and beyond. The A941 provides a direct link to the south from the A96 connecting Elgin with Rothes, Aviemore and the main A9 road corridor beyond. The A941 also connects with Lossiemouth to the north.

Elgin is also located on the famous Speyside Malt Whisky Trail which branches out across the region linking many of the historic communities established across this landscape. A range of historic distilleries are often seen as the landmarks associated with the various settlements, often placed at the gateways to the communities or in key locations within the river valley. Elgin itself benefits from having a number of distilleries established within close proximity.

The land defined in the Local Development Plan as Elgin South and which extends to approximately 205 hectares is located immediately to the south of the established settlement boundary of Elgin. The south side has seen extensive development over a number of years, with a focus around Southfield community facilities, New Elgin. Elgin South extends out from the existing settlement boundary across this predominately agricultural landscape with Elgin Golf Club and Birnie Road combining to define the land holding to the west whilst the Moss of Barmuckity defines to the east. Notable landmarks within close proximity of the land holding include Linkwood Distillery where the traditional pagoda to its malting kiln can be seen from a number of views across the landscape.

Connectivity

As stated above, Elgin is very well connected with the national road network and it also benefits from rail and bus stations, located towards the city centre. The site is also well connected at a local level with three main roads linking Elgin South with the city centre to the north as well as the extended rural community to the south.

The main road through the site is the A941 and this is supported by Linkwood Road to the east and Birnie Road to the west. In addition the site benefits from its close proximity to a range of established paths which either form part of the Council's Core Path network or offer local connections across the south Elgin landscape.

This site takes full account of this connectivity highlighting the opportunity for significant improvements which will ultimately be seen to benefit both new residents and the established community.

An enhanced path network will offer scope for residents and visitors to enjoy a more comprehensive network of paths to the south of Elgin offering both segregated and integrated path networks for the enjoyment of walkers, cyclists and potentially horse riders.

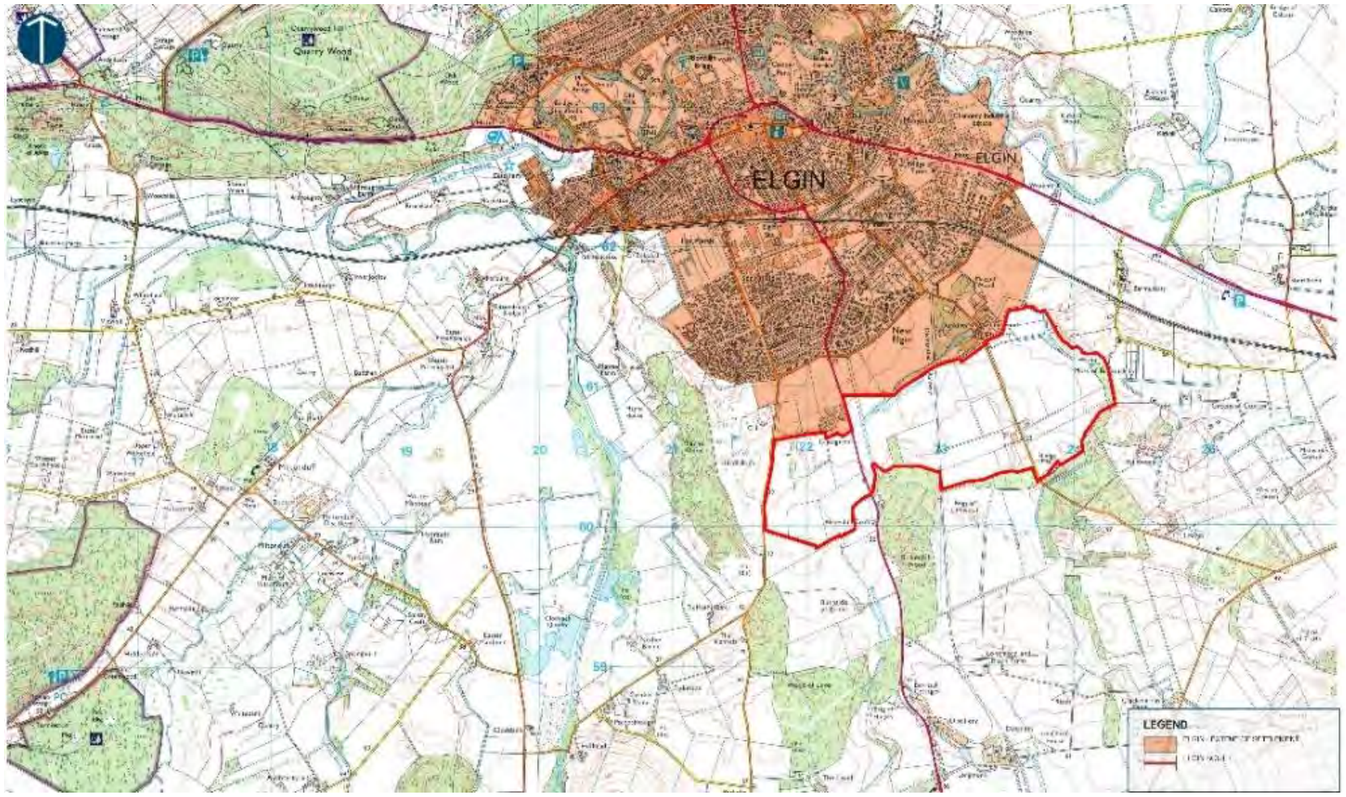


Figure 1. *Location Plan*

General Context

It is the historic core however, that offers most scope for interpretation in planning for the new development at Elgin South. In this respect the city core has a strong east-west axis centred on High Street where St Giles Church remains the focus to this bustling city centre location. The church acts as focus to the street from a range of locations and across Elgin South these principles have been adopted, from the village square in Easter Linkwood through to the 'pavilion' building at the centre of Linkwood Village where the main road is seen to wrap itself around this building on the approached from the east and west.

Consistent with many of Scotland's historic communities, including the High Street in Edinburgh, the main thoroughfare forms the focus to a network of narrow streets, lanes and closes which extend out on a regular basis to the north and south often towards more suburban 'fringe' developments built out by the Victorians.

Reference has been taken from these built characteristics of old Elgin in the planning of Elgin South as there is a strong east-west axis centred on a strong linear open space network with roads, lanes and paths extending out from this to looser development forms and importantly, allowing views towards the wider countryside setting to emerge. In addition at the 'head' of these lanes and narrow roads in Elgin, often fronting onto the High Street, are a series of 'vista stoppers', buildings that act as reference points in the older townscape and which improve legibility for both residents and visitors. This approach is very important to urban 'way finding' and again has been drawn into the masterplan for Elgin South where accent buildings and/or landscape features have been planned to help people to navigate across the development.

In contrast where undulations in the landscape interrupt the flow of the urban form planned for Elgin South and in turn, remain free from development, it is proposed to use these knolls and hillocks to set the context to additional landscape features which will also help the 'way finding' process. This approach also references some of the historical parts of Elgin including Ladyhill, where the tall monument at this location acts as a major reference point or 'town mark' within the city.

At a more local level and important to the context of Elgin South is Linkwood and Dunkinty which was previously seen as a standalone small hamlet to the south east of the city offering arrange of business and residential accommodation, including Linkwood Distillery. Figures below illustrate key historical qualities of this area and importantly, has retained many of its key features and buildings over the years despite redevelopment pressures. Linkwood Distillery is the most prominent of all these buildings as its pagoda structure rises above the skyline to offer a clear reference point in the landscape. Reference is made to this feature in the masterplan for Elgin South as the Distillery is seen as the Elgin South 'town mark' to views from the south. In addition, reference is made to the scale and form of the historic buildings in the development of the villages at Elgin South where the opportunity has been taken to introduce building groupings which reflect the scale and form of the Linkwood Steading as seen in the landscape, with the potential for lodge houses and standalone detached properties to be introduced across the development site, building at a scale of 1.5 to 2.5 storey heights.

Historic Aerial Photograph of St Giles Church and City Core

Aerial Photograph of Lady Hill Landform and Development Edge

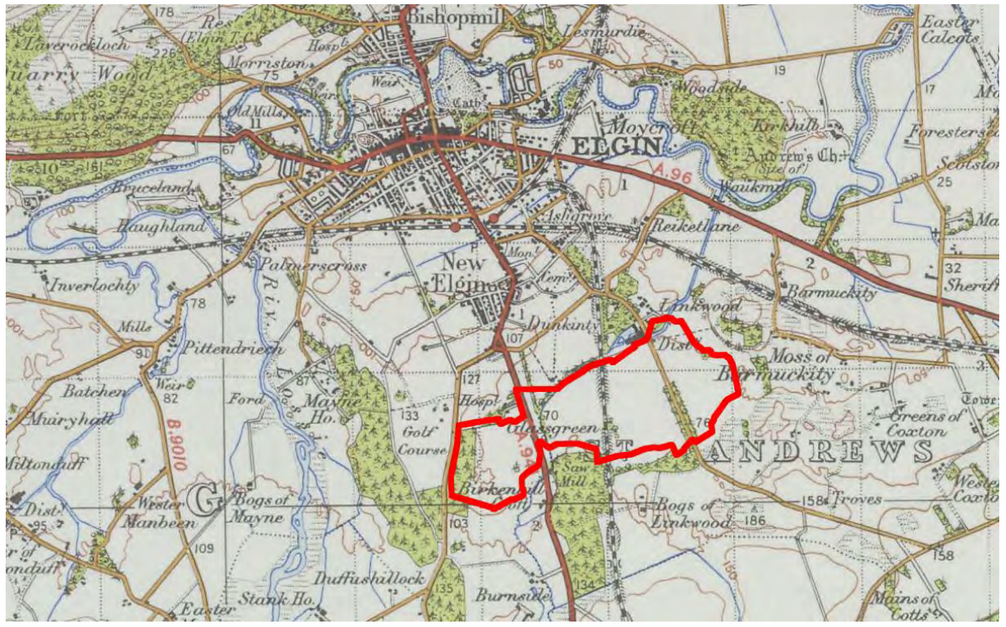
Linkwood Distillery Pagoda

Masterplan Excerpt – Residential Core and Pavilion Building

Masterplan Excerpt – Development Form and Land Form

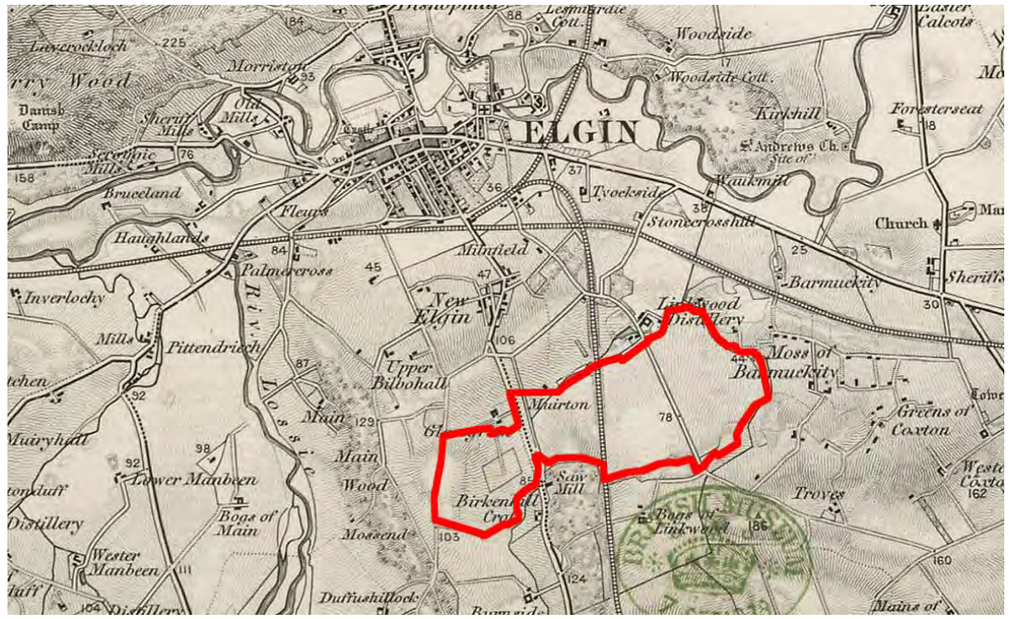
Views of Linkwood Distillery

Historical Map of Elgin Town Core *(1822)*



Historical Map of Elgin *(1856)*

Historical Map of Elgin Town Core *(1883)*



Historical Map of Elgin *(1925)*

Figure 2
Existing Site Context

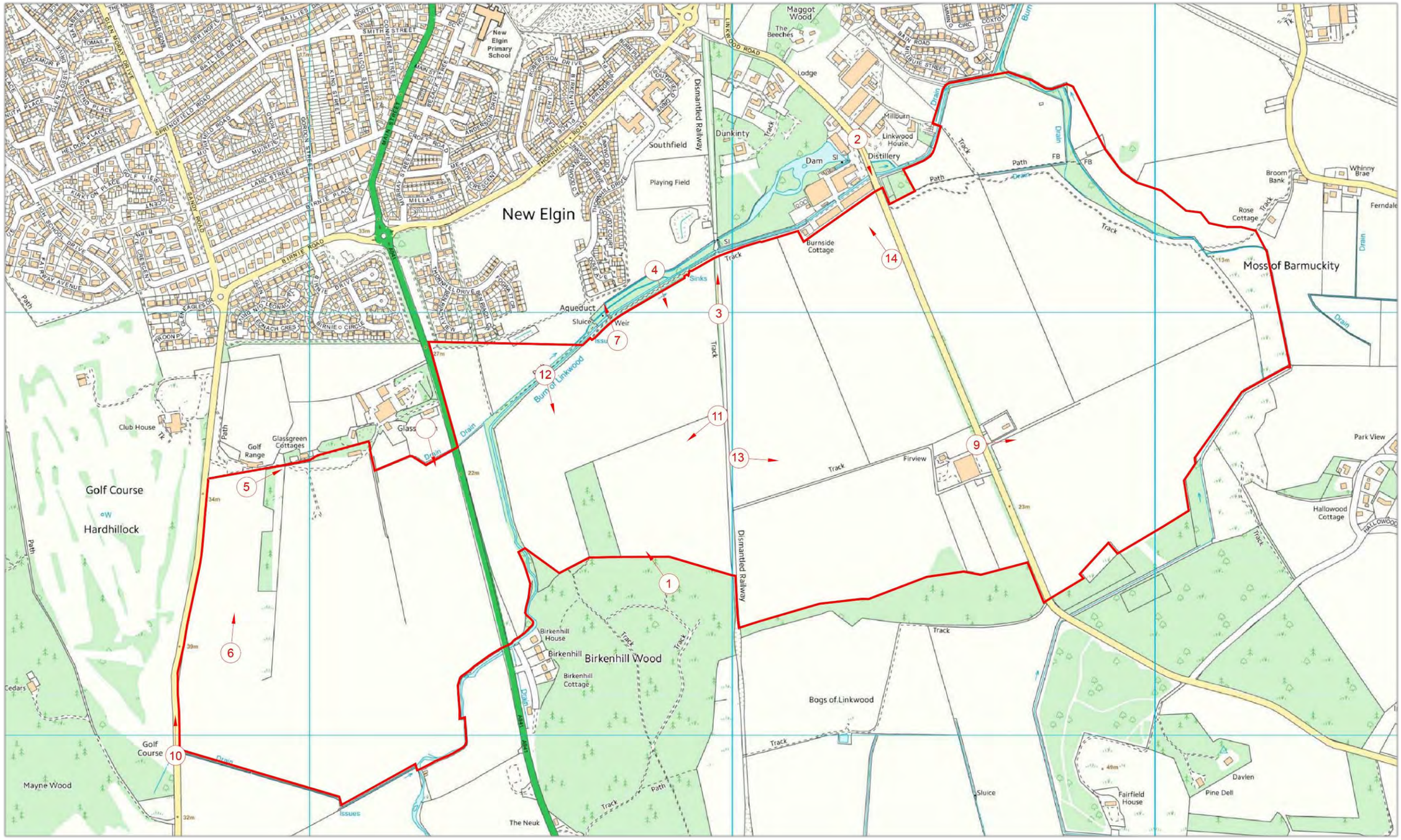


Figure 3
Site Photos (Reference Plan)

Landscape Context

3.4

Landscape Setting

It has been acknowledged in a range of studies undertaken in the lead up to the adoption of the Moray Local Development Plan in July 2015, including Carol Anderson Landscape Associates' Report Dated October 2013, that this is generally a well-structured landscape set within a rolling terrain and benefitting from broad belts of mature woodlands. The land holding also lies at a lower elevation than the existing settlement form and through a combination of factors views across the area are often limited. Where views open up on the approach to Elgin on the A941 to the west these are often limited to views across adjacent fields with the existing and emerging built forms of Elgin and New Elgin seen to form the backdrop.

This is an intensely farmed and managed landscape however, significant parts of the land holding are also given over to woodland areas as well as amenity open space, The Linkwood Burn meanders across this landscape before crossing into the extended land holding of Elgin South, towards the south west corner north of Burnside of Birnie. It continues to meander across Elgin South before leaving the land holding to the north east, just east of Linkwood House and the Distillery. Linkwood Burn is the main water course within this landscape, providing the feeder to Linkwood Distillery, however, it is supported by a number of other channels and water courses that have been carved out of the landscape (both naturally and by land owners) helping to maintain the quality of the land holding for agricultural purposes.

The Linkwood Burn is also a distinguishing visual feature of this landscape as the river corridor benefits from a mature tree lined character which helps to reinforce the sense of structure in the landscape, defining fields and importantly, adding to the ecological and recreational interests in the area. In acknowledging the role played by Linkwood Burn in helping to define the character of the site and in turn, its capacity to accommodate development, it is acknowledged that there is an extensive flood plain associated with this feature. However, whilst it is assumed that this could be a constraint to development in the broadest sense Springfield Properties acknowledge that such 'constraints' can often become opportunities. In this case it is considered that the flood plain offers real scope in the masterplan to provide the basis for a range of formal and informal recreational/leisure activities to be promoted along with a strategy to enhance nature conservation and habitats in the area, all to the benefit of the wider community and consistent with the findings of the Ecological Assessment undertaken as part of the site's assessment process.

In acknowledging these characteristics the Masterplan identifies scope for new structure planting to be introduced to help reinforce the sense of structure in this landscape, some of which, consistent with LDP Policy can be part of a fully integrated advanced planting strategy. However, the approach advocated will not be seeking to 'screen' the new development form but rather, consistent with best practice settlement planning, promote a new development form which will be seen in the landscape, outward looking with key 'gateway' buildings and features seen framed by both established woodland cover as well as new structure planting elements.

1. Pedestrian path through Birkenhill Wood

2. Linkwood *Road* Tree Foliage

3. Dismantled Railway Line

4. Pedestrian Path from New Elgin

5. Glassgreen Cottage

6. Looking North from West of Site

7. Weir from Linkwood Distillery

Topography

A topographical survey was undertaken in November 2015 to help establish accurately the key characteristics of the site. The general land form, consistent with the wider landscape type, is gently undulating providing the context to an agricultural landscape given over to a combination of arable farming and grazing. A series of low knolls frame the setting to the south east, east and south west offering a sense of visual containment which is enhanced by woodland belts established around the perimeter of the subject lands. The highest point within this landscape is located to the south, just outside the site boundary at Birkenhill Wood. This is a locally important viewpoint enjoyed by users of the Core Path network with views towards Elgin and its skyline available.

Generally the land form across the site rises to the south and south west offering a north westerly aspect overlooking the shallow valley form of the Linkwood Burn. Linkwood Burn defines the low point of the site and as stated above parts of the land holding adjacent to the burn and its many linked water courses and channels are within the defined 1:200 year flood plain. As the land rises to the south however, the impact of the flood plain diminishes to allow most of the Elgin South area to come forward for development.

There will be a clear hierarchy of publicly accessible open space provided across Elgin South, from pocket parks located across each of the villages through to the central East-West Linear Park, potentially accommodating various leisure uses, including allotments, sitting out areas, informal recreational areas and gardens. This east-west Linear Park will form the backbone of the whole development and from this all areas of the development form will be accessible, including public transport facilities. Enclosed and managed open space facilities will be provided within the two primary school sites as well as the Moray Sports Centre, the latter of which will be seen as a major asset to Elgin and the wider region.

This hierarchy will lead up to the Central Park which will offer itself as a multi-purpose open space, accommodating formal play areas, a potential bowling green (subject to demand), landscaped gardens set out around a site for a community pavilion, through to extensive areas of common land which could be given over to formal sports pitches and informal gatherings as well as meadows designed for passive recreational activities. Formal greens located at the centre of Linkwood Village and Wester Linkwood will add to the overall open space structure which will also include the formal square in Easter Linkwood. These spaces will offer scope for year round use by the community.

In addition the new community will be framed by a broad range of more informal open spaces incorporating woodland belts, meadows, riverside walks and paths which will open up the countryside edge to the development site and allow more passive recreational pursuits to take place. These areas will add to the overall open space experience and the green infrastructure provided will be at the core of the Masterplan for Elgin South.

8. View looking South from Glassgreen

9. View looking East from Gas Station on Linkwood Road

10. View looking North from Birnie Road

11. View looking South-West from Dismantled Railway

Figure 4
Site Topography

3.6

Woodlands

Tree cover within the site is limited as the main woodland areas, including Birkenhill Wood and Mayne Wood, are located outwith the site area but are seen to visually contain the setting. Within the site tree cover is often quite mature and formal, with trees lining the road side forming avenues, especially on Linkwood Road. In addition there is the more organic tree and vegetation cover associated with the Linkwood Burn which helps to soften the effect of the more recent development within New Elgin. However, importantly, all this vegetation cover both on and within the site, combine to create a well-structured landscape with the capacity to accommodate an appropriate scale and form of development that fully takes into account the key constraints and opportunities inherent in this land holding.

Land Use

The predominant land use is arable farm land with some fields also given over to grazing. The field pattern is generally large but framed in places by woodlands and tree belts. Existing development within the site is limited to building groups associated with the farming activities of land owners however, outwith the site the settlement pattern is more complex ranging from single buildings in the landscape to small groups of residential properties forming 'hamlets'. This includes Barmuckity to the north east. Troves is located to the south east of the subject lands, accessed off Linkwood road. There is also a row of cottages located just off the A941 (on the old main road alignment) immediately to south of the site boundary whilst further to the south is Burnside of Birnie.

Distillery

The Linkwood distillery sits in close proximity to the site, drawing its water from the springs of Millbuies Loch. Next to the distillery is a large and rather beautiful reservoir which plays host to a variety of local wildlife including ducks and swans, the latter can be seen gracing the label of the twelve year-old bottling. Linkwood is home to two stillhouses, Linkwood A, which is currently not in use, houses the two original stills and Linkwood B, in which a further four stills operate.

12. Southerly view of Birkenhill Wood

13. View of Firview arable farming field

14.Linkwood Distillery

4.0

constraints & opportunities

Site Analysis

In assessing the existing conditions on site the Project Team have identified the key constraints and opportunities inherent in the land holding. From the gently undulating terrain and areas of woodland through to the presence of strategic infrastructure, including lower voltage overhead power lines and an underground high pressure gas pipeline, the existing land holding and its characteristics has had an important bearing on design of the Masterplan for Elgin South. **Figure 5, Constraints Plan,** identifies the key policy constraints evident across the land holding and the immediate context.

This 'layering' effect, as presented in the Constraints Plan, illustrates how these features combine to determine the level of opportunity that is available at Elgin South to deliver a new and extended community. Each constraint has been identified by the Project Team through a series of assessments with a range of mitigation measures formulated to meet or surpass the requirements of current best practice guidelines and policy. In this respect, areas of woodland and mature tree features will be protected, flood plains avoided, and major infrastructural elements retained with appropriate levels of protection introduced to ensure the delivery of this new, high quality development form.

In the wider context the landscape generally is undulating and as a result views to and from the site are limited. This characteristic is reinforced by the presence of existing areas of mature woodland and plantations which effectively frame the land holding to the south, east and west. **Figure 6, Site Analysis Plan,** illustrates how the site is well defined with a distinctive field pattern reinforced by the road and core path network, which are seen to combine to subdivide the area into four distinct parcels.

Within the site the mature tree lined roads and paths add a further level of definition which help to reduce the sense of scale of this large land holding and thereby ensuring that the four distinct compartments identified within the Site Analysis Plan will provide the basis for the delivery of this extension to the Elgin settlement form. By working with the key constraints it is considered that the opportunities across this land holding are also defined and in turn, the new development forms emerge. This provides the basis for a unique development form to come forward which, in its detail can then draw upon, in the first instance, the Scottish 'planned settlement' approach and secondly, the local vernacular, referencing Morayshire and Elgin, in the design of the street scenes and in turn, building forms.

Where the site opens up more towards the west and along both the western side of the A941 and the eastern edge of Birnie Road, new structure planting will be introduced to help enhance the landscape setting and pave the way for the proposed development in this sector. In keeping with this pro-active approach to settlement planning existing assets across the site will not only be retained but enhanced to add to the overall quality and landscape resource of the setting. This will ensure that the masterplan is seen to respond to the assessments undertaken by the Project Team with a range of mitigation factors introduced to ensure that new development, will be seen to fit into this landscape.

Strategic and Local Connections

Elgin South is well located as it benefits from the city of Elgin's strategic role in the Morayshire and north of Scotland economies with excellent transport connections. These connections extend out to the subject lands and as per the advice given by Arup it is proposed to integrate the new development into the established transport network with improvements made as required to accommodate the scale of development proposed. The A941 offer scope to provide the main access roads into and out of the site supported by Birnie Road and in time, a new road link to the A96. This approach will ensure connectivity to the established community with an integral part of the transport strategy drawing on the key policy objective of promoting alternative modes of transport whilst opening the site up to improved public transport facilities. This approach will include a significant level of investment in the path network to encourage walkers and cyclists with clearly defined routes for buses to travel across the development linking all the villages and ensuring that all residents will be within 400 meters of a bus stop.

Moray Council have done extensive work in promoting their **Core Path Network** across the region linking up with a national strategy for paths and connections. The proposals for Elgin South will seek to build upon this success to help open up the site with improvements to paths coming into and out of the site. This will ensure the physical integration of the new community into the established Elgin settlement form helping to address any concerns of a piecemeal development approach. In addition the Masterplan for Elgin South seeks to open up opportunities for mobility through the countryside and in this regard will provide connections to the rural path network where possible with new opportunities for connections identified. These connections can then be promoted with local land owners to help enhance the Core Path network even further and building towards the Council's objective to connect as many of Moray's outlying communities as possible through an extended path network.

Linkwood Road

Mature tree lined pathway

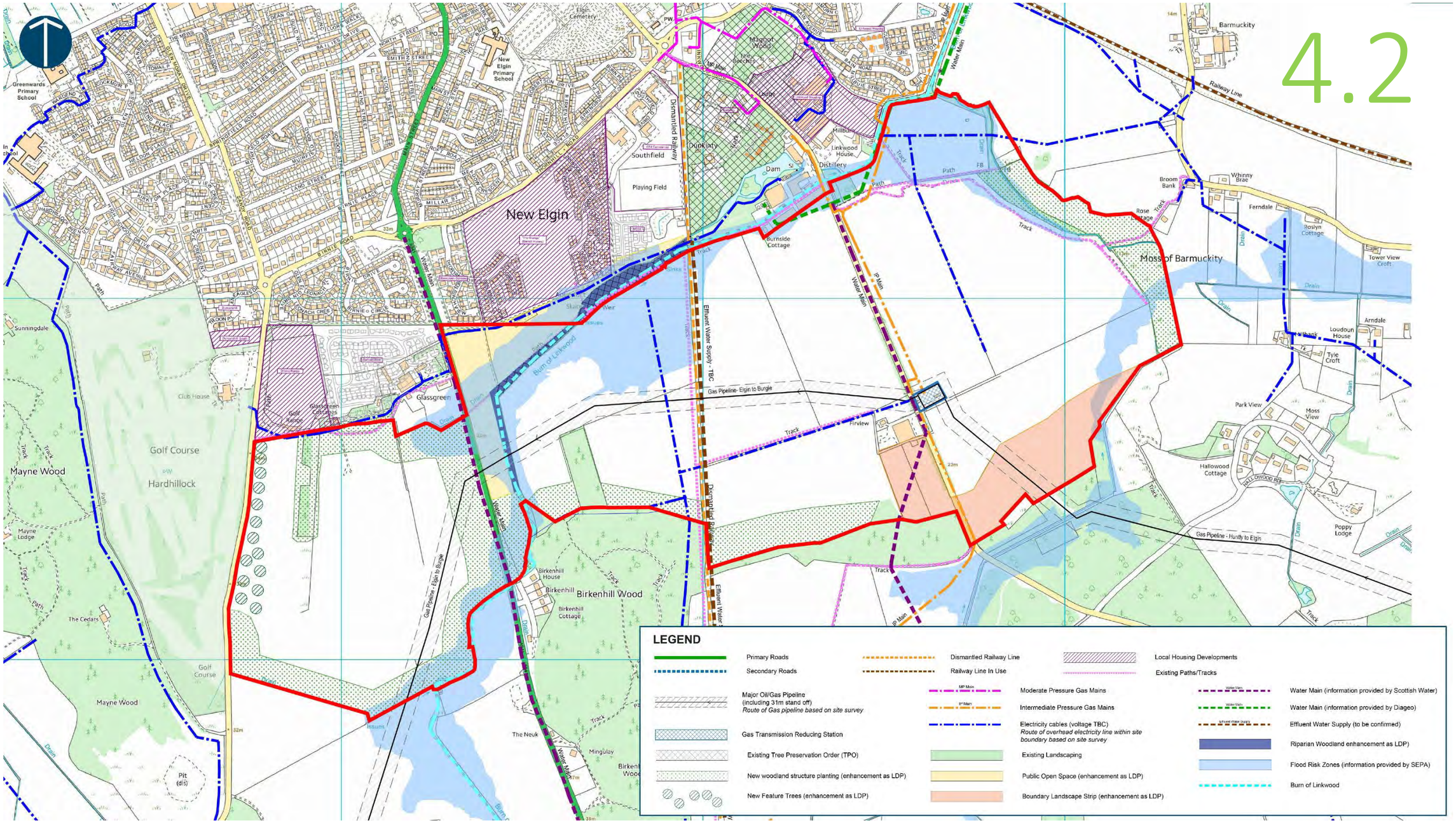


Figure 5
Site Constraints

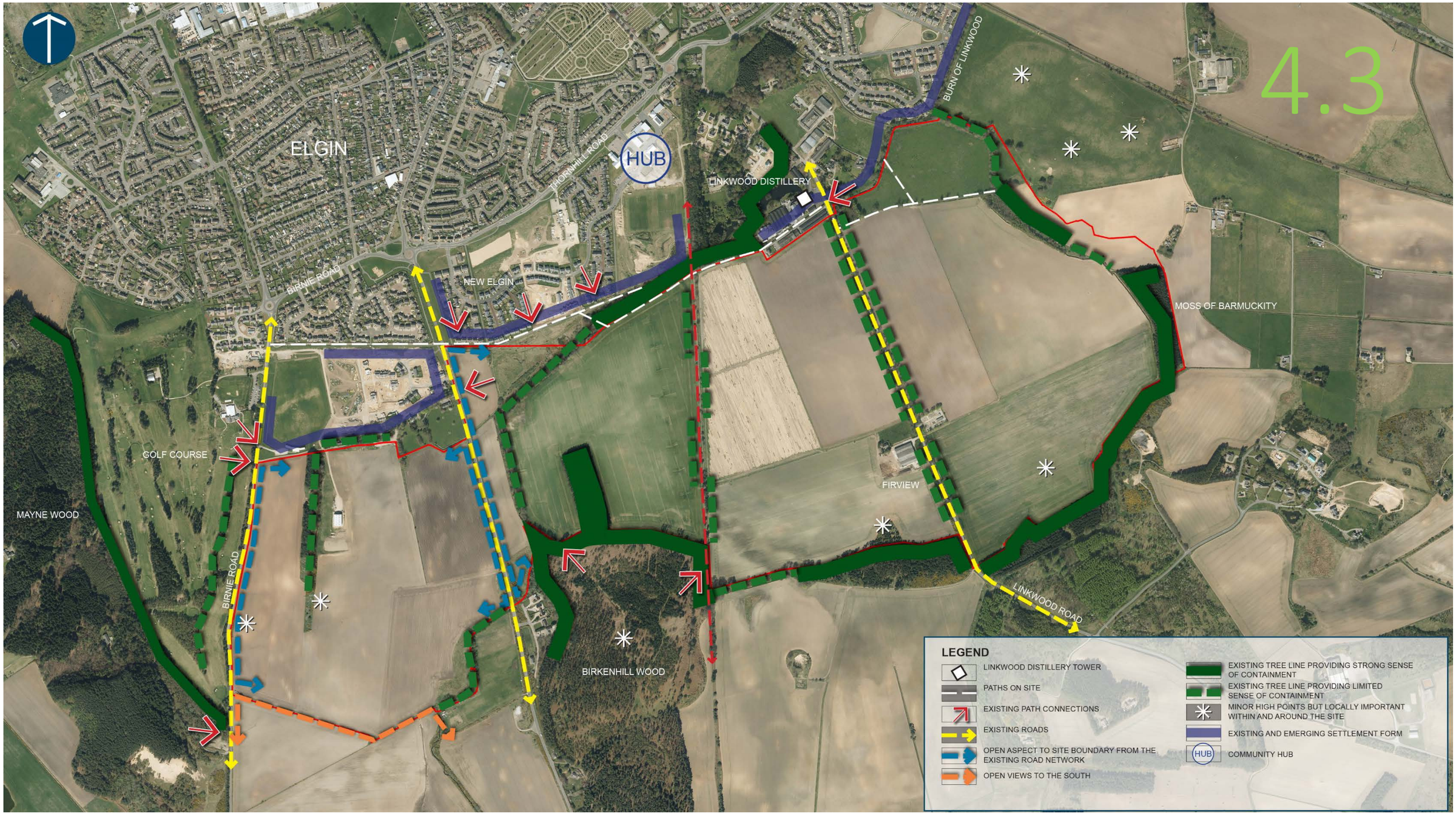


Figure 6
Site Analysis Plan

Flooding

The Linkwood Burn flows through part of the site; from the southern boundary adjacent to the A941 then crossing under the road and running northwards approximately parallel to it before flowing in a west to east direction alongside the northern boundary of the site. SEPA flooding maps show the burn to overflow and flood the site in several areas (see overall constraints drawing for further details) and the extent of this flooding has been confirmed by a flood risk assessment undertaken to specifically assess the risk of flooding to the Elgin South site (refer to report in Appendix 10.2). The masterplan proposals introduce green space to areas identified to be at risk of flooding and ensures that no development is proposed for these areas within the flood plain for the 1 in 200 year flood event. The two school sites and the sports centre have the additional safeguarding of being outwith the floodplain of the 1 in 1000 year flood event.

Utilities/Services

Gas Pipeline Safeguarding

The masterplan area contains existing high pressure gas transmission pipelines from east to west (see overall constraints layout drawings for further details). The gas infrastructure affecting the site are the A6 Huntly to Elgin and A7 Elgin to Burgie pipelines and a gas transmission reducing station situated on the eastern side of Linkwood Road. The existing pipelines and pumping station would not be relocated or altered in any way. Early discussions have taken place with Scottish Gas Networks (SGN) with the aim of establishing suitable safeguarding distances for proximity of residential development near to the routing of the pipelines and SGN have advised that a stand-off of 31m either side of the pipeline is required, amounting to a 62m wide safeguarding corridor. By taking account of the restrictions imposed by the underground pipelines and working positively with this key constraint the masterplan provides a corridor of openspace and green network along with walking and local roads infrastructure. This corridor will foster good linkages across the villages and connectivity across the masterplan area responding positively to this constraint making an attractive feature within the masterplan. There are also medium and intermediate pressure gas mains crossing the site although these are less of a constraint to development of the masterplan.

Electricity cables

There are two overhead power lines running north to south across the site and one which links the two by crossing east to west between the disused railway line and east of Linkwood Road. These lines will be either diverted or relocated underground as the masterplan phases develop SSE have recommended that a Feasibility Study is required to identify any upgrades required to the existing network so that it can serve the masterplan site.

Water Mains

Water mains cross the site from north to south generally following the existing corridors along Birnie Road, the A941 and Linkwood Road. All of these mains will be preserved within the masterplan area. Scottish Water have indicated that it is likely that an upgrade of the water supply infrastructure will be required and further discussions and studies will be required to identify the extent of improvements.

Foul drainage

There is currently no foul drainage infrastructure within the site. A Drainage Impact Assessment will be required to assess the impact on the downstream network and establish the most suitable points of connection. Although there is capacity in the Moray West PFI Waste Water Treatment Works for the early phases of development improvements will be required to service the demands of the full development of the masterplan.

Telecoms

British Telecom have overhead telephone lines on Birnie Road and underground routes along the routes of the A941 and Linkwood Road.

Contaminated Land

A ground investigation has been undertaken and the preliminary findings confirm that soils encountered vary across the masterplan site and are generally consistent with published information.

Topsoil was encountered across the site with the underlying soils consisting of predominantly sands and gravels with some areas of organic clays also identified. The organic clays were generally identified in the lower lying flood risk areas where no development is proposed.

Due to the existing 'greenfield' status of the site and its previous agricultural use there are no significant risks anticipated with regards to contamination or ground gas.

The site is considered to be minerally stable with no previous mining activity at the site.

Reservoir at Linkwood Distillery

Existing Weir

Noise & Vibration

Spatial Scope

A number of noise sensitive receptors have been identified to the north, south and east of the proposed masterplan site. In order to consider a reasonable worst-case scenario, the assessment of airborne noise sources associated with the proposed development will be undertaken at the closest receptors within 300m of the site boundary. Consideration is also given to construction traffic and operational traffic noise. The spatial scope will be limited to the nearby road network where changes in levels of noise may arise as a direct or indirect consequence of construction and operation of the proposed development.

To minimise the level of noise to which existing receptors will be exposed, the construction works will be conducted in accordance with a Code of Construction Practice (CoCP) which will contain established control measures for environmental protection. These measures will be based upon guidance within BS 5228 and implementing Best Practicable Means (BPM).

Air Quality

Air quality studies are concerned with the presence of airborne pollutants in the atmosphere. The assessment of air quality will address potential impacts from the proposed development, focussing on emissions of dust, nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$).

Current Air Quality Conditions

Air quality concentrations in the area surrounding the proposed development site are currently below both the EU limit values and the Scottish national objectives for all pollutants. The council has also not declared any air quality management areas within their jurisdiction.

Construction & Operational Air Quality Impacts

Impacts during construction of the proposed phases of development may arise from the activities on the site. The assessment will identify potential dust soiling and human health effects from construction related activities, such as demolition of existing structures, earthworks, construction of new buildings and the transport of dust and dirt from the site onto the public road network.

Habitat

Habitats and Ecology

The site is currently under intensive agricultural use with the land comprising cultivated arable fields, alongside smaller areas of improved grassland. Scattered broadleaved trees can be found at its fringes bordering the Linkwood Burn, disused railway and along the Linkwood Road. Areas of woodland plantation are located to the south. Due to its fertile soils the fields are continually and extensively planted with the result that the land within the masterplan area has minimal biodiversity value.

A Phase 1 Habitat Survey and a Protected Species Survey have been carried out to provide an ecological baseline for the masterplan site. This includes work to identify sensitive or notable habitats or faunal species including groundwater dependent terrestrial ecosystems (GWDTE's), bats, water vole, otters, red squirrels, badgers along with nesting birds within the site or adjacent to its boundaries, including the Linkwood Burn. The survey results are indicated on respective Habitat Survey and Protected Species maps (See appendix 2).

The masterplan site was found to be of low-habitat value with very limited signs of protected species present.

Trees

A Tree Survey Plan that indicates the species and number of trees has been prepared and provides the basis of any Tree Protection Plans that would accompany future planning applications. The masterplan proposes suitable riparian buffers, the creation of meadows along with significant green and blue infrastructure and landscape framework to accommodate sensitive development and habitat.

Historical Environment & Archaeology

Historical Environment

There are a number of local features as contained within the Sites and Monuments Records (SMR's) adjacent to the Elgin South Masterplan area. To the north and located on the western side of Linkwood Road, immediately adjacent to the Linkwood Burn lies Linkwood Distillery whilst on the eastern side of Linkwood Road is Linkwood House, which is also Category C-Listed along with its ancillary buildings and boundary walls. Linkwood Farm steading is a model farm which is currently subject to redevelopment and conversion proposals for housing. Dunkinty House lies further to the north of Linkwood Burn within a few hundred metres of the development boundary.

The masterplan proposes sensitive development well away from these locally important built heritage features which includes an area of meadow openspace and riparian buffer to the northeast extent of the site. The setting of Linkwood Road and its wooded approaches to Elgin is to be safeguarded and enhanced as part of the materplan.

Archaeology

A Written Scheme of Investigation for archaeological evaluation and mitigation has been prepared (see appendix 4). There are thought to be several sites lying within the site boundaries including various blocks of rig and furrow at Burn of Linkwood, Moss of Barmuckity and at Hallowood. Further details are available within the WSI.

The vast majority of the evaluation area is improved farmland it is possible that hitherto unknown archaeological features and deposits may survive within this area as unseen subsurface features.

Any planning application for phased development of the site will require to be accompanied by an archaeological evaluation of 7%. Archaeology contractors would supply a detailed WSI Addendum for each phase of evaluation works. If the archaeological evaluation identifies significant archaeological remains there may be a requirement to undertake further works such as excavation, post-excavation and publication.

Linkwood Farm Steading

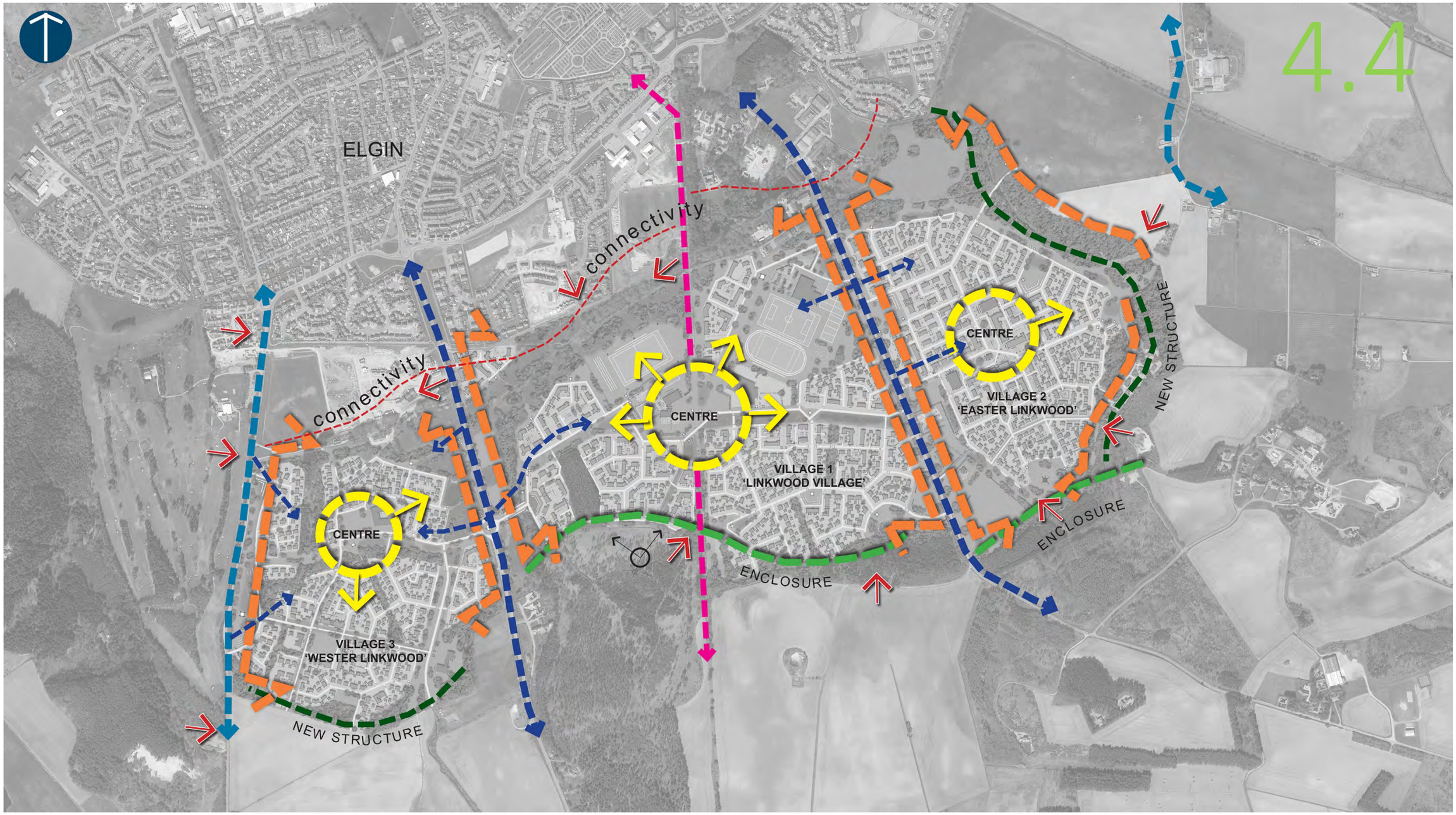


Figure 7
Development Form Concept

5.0

developing the design

Partnership Design Process

In keeping with the strategy outlined in Section 1.0 above, Springfield Properties and their Project Team have engaged in open discussions in the development of the Masterplan for Elgin South. Key stakeholders have been identified with representatives of Moray Council fully involved and engaged in the development of the proposals for this new community. In this respect Springfield Properties have acknowledged that **"effective masterplanning acts to reconcile the needs of stakeholders across public, private and community interests. The process of masterplanning may involve local authorities working together in partnership….." (Page 10, PAN83)**

Springfield Properties have embraced this process from inception through to completion of the Masterplan, having engaged in detailed discussions and reviews with, not only officers from the Council but also, representatives of statutory bodies, including Scottish Natural Heritage and the Health and Safety Executive.

A **Steering group** was set up to co-ordinate the response from the Council as the proposals evolved with regular meetings convened to review the proposals in light of the conclusions reached following the completion of the various technical and site assessments. Full consideration was given to the key objectives and the vision for Elgin South with the strategic and local benefits defined to help drive forward the proposals.

The Council and its representatives have had an important role to play in helping to shape the current masterplanning strategy whilst the Project Team have been assembled to take the proposals forward in light of the need to fully:

- **"Interpret policy**
- **Assess the local economy and property market**
- **Appraise a site and its wider area**
- **Manage and facilitate a participative process**
- **Draft and illustrate design principles**
- **Programme the development proposals**
- **Project manage the Masterplanning process."** (Page 10, PAN83)

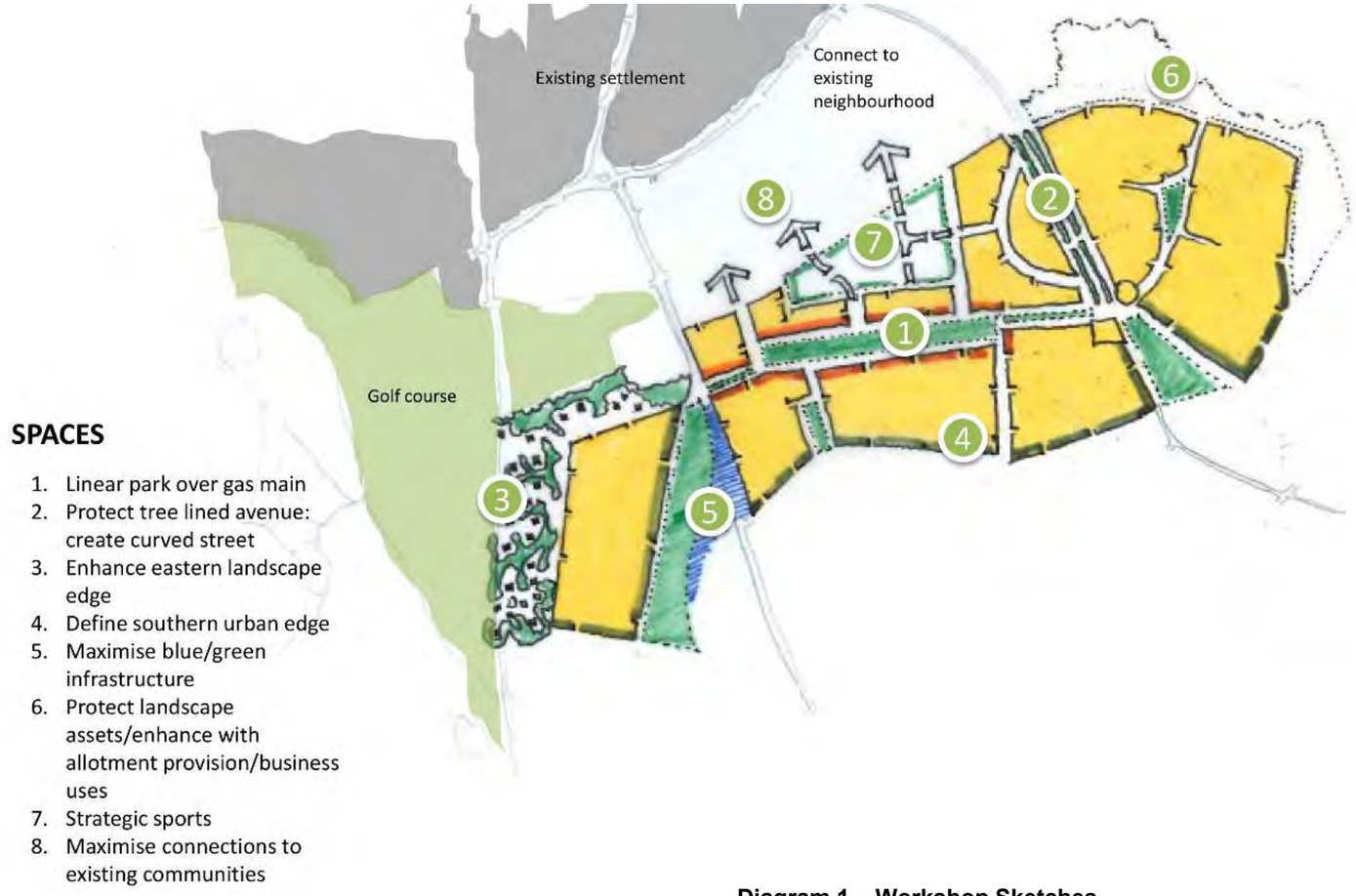


Diagram 1 – Workshop Sketches

Consultation Engagement

Stakeholder consultation

Springfield Properties PLC have worked closely with Moray Council via an ongoing series of dedicated project meetings as the Masterplan has developed and evolved, making significant contributions to the design process.

A Stakeholder Workshop was held in August 2015 to seek input and wider dialogue on various matters ranging from infrastructure and utilities, transportation, environment and flooding, to placemaking and community aspirations. Several stakeholder organisations with broad interests were invited including several departments from Moray Council (Transportation, Flooding, Education and Communities and Planning) along with RSPB, SNH, SEPA, Forestry Commission Scotland and Elgin Community Council for discussions.

At this session, the idea of a concept of village clusters of different types of character emerged, along with some key ideas of place built around the focal points of a much needed new school site, a regional sports centre and affordable housing (see Workshop Zones diagram) located in the distinct site zones.

Community Engagement

Planning Advice Note 3/2010 Community Engagement provides best practice guidance outlining that:

• Community Engagement must be meaningful and proportionate;

• Community Engagement must happen at an early stage to influence the shape of plans and proposals, and;

• It is essential for people or interest groups to get involved in the preparation of development plans as this is where decisions on the strategy, for growth or protection, are made.

Public consultation will take place in the coming months. Early dialogue with Elgin Community Council has helped raise awareness of the Masterplan.

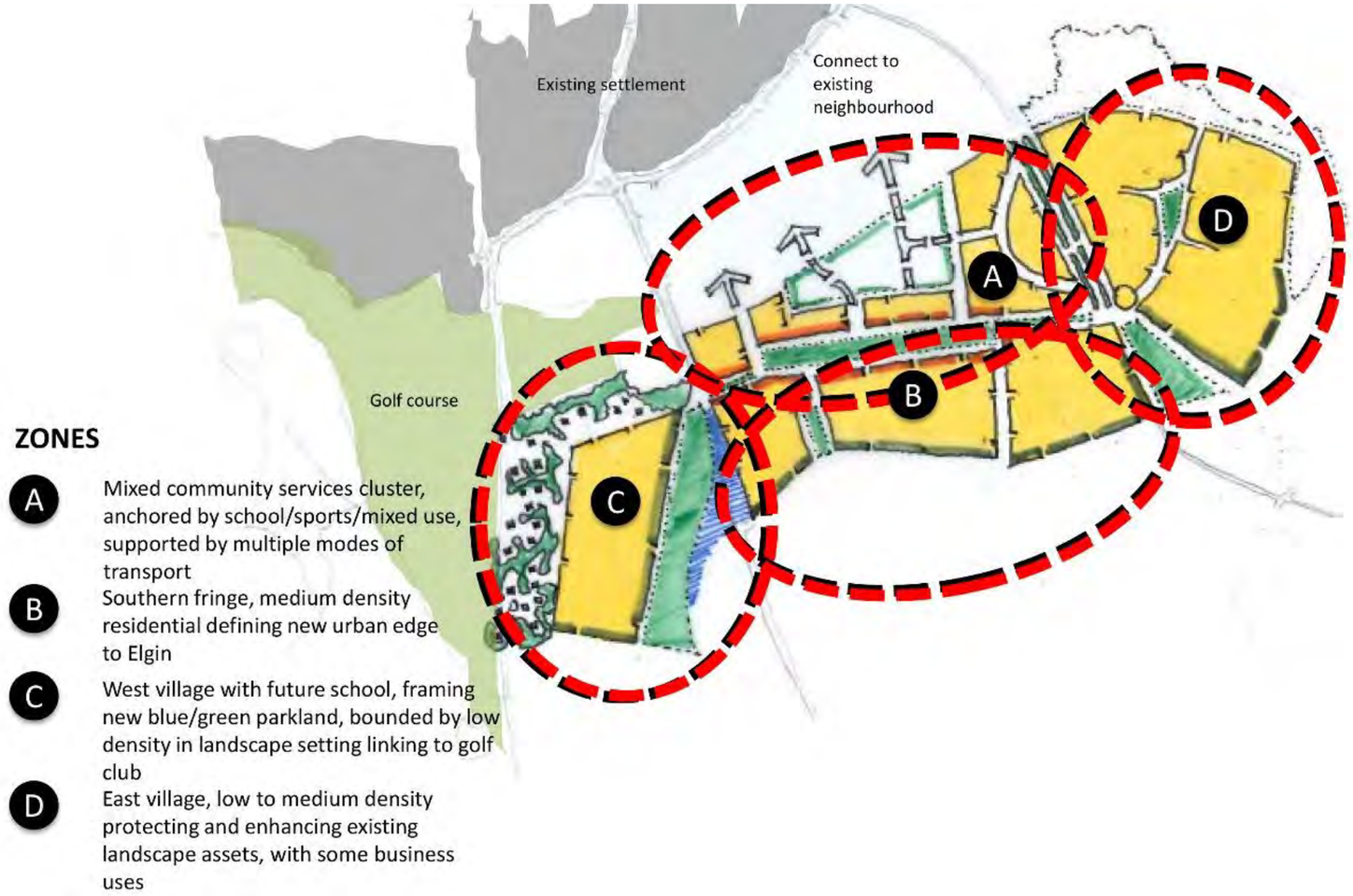


Diagram 2 – Workshop Zones

5.3

Design Development

Design Development

The proposals have evolved from the earliest concepts through an iterative process of design reviews and presentations leading to this vision for a new, fully integrated community at Elgin South. A development of circa 2,500+ dwellings in association with a broad range of ancillary community, leisure and education facilities (including a new Moray Sports Centre and two Primary Schools) the new community has been planned as a single entity made up of three distinct village forms. These village forms have been planned to be seen to be fully responsive to the specific characteristics of the site and its connections to the wider context.

This approach is fully consistent with the guidance and policy of the Scottish Government as the general development form has evolved with a real emphasis on place making and where the proposed development form is seen to be fully responsive to on site conditions. In this respect the key components of Buildings, Spaces and Movement have been drawn out and set within the landscape context to create a unique development form with a strong sense of place.

This strong sense of place derives from the landscape setting and its very form of the masterplan has evolved from the constraints and opportunities identified across the site. This has resulted in four development compartments coming forward which provide the context to the creation of three villages, all of which are contained within a strong landscape framework which in itself is unique to Elgin South.

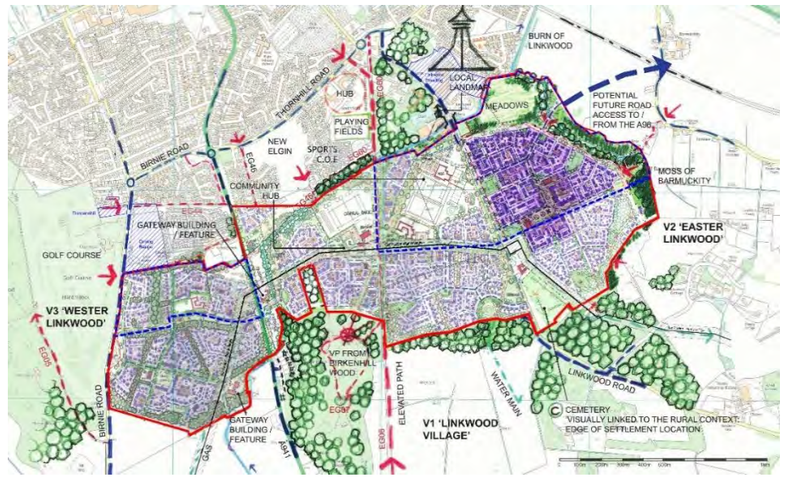
The design process has clearly evolved as more information has come forward in terms of the make-up of this new community and as the key constraints and opportunities have been refined. The design of the Masterplan is fully explored in Section 6 of this Masterplan document.

This Masterplan will be reviewed on a 5 year basis in line with the Moray LDP unless significant site development and/or other external changes require it to be updated earlier.

01 Sketch Draft Concept Masterplan *(Version 01)*

02 Preliminary Draft Concept Masterplan *(Version 02)*

03 Sketch Draft Concept Masterplan *(Version 03)*



04 Preliminary Draft Concept Masterplan *(Version 04)*

6.0

the masterplan

6.1

Design Analysis

Figure 8, Masterplan Design Analysis, illustrates how the new development form has been masterplanned to respond to the established constraints and opportunities across the land holding with the proposed development parcels set back from the more sensitive parts of the site. In total three primary development sectors have emerged within which a series of character areas will be realised offering a broad spectrum of living accommodation.

The general land form has a north eastern aspect with localized undulations creating pockets of relatively steeper terrain. Some of these areas will be the subject of localised regrading however, as illustrated in Figure 9, Masterplan with Constraints, the primary road infrastructure will generally follow the profile of the land, running with the contours and allowing views to open up across the development form south to north and from east to west. The new development form will be seen to be framed by the woodland belts to the south, east and west with the Linkwood Burn river corridor acting as a focus to both the established and the emerging development forms. Well defined green corridors emerge to turn areas of constraint into positive landscape features.

The design analysis identifies the need for a significant level of new structure planting to be introduced into the landscape of Elgin South however, this will not be designed to 'screen' the new settlement form but rather the new planting will be designed to reinforce the framework into which the new development will be placed, softening the elevations as appropriate but allowing for an outward looking development form to come forward. The new structural planting will be designed to enhance the road corridor landscapes and working with other landscape features and buildings, to help emphasise the 'gateway' effect on the approach to Elgin from the south.

The Masterplan (Figure 10) illustrates in greater detail the general form and characteristics of the proposed development and importantly, its relationship with the landscape setting and surrounding land uses. The new development will be seen as a new 'quarter' to Elgin but consisting of 3 new village forms all connected by the 'Landscapes of Elgin South', a network of formal and informal open spaces, green corridors, structural landscape components, nature conservation areas, water courses, traffic calmed roads as well as sports and recreational facilities. Indeed, the new development forms will be seen in the context of a bold landscape structure incorporating both established and new landscape features all of which will be accessible to both the existing community and the new.

Spatial Framework and Masterplanning Principles

In planning for this new development form and taking into account the objective to avoid the appearance of 'urban sprawl' the Masterplan presents the opportunity to deliver circa 2,500 + dwellings within three new villages. (Figure 14, Building Forms and Spatial Framework) To enable these new villages to be seen as 'real places' from the beginning they have been given 'working titles' drawing on the role played by the Linkwood Burn which winds its way across the subject lands forming a focal point for future restoration and nature conservation work as part of the plans.

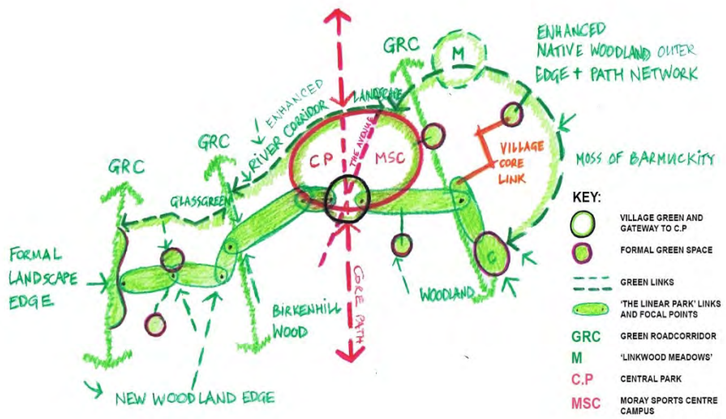
The 3 villages are referred to as:

- Village 1: **Linkwood Village**
- Village 2: **Easter Linkwood**
- Village 3: **Wester Linkwood**

The 'main' village, Linkwood, has been planned at the centre of the overall development and as the 'main' village, will form the focus for the healthy living culture being promoted as a key objective of the Elgin South plan as such, it will provide many of the key land uses, in addition to the residential element, within the overall strategy. These will include the Moray Sports Centre which will be located immediately to the west of Linkwood Road and to the east of Core Path EG06 which connects the site with Elgin via an elevated former railway line. In planning for this Sports Centre and the role it will ultimately play across the region and beyond, it is proposed that, in future phases of the development strategy, a road access will also be provided to this from the west and the A941. Details of the road and the route are still to be agreed but it is proposed within the Masterplan that this road should be designed to deter 'rat running' across the villages with traffic calming, as appropriate, designed into the street form.

Closely linked to the Moray Sports Centre will be a site for a new primary school which should be designed with a dual aspect, North facing, overlooking the sports campus and South facing, making reference to the Eastern sector of Central Park and the green corridor. These land uses will, in effect, form the focus to Linkwood Village with the potential for the school to 'share' facilities with the sports centre. It is proposed that both these facilities will be provided as part of Phase One of the overall development with scope, subject to the necessary permissions and funding, for both facilities to be provided almost immediately.

The remaining land uses within Linkwood Village will include: a broad range of residential properties, including affordable homes, designed to meet market demand at the time; a site for an additional community hub, providing for a range of social and leisure facilities including potentially a clubhouse, café/bar and changing facilities complementary to local facilities already provided for in New Elgin. The final mix of community facilities to be allowed for in the Masterplan for Elgin South will be agreed with representatives of the Council but could include, subject to market demand and planning permission, a dental surgery, a doctors surgery, village retail/store, café, commercial, nursing home, hotel, farmers shop, garden centre, visitors centre or nursery.



Open Space Hierarchy sketch

A new linear parkland will be designed to connect all the development sectors of this village with a Central Park set out to the west of the Core Path (EG06). This will form the focus for future 'summer' events within the village and in addition to the new Moray Sports Centre and the Primary School, will form a key part of the Linkwood Village 'Public Realm'.

The Masterplan envisages two further villages set out to the west and east of Linkwood Village. To the east is Easter Linkwood, where the Masterplan illustrates the potential for a 'satellite' village community set out around a hard landscape public realm focus drawing upon a traditional Scottish style and incorporating features consistent with historic settlement planning in many parts of Moray and the north of Scotland. A 'square' will be planned as a formal space offering scope for village activities all year round. The public realm associated with this village will include 'traditional' materials for paving and edgings with limited specimen semi-mature street tree planting introduced for shelter and to provide focal points.

The new tree planting will be designed onto the street scene with hard edgings designed to formalise the setting which will also include sitting out areas, possibly associated with bus stops, visitor car parking, cycle racks, etc. The formal tree planting will extend out from the square towards the outer edge of the village where it will meet green links which will provide access to the country path and Core Path network. This green 'outer ring' approach to Easter Linkwood will be reflected across all three villages as it picks up the characteristics of the mature tree lined Linkwood Road and the wider setting to the site. However, to reinforce the green edge new residential development will also be set back from the main roads (Linkwood Road and the A941) to allow for the introduction of linear open spaces and other facilities to be provided along these corridors. These will include a new cemetery which will be planned as a 'gateway' from the south to Easter Linkwood, reflecting again one of the attributes of many of Scotland's traditional villages, as well as potentially small scale business/community opportunities within 'gateway buildings'.

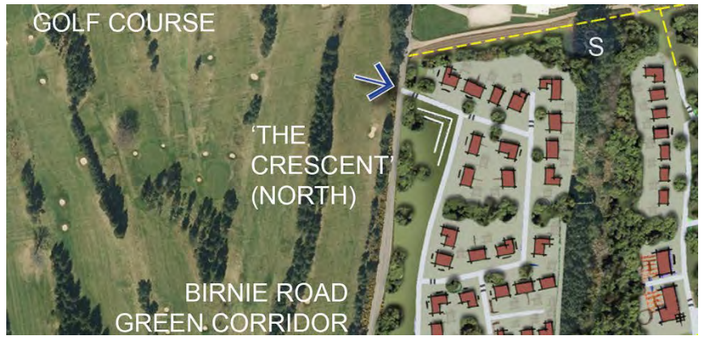
Extract from masterplan – Gateway Buiding

In contrast to Easter Linkwood, Wester Linkwood, the second 'satellite' village community, located to the west of Linkwood Village, will be planned as a 'garden city' influenced community with the Linear Park extending across its core with two formal village greens adding to this village's soft landscape focus. This approach also reflects the characteristics of other historic settlements across Moray with more of a soft landscape led approach to the planning of this village. This approach will include more tree planting than in Easter Linkwood and less formal with the roads extending out from the central green spaces, incorporating grass verges and which will provide the setting for informal avenues of trees. The street scenes could also include verges widening out to create 'drying greens' to help form variety and interest in the urban form and relief to the standard street widths.

As Wester Linkwood is located immediately to the east of Elgin Golf Club, beside Birnie Road, it is proposed that this 'greener' approach to the design of the public realm will reflect more of the characteristics of this part of the setting to Elgin with scope to introduce lower density and larger dwellings fronting on to the Birnie Road. The green space fronting onto the east side Birnie Road, identified in the Masterplan as 'The Crescent' will, as with the A941 and Linkwood Road, include informal avenues of trees (where trees lining the road will be in groups of 1, 2 and/or 3 rather than in a more regimented fashion, where an avenue is evenly spaced and much more formal) to help reinforce the common character sought for across the various approaches to Elgin from the south. Formalised ground modelling with land art techniques (where changes in level are refined to create formal embankments and stepped ground features above which buildings and/or sculptural features can be placed). will help to reinforce the sense of arrival to Elgin on the approach from Birnie with the design concept taken from historic references in the area. These include the 'planned development' at Tormore Distillery to the south of Aberlour where the housing within the community, built in 1958 to a design by sir Albert Richardson, is set out in a 'crescent' form with the ground modelled in front to help reinforce the design of the street and add a low density edge of settlement status to this community.

Elgin Golf Course

Tormore Distillery *Housing Crescent*



Extract from Masterplan *'Crescent' character area*

Woodland Edge housing

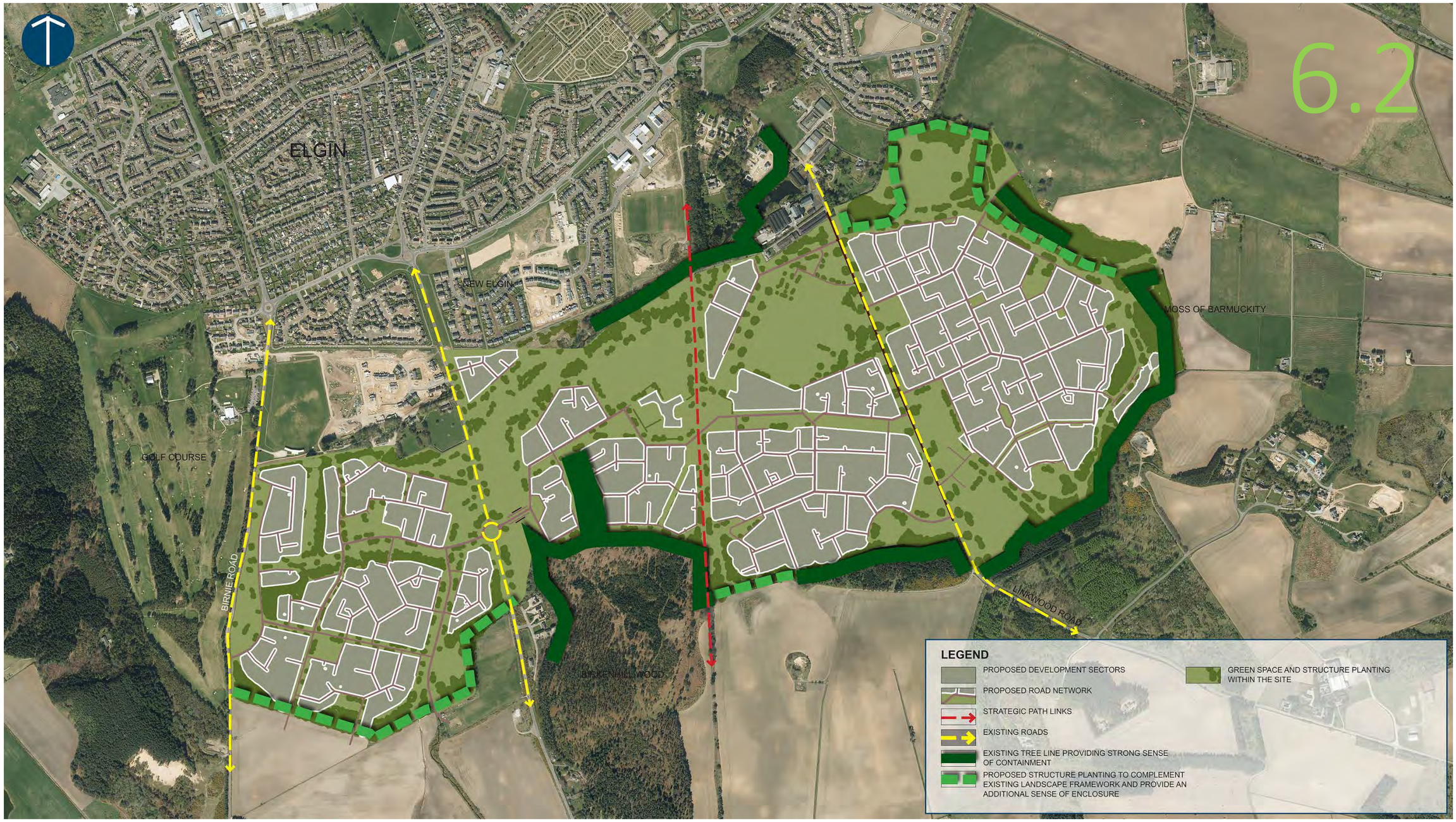


Figure 8
Masterplan Design Analysis

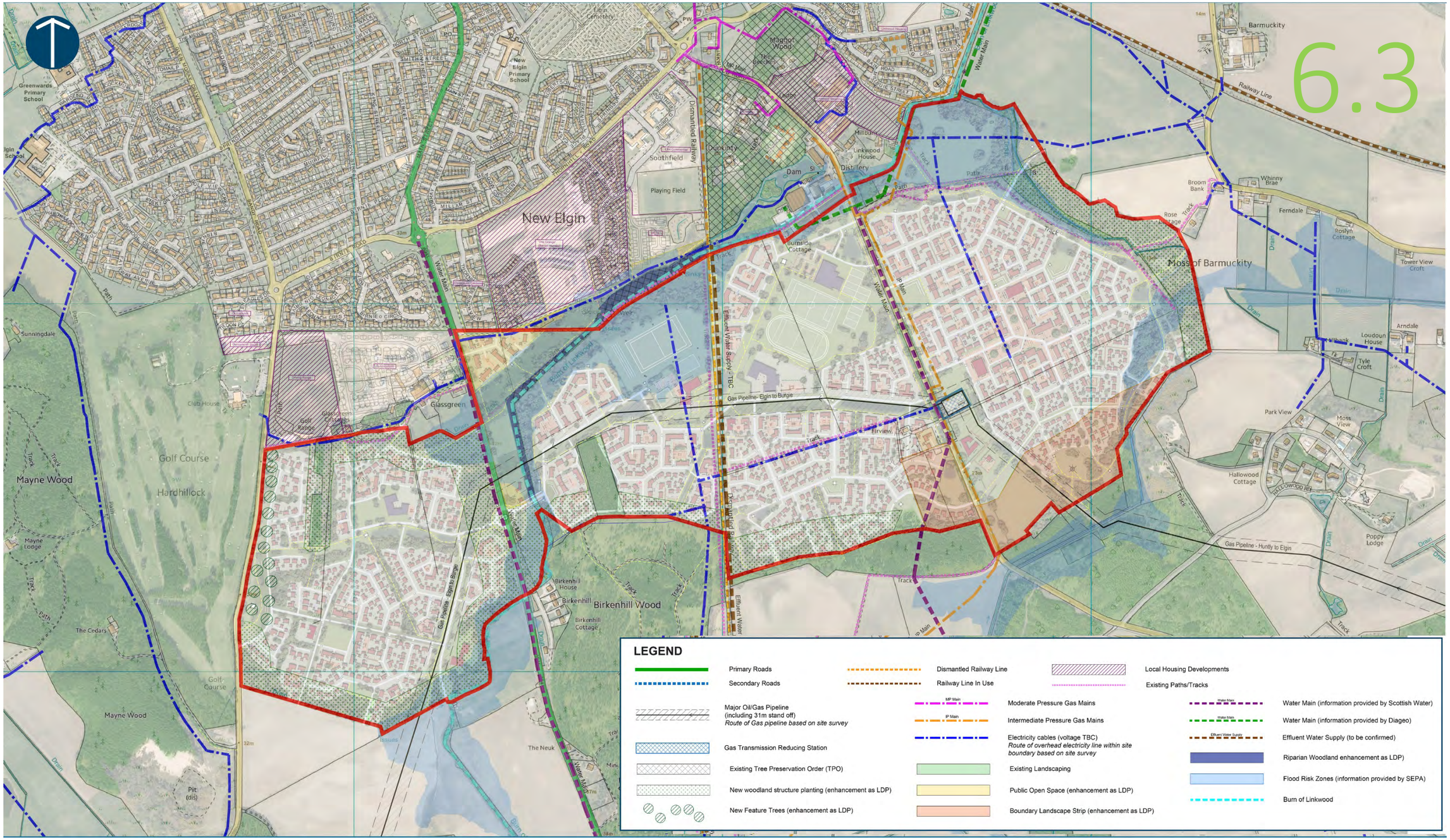


Figure 9
Masterplan & Constraints

Figure 10
Concept Masterplan

Figure 11
Concept Masterplan - Wester Linkwood

Figure 12
Concept Masterplan – Linkwood Village

Figure 13
Concept Masterplan – Easter Linkwood

Figure 14
Building Forms & Spatial Framework

6.6

Density

Density and Scale

The site is naturally divided into three sections, which each portray an individual density structure. Each section is determined by the surrounding infrastructure and woodland which, together with a mix of uses, will collectively create a diverse architectural character.

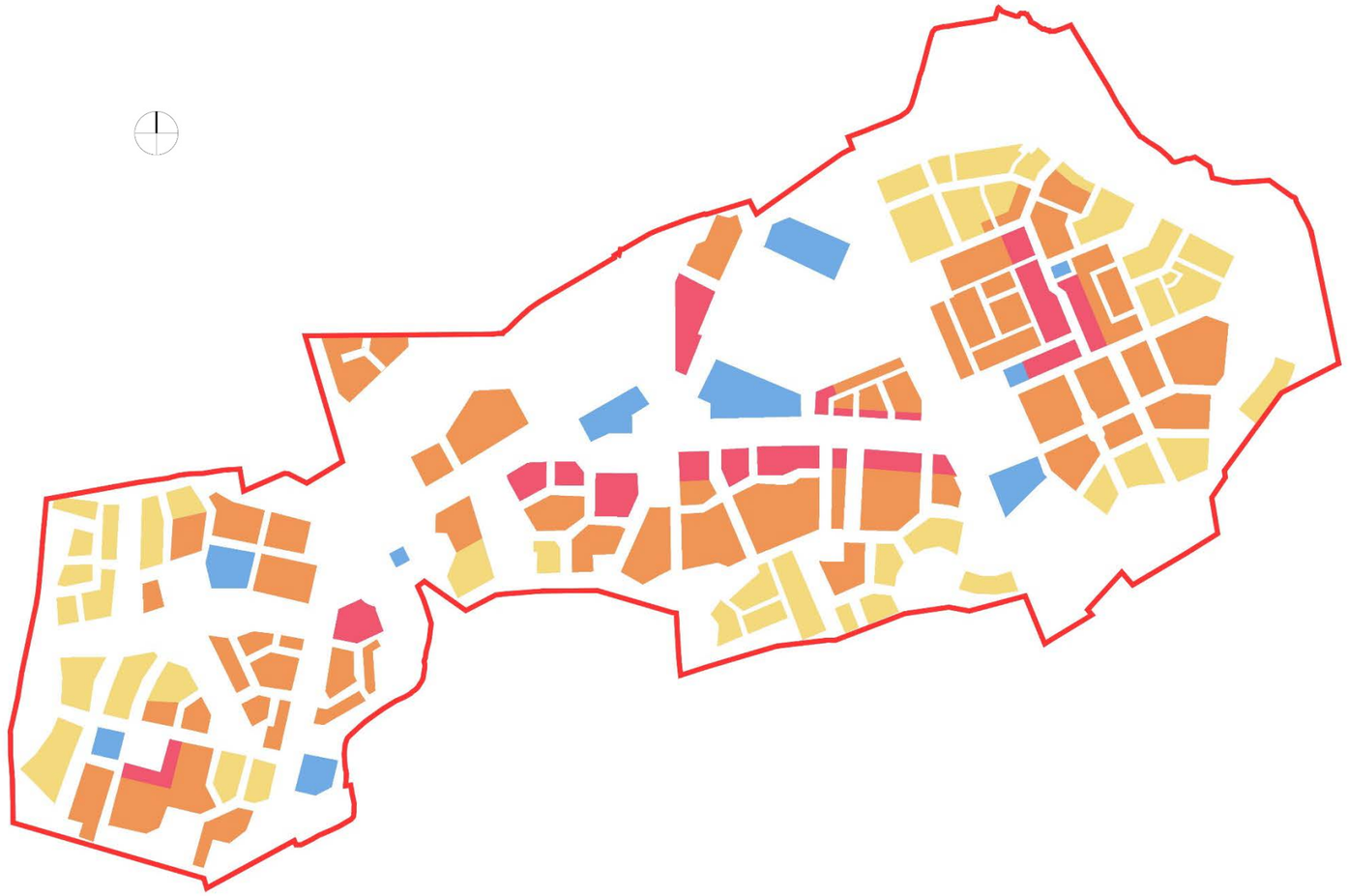
In terms of scale, the higher density areas will form up to 3 storeys, gradually decreasing to primarily 2 and 1.5 storey round the perimeters of the site.

Housing Mix

Given the variety of densities, a wide range of house types is proposed. The proposed house types will be flexible to allow for an adaptable and mixed-use development over time.

Affordable Housing will be spread throughout and will be an equivalent contributor to the diverse architectural language seen within the site.

Key buildings are located throughout to identify potential community hubs for residents. The buildings themselves will be flexible and be able to provide a mix of uses to accommodate future community uses/needs.



Higher density [45-50 units/Ha]

Medium density [30-35 units/Ha]

Lower density [20-25 units/Ha]

Key buildings (non residential)

Development Mix

Residential Density

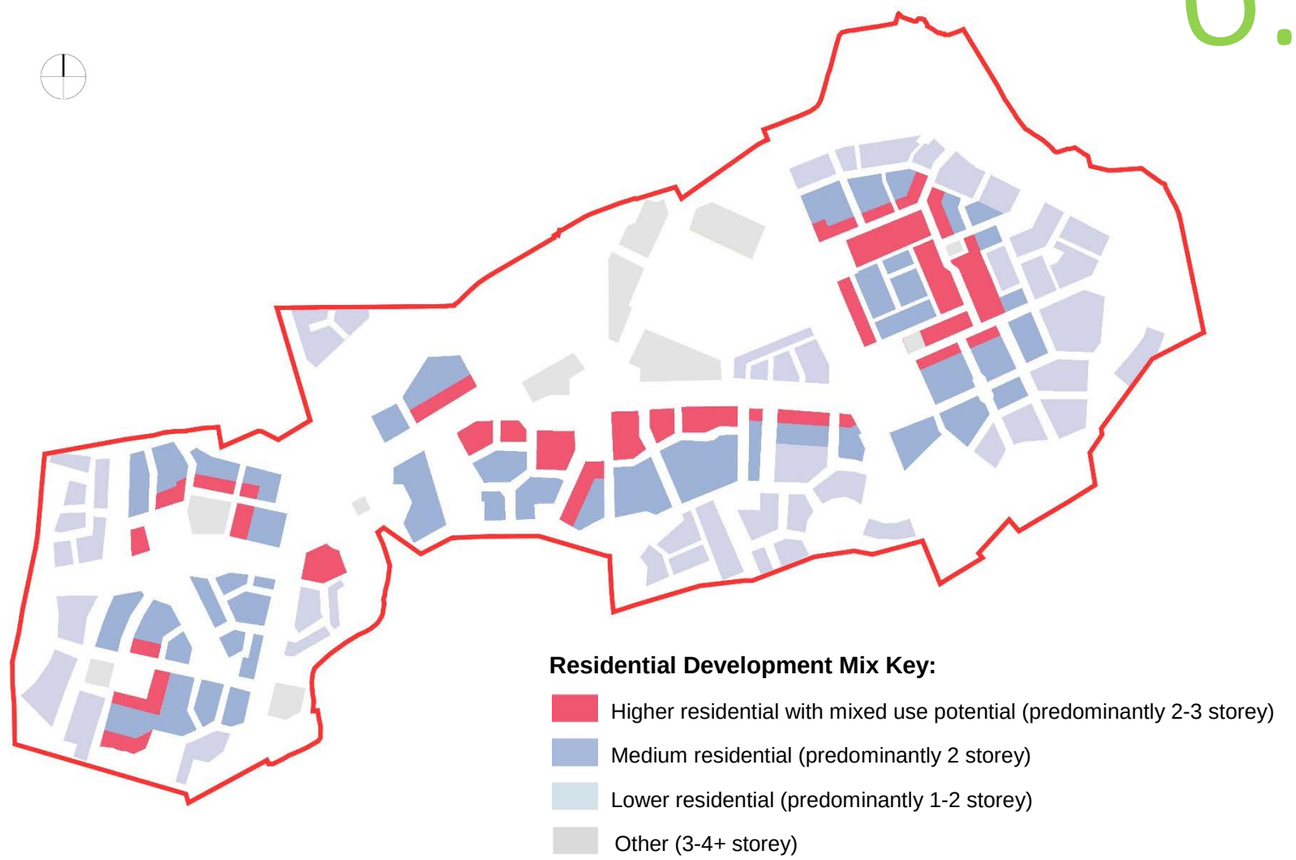
A broad mix of residential scale and massing will be provided with approximately 2,500+ no. homes planned, of which 25% will be delivered within the affordable tenure.

Higher built form follows the principle street and reinforces gateways into the settlement. The higher edges and areas will include a diverse mix of uses.

Joined up or terraced forms are located close to the principle streets with semi-detached and linked detached housing along secondary and tertiary streets. Individual houses are proposed for the woodland edges.

Scale varies from 3 storey along parts of principle streets to predominantly 2 storey with some 1.5 storey at the edges.

This broad approach allows for a range of house types to come forward in a number of phases, including terraced units, apartments, detached and semi-detached houses and these can be delivered across the masterplan to meet different market demands. In addition, feature buildings will be introduced at key locations which include a new Moray Sports Centre, Primary School, Sports pavilion and various other community facilities.



6.8

Mix of Uses

This mix of uses will encourage 24 hour activity and a vibrant mixed community where people live and work.

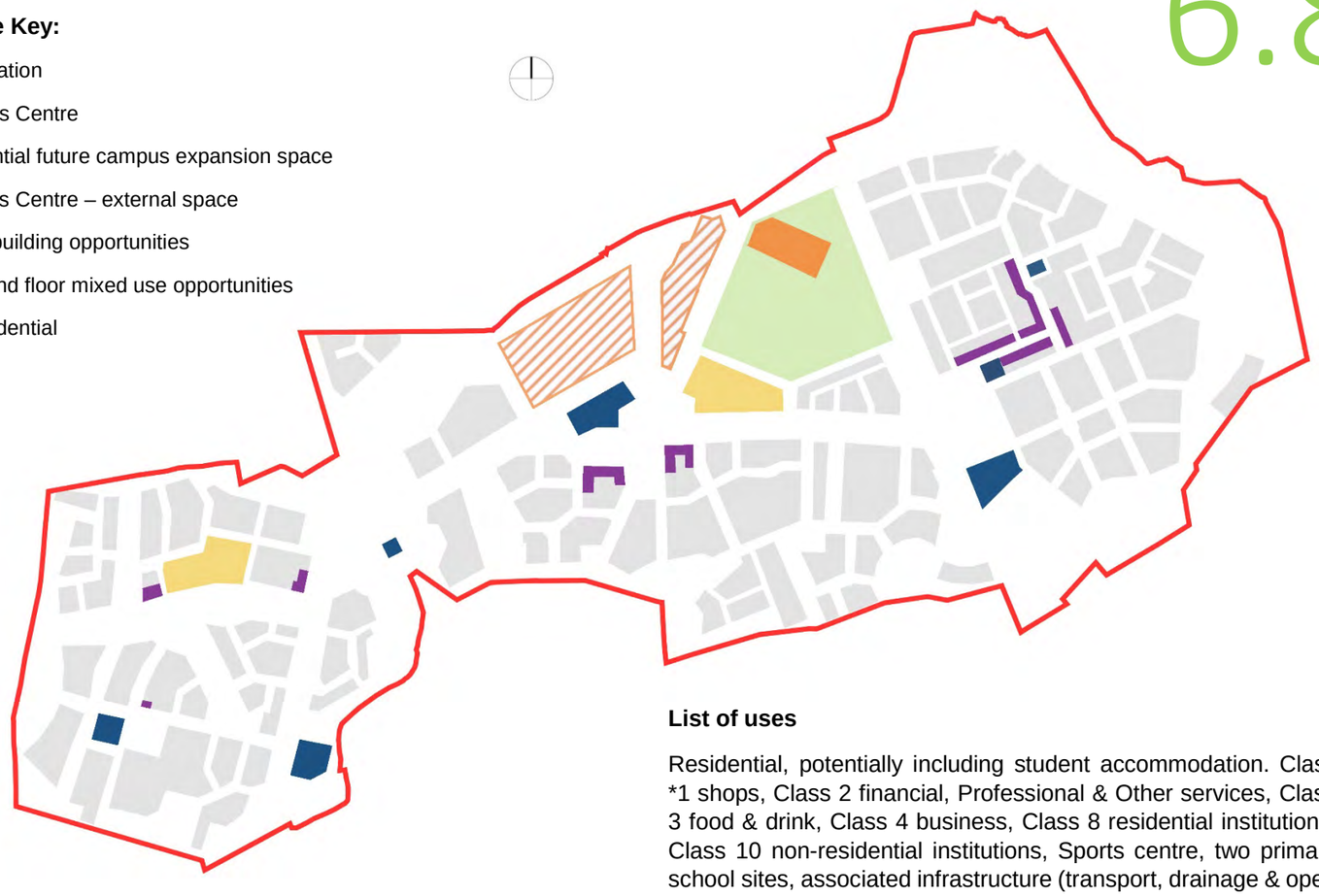
The eastern village core will ultimately include a mix of retail, commercial, leisure and community facilities including a new Sports Village hub. A new primary school is also located close to the Moray Sports Centre which sits to the west of Linkwood Road and is also within close proximity to the main footpath / cycle path connections running north-south. The Moray Sports Centre & primary School will share complimintery facilities including sports pavillion and multi-use sports pitches. A second primary school site is identified and located to the west.

Initially there will be a focus on delivering the Moray Sports Centre and Primary School along with residential accommodation with some elements of mixed use near the school and in the village core.

Potential mixed use buildings in this area could be designed to have flexible ground floor spaces such that these can be adapted to residential uses in the short term. This will ensure occupation of the buildings within the villages providing fututre flexibility.

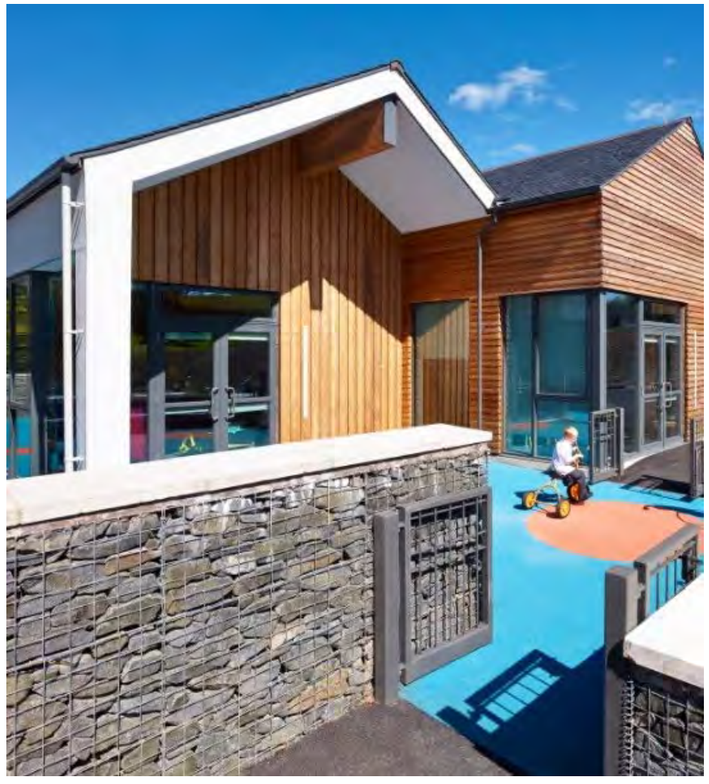
Mixed Use Key:

- Education
- Sports Centre
- Potential future campus expansion space
- Sports Centre – external space
- Key building opportunities
- Ground floor mixed use opportunities
- Residential



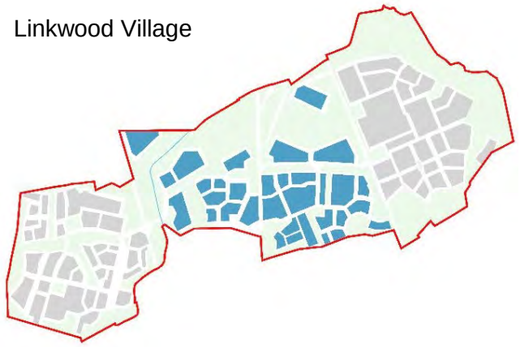
List of uses

Residential, potentially including student accommodation. Class *1 shops, Class 2 financial, Professional & Other services, Class 3 food & drink, Class 4 business, Class 8 residential institutions, Class 10 non-residential institutions, Sports centre, two primary school sites, associated infrastructure (transport, drainage & open space) and landscaping.



Easter Linkwood Village

Linkwood Village



Wester Linkwood Village

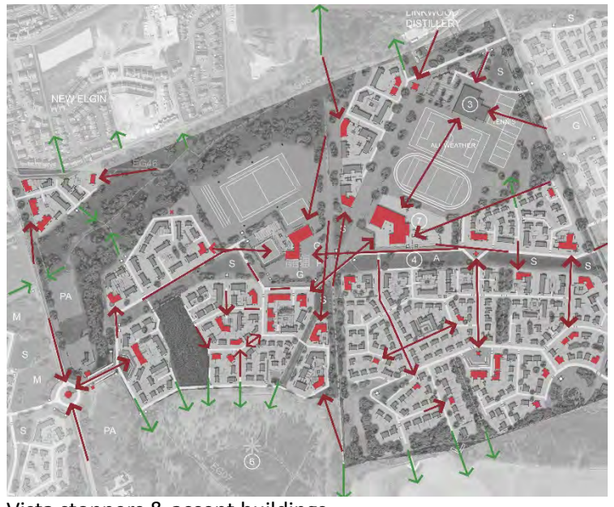
Mixed use opportunities

Mixed use opportunities

Mixed use opportunities

Key: Education Key Building Opportunities Ground Floor Mixed Use Opportunities Sports Centre

Vista stoppers & accent buildings



Vista stoppers & accent buildings

Vista stoppers & accent buildings

Access & Circulation

Network Hierarchy

In developing the transportation aspects of the masterplan careful consideration has been given to ease of access and circulation by a range of travel modes. This has been achieved through early recognition in the design process of where future residents and visitors will want to walk and cycle to/from, such as schools, leisure sports facilities, community facilities, public transport and local shops and also to parks and open spaces. This ensures that the area encompassing the masterplan is both easy to access and easy to get around, which helps to create a successful sense of place. Importantly, the Elgin South masterplan is not seen as a separate community to Elgin but as an integral part.

Accordingly, an important component of developing the access strategy for Elgin South is the development of linkages, particularly by sustainable modes of transport, connecting the masterplan area to both the current southern boundary of Elgin but also with developments such as Linkwood Steadings and Driving Range. Furthermore, the masterplan also considers the further future potential expansion of Elgin by again introducing opportunities by connecting the masterplan area to areas beyond the southern boundary of the masterplan.

Within the masterplan area a street hierarchy has been developed that considers pedestrians first and private motor vehicles last. This is in keeping with the Scottish Government policy document 'Designing Streets', and is one of the core principles contained within the document. Implementation of such an outlook ensures that trip making by pedestrians and cyclists is given priority where feasible within the masterplan.

The street pattern will provide a range of street types, each designed to satisfy its role in the movement framework, and by the design and arrangement of streets the layout will influence preferred route choice and mode of travel. Culs-de-sac are avoided, as these do not permit a permeable layout. The internal masterplan roads will be designed in such a way as to reduce traffic speeds with residential streets designed to be capable of becoming mandatory 20mph zones. Reductions in vehicle speeds will be achieved through the detailed design of the street, the positioning of buildings, location of street furniture, tree and shrub planting and surface changes rather than through vertical traffic calming measures.

A941/A96 linkages

The phasing of when road linkages are required, such as the road link to the A941 from the MSC and the connection to the A96(T), will be informed by the modelling exercise which will be undertaken in support of the development proposals.

Birnie Road/A941 principles

Further investigations and discussions with officers of Moray Council will be undertaken regarding the future 'treatment' of both Birnie Road and the A941.

As part of the gateway to Elgin the objective is to reduce the speed limit by achieving lower self-enforcing speeds on this section of the A941 which would enable enhanced pedestrian and cycle crossing facilities to be provided.

In order to introduce additional pedestrian facilities agreement and support will be sought from Moray Council as local roads authority to relocate the position of the National Speed Limit on the A941 to a more southerly location.

Similarly, along Birnie Road, any proposed changes, such as revising the location of the National Speed Limit and junction visibility splays will be discussed with officers of the council.

Further investigations will also be undertaken to investigate the optimum access junction strategy taking into consideration issues such as the existing horizontal and vertical alignment of Birnie Road.

Any proposed revisions to both the A941 and Birnie Road, such as access junction visibility splays and roundabout design will be in accordance with the appropriate design standards.

The phasing of when road linkages are required, such as the road link to the A941 from the MSC and the connection to the A96(T), will be informed by the modelling exercise which will be undertaken in support of the development proposals.

Linkwood Road principles

Linkwood Road will form a primary route into the development for all modes of transport and will require to be capable of providing for a bus route. Agreed solutions are required to allow for all modes of transport including a bus route.

Improvements to Linkwood Road will require to overcome constraints associated with existing trees, land requirements and the existing bridge crossing of Linkwood burn. Agreed solutions will be required for these constraints.

As a result further detailed investigations will be undertaken on the measures and interventions that can be introduced to satisfy the requirements for Linkwood Road detailed above. Following these further investigations it is also proposed that further discussions are held with council officers with a series of options presented and the optimum solution identified.

Transport Assessment

6.9

A traffic modelling exercise will be undertaken to identify the impact of the masterplan on the network and to highlight constraints which will require to be addressed. A strategy to address constraints will be set out. Further detailed Transport Assessment will be required for subsequent detailed applications to reflect the specific requirements of each phase at the time of the application and also to ensure each phase of the development contributes to deliver the overall mitigation required by the masterplan.

A detailed Transport Assessment (TA) will be prepared in support of the phase 1 application. In accordance with good practice guidance, prior to the commencement of the TA a scoping exercise will be undertaken with officers of Moray Council where the appraisal approach to be used will be discussed and agreed. The conclusions of the TA, with respect to implications of the development proposals on the operation of the local transportation networks, will be informed by the transport modelling exercise which will be undertaken and reported upon within the final report and suitable mitigation measures proposed.

Photograph of Birnie Road

Active Transport

In addition to the street hierarchy, a foot/cycle path network is proposed which complements and wherever possible connects with the existing and established network of core paths within Elgin. Pedestrian permeability through the masterplan area is an important consideration to ensure a well-connected network of routes that relate to the key desire lines for users and this is exemplified by elements such as the pedestrian/cycle path “spine” using the alignment of the now disused railway line.

As stated in Designing Streets, ‘streets should be designed, not only to allow for walking, but to actively encourage it to take place’, and the extensively connected network of paths aids in meeting this aim. In addition, these pedestrian and cycle routes will encourage new residents and visitors to travel by active modes as they will be more direct, convenient and quicker than corresponding vehicle routes. This network of hierarchical roads and paths in the masterplan area will connect to respective existing networks in the urban area to the north of the site.

The high level of transportation connectivity, which will be provided within the masterplan area, will offer the opportunity for optimising the level of trip making by sustainable modes of transport, for instance for trips to and from the proposed new educational facilities and Moray sports centre. Additionally, tactile paving and wayfinding signage will also be incorporated to aid trip making by active modes.

Wider Connectivity

Furthermore, public transport will be able to be extended and/or diverted further into the site as development proceeds. The aim to encourage and increase sustainable and active modes of trip making is highlighted in the Moray Local Transport Strategy and Local Development Plan.

The principle of connectivity and balanced access by a range of travel modes is strengthened by the inclusion of a number of road accesses providing links into the masterplan site including a proposed new four arm junction located on the A941 acting as a ‘Gateway’ to Elgin, Linkwood Road to the north-east, Birnie Road to the west and in the longer term a potential new link road from the masterplan to the A96(T) by way of the Barmuckity Business Park to the east.

The principle of numerous access points being provided is in line with “Designing Streets” in order to spread vehicular traffic throughout the development and to not overload any one specific access road or junction. This approach also provides resilience in case of future maintenance and emergency access requirements. Priority junctions will give access to the development on Birnie Road and Linkwood Road and the number of roundabouts are minimised, due to the negative impact on pedestrian and cycle routes.

Photograph of Linkwood Road

Internal Road Hierarchy

Within the new development the road hierarchy will be simple and legible with a main thoroughfare planned to link all the communities from east to west (Figure 15, Strategic Connections and Local Context) This route will follow the Green Corridor and Linear Park which will effectively form the back bone to the new community offering access to a range of open spaces and green infrastructural components. Traffic calming measures will be introduced to slow traffic down and prioritise the streets for pedestrians and cyclists. Whilst junctions will be designed to slow traffic, with tight corners and narrow road carriageways as appropriate the new development will be fully accessible to buses and service vehicles.

The main access points to the development will be taken off the A941, Linkwood Road and Birnie Road with a new road link to be provided from the A96 to meet the demands of this scale of development. In planning for these proposals and the integration of this new community into the wider Elgin community a clear and legible road hierarchy will be provided knitting the new road hierarchy into the established network whilst allowing opportunities for features to be introduced. This will be a fully coordinated strategy with priority given at key locations to pedestrians and cyclists. The detailed design of all traffic calming measures will be worked up to reflect best practice guidance and with officers from Moray Council.

Transport Assessment

A detailed Transport Assessment (TA) will be prepared in support of the phase 1 application. In accordance with good practice guidance, prior to the commencement of the TA a scoping exercise will be undertaken with officers of Moray Council where the appraisal approach to be used will be discussed and agreed. The conclusions of the TA, with respect to implications of the development proposals on the operation of the local transportation networks, will be informed by the transport modelling exercise which will be undertaken and reported upon within the final report and if required suitable mitigation measures proposed.

Traffic calming measures/Public transport

Traffic calming measures will be in line with current standards including those contained within Designing Streets. Further, where both feasible and appropriate self-enforcing speed reducing measures will be introduced. Horizontal but not vertical traffic calming measures are also to be utilised and will be introduced in locations to discourage ‘rat-running’.

Traffic calming measures will be in line with current standards including those contained within Designing Streets. Further, where both feasible and appropriate self-enforcing speed reducing measures will be introduced. Horizontal and not vertical traffic calming measures are also to be utilised and will be introduced in locations to discourage ‘rat-running’.

A diagram if required to show the route options for public transport i.e. 6m wide roads and also the optimum spacing for stops to achieve accessibility across the masterplan site for all users within a 5min walking time (400m door to stop distance). Also similarly the isochrones for access to the school, shops, sports centre ect also need to be assessed.

Signage

All signage across the masterplanning area will be fully coordinated and legible and the specification of the signs, as well as path finishes, will accord with latest best practice guidance including those produced by the Paths for all and Scottish Natural Heritage.

Car Parking

In masterplanning for the new development at Elgin South it is proposed to provide for private and visitor parking across the development. The optimum arrangement would like shared use of parking where appropriate i.e. where there are complimentary uses, to avoid over provision and to encourage more sustainable methods of travel. In this respect, car parking facilities will be provided in-curtilage for a majority of the detached and semi-detached houses however, the opportunity will also be taken to include a number of these dwellings within discrete courtyards where car parking for visitors will be either on street or at other locations to the side or rear of the main building group.

In addition, denser areas of development, involving terraces, townhouses and/or apartments, will be provided with discrete car parking areas generally located off road, to the rear of properties behind garden hedges and/or walls and accessed off narrow lanes and/or pends.

Communal and visitor parking will be provided alongside the various community uses located across the development with parking standards applied to fully meet the Council’s standards.

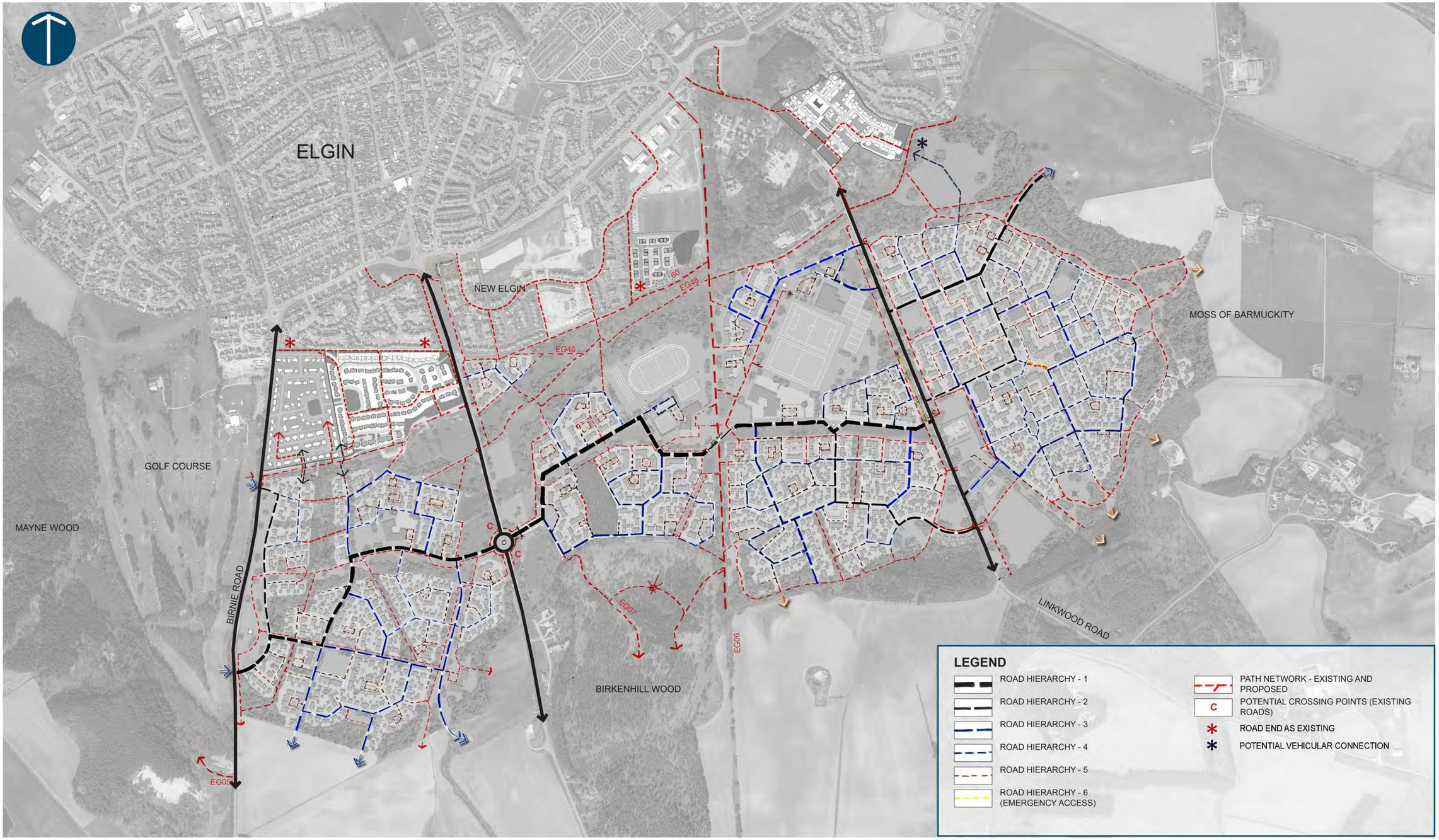


Figure 15
Strategic Connections & Local Context

The Landscapes of Elgin South

In planning for this new development consideration has been given to the quality of the landscape context and the range of features that combine to give it its character. From the gently rolling terrain to the focus that is the Linkwood Burn corridor these features play an important role in the realization of the vision for Elgin South setting the context to The Landscapes of Elgin South.

Figure 16, The Landscapes of Elgin South, illustrates the broad range of landscape character areas that will be promoted as an integral part of this development strategy forming the focus for a broad range of formal and informal activities and leisure pursuits with more formal sports activities focused around the proposed Moray Sports Centre and Central Park linked via a network of paths and green corridors to more informal landscapes which will be seen to frame the overall development form.

There will be a clear hierarchy of publicly accessible open space provided across Elgin South, from pocket parks located across each of the villages through to the central East-West Linear Park, potentially accommodating various leisure uses, including allotments, sitting out areas, informal recreational areas and gardens. This east-west Linear Park will form the backbone of the whole development and from this all areas of the development form will be accessible, including public transport facilities. Enclosed and managed open space facilities will be provided within the two primary school sites as well as the Moray Sports Centre, the latter of which will be seen as a major asset to Elgin and the wider region.

This hierarchy will lead up to the Central Park which will offer itself as a multi-purpose open space accommodating formal play areas, a potential bowling green (subject to demand), landscaped gardens set out around a site for a community pavilion, through to extensive areas of common land which could be given over to formal sports pitches and informal gatherings as well as meadows designed for passive recreational activities. Formal greens located at the centre of Linkwood Village and Wester Linkwood will add to the overall open space structure which will also include the formal square in Easter Linkwood. These spaces will offer scope for year round use by the community

In addition the new community will be framed by a broad range of more informal open spaces incorporating woodland belts, meadows, riverside walks and paths which will open up the countryside edge to the development site and allow more passive recreational pursuits to take place. These areas will add to the overall open space experience and the green infrastructure provided will be at the core of the Masterplan for Elgin South.

This approach will in turn, promote walking, cycling and potentially, horse riding as pursuits to be adopted by all across Elgin South balanced by a desire to restrict access to selected locations, including parts of the river corridor, to help encourage habitat creation. This approach to asset management will be included in a formal Landscape Management Plan which will be adopted as part of the construction and post construction works contracts.

Green Infrastructure

This landscape- led approach to settlement planning will lead to the creation of extensive areas of greenspace which in turn will form the setting into which the various development sectors will be planned. This Green Infrastructure, making up more than 30% of the total site area, has an important role to play in the Masterplan for Elgin South as it will help to characterise the area and provide connectivity across the whole of the subject lands whilst offering a broad range of facilities to the wider community.

In responding to the 'constraints' identified across the extended land holding, the green infrastructure has been designed to offer a framework into which the building form can be planned with scope for broad meadows to be introduced in flood plains while in contrast, more formal linear parks will be introduced through the centre of the development, taking account of restrictions due to underground pipelines and leading to 'Central Park' – a large expanse of open space which will provide the setting to a range of formal and informal activities. This is seen as a pro-active strategy in dealing with limitations on the site as the green infrastructure extends out from these key features to connect to a broad range of landscapes, including the potential for enhanced riverside walkways along the Linkwood Burn and on to the Core Path network which in turn, offers scope for connections not only back into Elgin but also out into the wider countryside setting.

In addition to the provision of linear parks, walkways and meadows, the green infrastructure will extend out to include formal avenues of trees set out along linear green spaces beside the primary access roads, drawing upon the characteristics of Linkwood Road itself, with scope for the introduction of allotment gardens/food production areas, formal play areas and a new cemetery as part of the Masterplan. Where formal open spaces/leisure facilities are not required within the 'green infrastructure' these areas will remain open space and will be laid out for more informal leisure and/or amenity use, remaining undeveloped unless other use agreed with the council.

In addition, as part of the Moray Sports Centre, a broad range of indoor and outdoor formal sports facilities will be provided offering facilities for use by local schools, local residents, as well as the wider community. In time and as part of the phased approach to delivering the Masterplan for Elgin South the Moray Sports Centre will be accessible from all parts of the development via the road and path network.

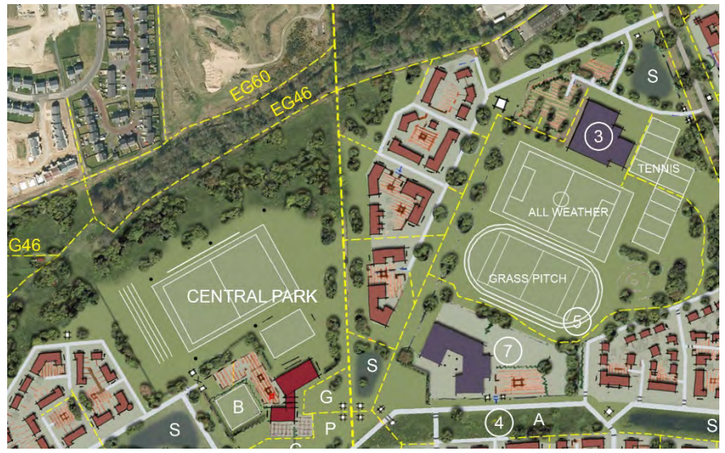
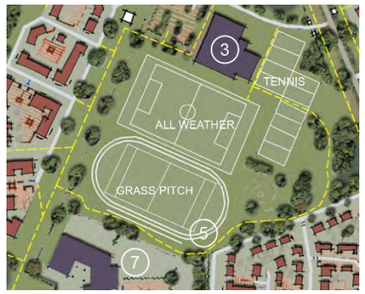


Figure 16
The Landscapes of Elgin South

Sports and Education Campus

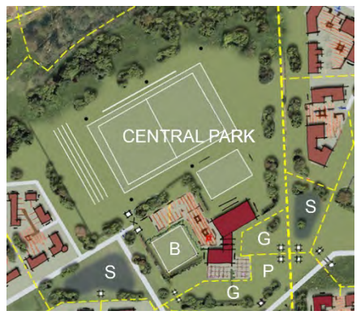
An extensive area of the site, potentially measuring over 12 hectares, will be given over for the construction of the Moray Sports Centre which will provide for an extensive range of both outdoor and indoor sports and activities linked to a new state of the art building. The Sports Centre will form a key focal point to the Masterplan set in the context of a formal landscape setting yet designed to 'fit' into the broader landscape approach, with extensive areas of structural landscaping and formal tree planting set out across the campus.

The Sports Centre will benefit from its location in relation to the proposed network of paths and green infrastructure which will connect the Centre to a new Primary School located on the southern boundary of the Campus. The school will be laid out to take full advantage of its own connectivity with the potential, subject to the necessary agreements, for the school to 'share' facilities. The Sports Centre will be provided as a self contained facility with scope for extension to the West. Any future phases would be agreed with the council but would only be subject to market demand at the time.



Central Park

Accessible also by the new network of paths and forming the other 'half' of the landscape focus to Linkwood Village will be Central Park. An extensive area of the site will be given over to landscape resource with scope for both formal and informal sports activities to be introduced, complementary to the Sports Campus to the east. Central Park will extend from the middle of the development to the north and into the Linkwood Burn river corridor landscape providing scope for a broad range of activities and interests to the benefit of the wider community. Central Park will form the community focus to Linkwood Village as it will potentially have a community hub, centred around a new Pavilion building which could cater for a range of community activities from social gatherings, to additional sports clubs and groups. The Pavilion would offer both indoor and outdoor spaces and would be seen as the social focus of this community with scope for formal gardens, play areas, bowling greens and more intimate spaces to be introduced in contrast to the more open characteristics if the larger parkland setting.



The design of the park could follow on from a further consultation process however, it is considered that the character and quality of this landscape would draw upon the quality of the environment of many of the Victorian Parks located within communities across Scotland and beyond but with a more contemporary feel taking account of modern management techniques.

Reference should also be made to some of the UK's greatest parks including Hyde Park in London which displays vast open areas of meadows and grassland in contrast to more intimate landscapes and gardens. These are seen in the context of formal sports facilities, not dissimilar to the Central Park concept and importantly, Hyde Park had adopted an access strategy which allows people to enjoy all the spaces safely whilst maintaining vehicular access as part of the city's road network.

Linkwood Burn Corridor

The Linkwood Burn Corridor landscape will be enhanced to create a publicly accessible amenity open space however, significant areas will also be set aside for habitat creation and conservation practices. The river corridor will be opened up further as a range of pathways will be created for use by pedestrians, cyclists and potentially, horse riders. A series of open spaces will be created along the length of the burn corridor to provide for more localised and informal recreational and leisure pursuits. These spaces will often be linked to pockets of housing to help provide a sense of ownership as many of the dwellings will be laid out to overlook these spaces and provide passive surveillance.

The structure planting within this landscape character area will be designed to encourage wildlife with different mowing regimes introduced to help define how spaces should be used, actively or passively. Discrete, less accessible areas will be created along the water's edge with paths laid out to avoid these locations and to encourage habitat creation, striking a balance between human activities and the needs of the environment.

The Linear Park

A new Linear Park network will be created extending across the whole of Elgin south and linking all parts of the new community. Where there was a potential 'constraint' this has been turned into a strong unifying feature for Elgin South as the no build zone associated with the route of the high pressure gas pipeline which crosses the site offers scope for a key landscape feature to come forward. The Linear Park will extend from the Birnie Road frontage to Wester Linkwood in the west through to Easter Linkwood forming the main green corridor and 'back bone' to the Elgin South concept.

The Linear Park will be a minimum of 62 metres wide but will broaden out at key locations across its length with a range of formal and informal activities incorporated, including:

- **Allotment Gardens**
- **Play Areas**
- **Avenues of Trees**
- **Meadows (winter and summer flowering)**
- **SUDs Basins and associated Habitats**
- **Formal Green Spaces**
- **Woodlands**
- **Paths**
- **Public Art**

Green Road Corridors

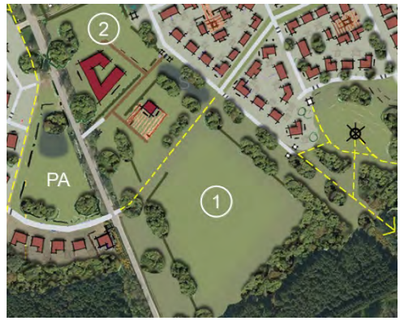
A key component of this masterplanning strategy is the treatment of the road corridors that already cross the site and how the new development form will be planned to address them. Taking reference from Linkwood Road, the other main highways, including the A941 and Birnie Road will be subject of significant formal landscape and tree planting treatments to help form Green Road Corridors. New development will generally be set back from the road corridors to allow the tree planting to establish safely with segregated paths and a network of open spaces planned to set the scene to the development approaches. These green fingers will, in turn, extend out from Elgin South to visually connect the wider countryside setting with this new urban corridor.

The road corridors will in turn be designed with key features and buildings introduced to form 'gateways' to the site and importantly, Elgin itself. New drystone walling, public art and features as well as buildings with a 'gateway' function will be introduced to help urbanise the edge and set the scene to those approaching the city from the south. The new roadside corridors will remain active with path networks laid out alongside the highway with fully integrated, at grade crossings and traffic calming features designed to allow safe access across this area. Green corridor streets will be designed with self-enforcing speeds.

Cemetery

A site for a new Elgin Cemetery has been located to the south east of the site and this has been designed to form part pf the southern gateway landscape to Easter Linkwood on the Linkwood Road whilst promoting strong links with the wider countryside setting.

The cemetery will be designed in association with officers from Moray Council however, the masterplan envisages a formal landscape framed by avenues of trees, consistent with the Green Road Corridor philosophy with further layers of landscape features designed to frame the immediate setting of the cemetery and add shelter for users. These will include formal hedges using species including Beech and Copper Beech. There will be scope for a building to be introduced into this landscape as required as well as discrete areas of car parking all overlooked by some of the housing within Easter Linkwood.



Paddocks and Allotments

In keeping with the need to get this new community to take ownership of the landscapes of Elgin South features that locals can get directly involved with will be introduced at key locations across the development. Opportunities for locating Paddocks and Allotments across each of the villages have been identified to allow local people to get directly involved in the 'ownership' and management of this landscape. This will also help to provide additional open space for personal use for residents with smaller or shared gardens within the development thereby adding to the overall 'social sustainability' of this masterplanning strategy.

Meadows

Meadows will be created generally within the flood plain defined for the Linkwood Burn as it will allow a new habitat type to be created yet allow significant parts of the site to be enjoyed informally by local people, with 'grass paths' carved out of this landscape resource, complementary to the permanent path network, with the meadows managed for either spring or summer effect.

Creating meadows is a positive way to enhance a landscape as it can create a character area rich in habitat and nature conservation interests utilising indigenous seed mixes with, importantly, lower maintenance requirements once established. This also adds to the overall sustainability credentials of the site.

Segregated Footpath, Cycleway and Bridleway Network

A network of paths will be laid out across Elgin South linking the proposed residential areas and facilities with the wider landscape setting and importantly, the established communities around Elgin. These paths will be clear and appropriate for use, and will be constructed with a range if finishes from mown grass, self-binding gravel and mulch through to asphalt and pavers. The formality of the path will reflect its function and location with a number of paths designed to meet adoptable standards as required. Paths will be open and accessible, well sign posted, and where appropriate, mowing strips will be introduced to to help improve safety and forward visibility for users.

Structure Planting

The Masterplan acknowledges the landscape context and the diversity in the woodland belts and associated vegetative cover in the area. In response to this the Masterplan incorporates a broad range of structure planting elements which will be designed and phased to set the context to, not only the proposed development form but also, the range of open spaces and leisure activities identified across the site.

The overall concept therefore, is seeking to increase the sense of structure across this landscape with woodland belts, hedgerows and open space designed to soften the interface with the wider rural setting. This will also increase the sense of connectivity between the new development and the wider context and will allow habitat corridors to be created.

As part of this longer term, strategic masterplanning exercise an advanced planting programme will be undertaken which will consist of a mainly 'native' locally indigenous species mix which will provide a framework into which more ornamental and exotic species can be introduced to add colour and texture as well as year round interest into the various development areas. This strategy will provide in time, an increased sense of visual containment to the subject lands ultimately paving the way for the phasing of the development.

It is considered that the need for both the successful establishment of the structure planting and year round interest will be determined by a combination of the factors noted below:

- **Existing soil and climate conditions**
- **Soil amelioration, planting specification and density**
- **Species selection**
- **Size of stock**
- **Management and maintenance**

A key factor will be the management of the landscape resource and in this regard, a detailed Management Plan will be drawn up which will be adopted as part of the initial construction contract, including Advanced Planting, and then be implemented as part of the longer term agreements managing the overall site.

6.12

Sustainable Drainage Strategy

The overall approach will allow for the creation of a self-contained, sustainable community with extensive areas of the land holding given over to open spaces which will provide the setting for recreation and leisure pursuits as well as, importantly a Sustainable Urban Drainage System.

The range of facilities will include swales and potentially open water courses along with Detention Basins sited throughout the development and taking advantage of the distinct north easterly aspect of the landholding. Figure 17, SUDS Detention Basins Location Plan, illustrates the location of the Detention Basins across the Elgin South site based upon a surface water drainage strategy worked up by members of the Project Team. The features will be designed to meet the requirements of both the Council and SEPA as well as Scottish Natural Heritage and will be designed to add to the overall diversity of the landscape resource.

Figure 17
SUDS Detention Basins Location Plan

6.13

Wayfinding

The ability to navigate easily through an urban environment appears to be an obvious approach to designing communities but was one of the major contributing factors to the failure of developments built during the 1960's. Beyond the practical purpose of simply finding where they are going, a well-structured environment, with clear and legible reference points, both within the new community and to the existing urban area, contributes to a general sense of security.

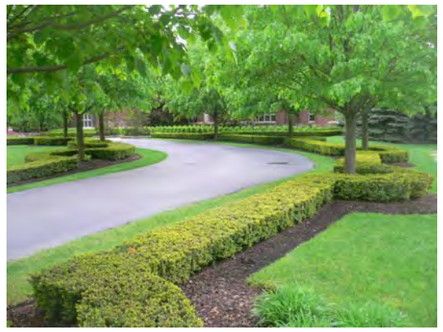
Wayfinding is a key aspect of the urban design approach taken in the design of the Masterplan for Elgin South and this has been achieved through several means. Firstly, an easily understandable network of roads that creates a logical movement pattern. These form a hierarchy from the main spine roads, running both north-south and east-west, through residential access roads and on to lanes and shared access courts. Memorable buildings and 'vista stoppers' that close views or act as focal points further add to the legibility of the street (see 'vista stoppers and accent buildings').

The introduction of Public Art and landscape features can help to build on this sense of place and importantly local identity. The proposals for Elgin South allow for a range of public art features to be introduced at key locations from larger 'gateway' reference points, like the proposed roundabout on the A941 and junction with Wester Linkwood and Linkwood Village, through to features introduced along the path network.

Figure 18, Potential Locations for Public Art, identifies locations where it is considered that works of art would make a positive contribution to the Elgin South community. Key locations include:

- **The proposed roundabout on the A941**
- **Focal points at the ned of avenues**
- **At key junctions of paths and paths/roads**
- **Key vistas from within the development**
- **Viewpoints**
- **Elevated locations to act as internal and external references**
- **Local Gateways/Bridges**
- **Boundary walls including dry stone dykes**
- **Standing stones within meadows**
- **Boundary fences and railings including Paddock fences**
- **Formal streetscapes, squares and greens**
- **Land art and ground modelling**

The style and form of the public art will be agreed with officers of Moray Council and through consultation processes associated with each detailed planning application to ensure that Public Art is seen as an integral part of the phased approach to delivering the villages if Elgin South.





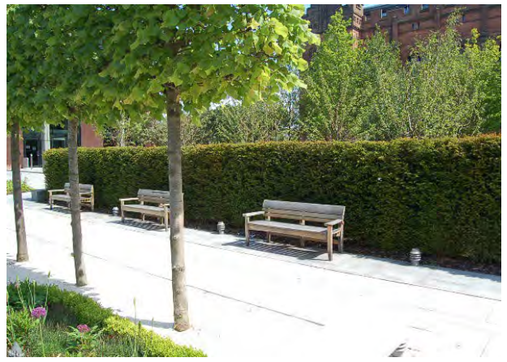


Figure 18
Potential Locations for Public Art

7.0

design principles & design code

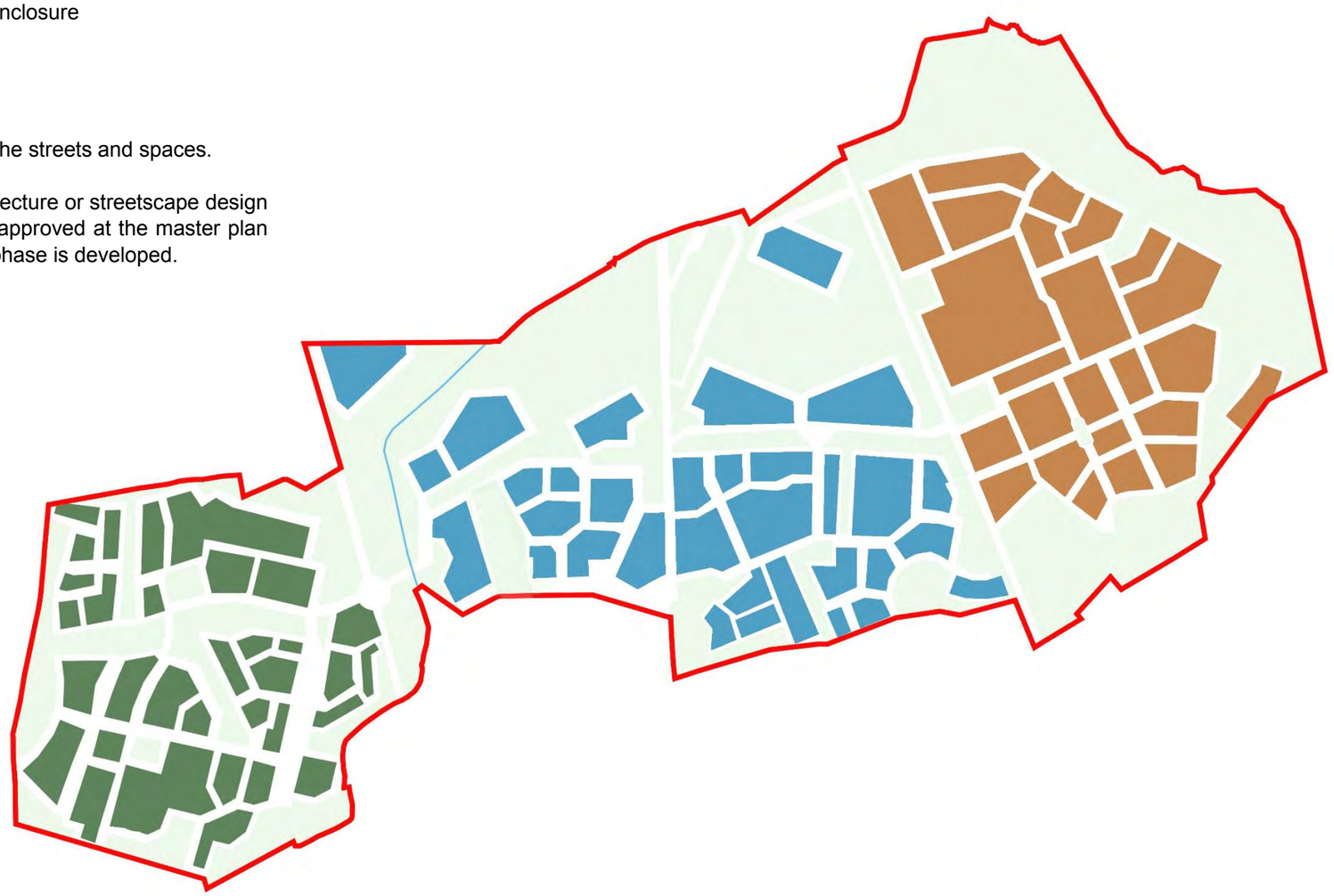
Design Principles

The design code sets out the expectations for each area of Elgin South. The code defines:

- the frontage lines and spatial enclosure
- threshold spaces
- boundary treatment
- streetscape and public realm
- landscape

This is used to govern the integrity of the streets and spaces.

This is not intended to detail the architecture or streetscape design as these cannot be fully designed or approved at the master plan stage, but will come forward as each phase is developed.



Wester Linkwood Village

- Housing density - predominantly low
- Building heights – 1 ½ to 2 storey
- Boundaries / landscaping – soft, sensitive; trees & hedges
- More generous garden space

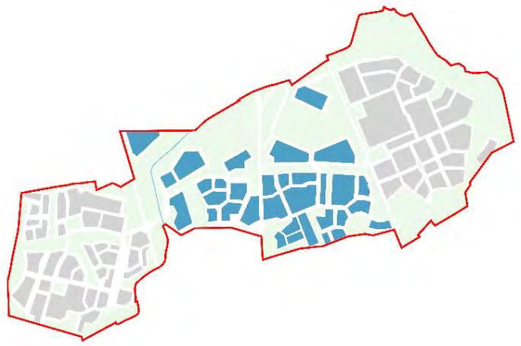
Linkwood Village

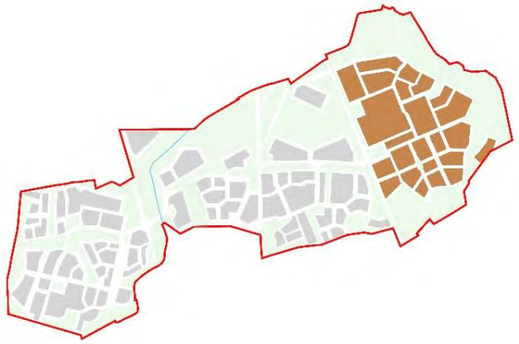
- Housing density – ranging from high to low
- Building heights – 1 ½ and 2 Storey residential and up to 4 storey non-residential
- Boundaries / landscaping – soft, sensitive; trees & hedges
- Sports village, School & central park
- Public amenity space, allotments, walking, cycling & running routes. Softer public realm

Easter Linkwood Village

- Housing density - higher to village core, low to outer edges
- Building heights – 1 ½ to 3 storey in village core
- Boundaries / landscaping – hard; walls & street furniture within urban realm areas
- Setbacks / front gardens – closer to street around core

Frontages Overview Diagram





Wester Linkwood Village

This area will provide predominantly medium & lower density housing with a continuity of frontage to Birnie Road, overlooking the existing golf course. Sensitive boundary treatments, such as hedges, and woodland will be prominent in this area complete with walkways and linkages through to surrounding areas.

Streets will be less formal and those with low volumes of vehicular movement will comprise of shared surfaces encouraging walking and cycling.

Buildings with occasional side driveways and hedges to front gardens will be used to screen vehicles and allow for a softer landscaped frontage to the streets with a more rural domestic character.

There will be a small cluster & mix of uses within this area including a primary school, a small community hub with non-residential uses and facilities.

Linkwood Village

This area provides a range of housing densities depending on location, with medium to higher density housing, overlooking the linear park, through to lower density housing overlooking woodland areas.

The old railway line dissects this area and will be utilised as a walkway and cycle route with paths which branch and permeate through the development and parkland.

There will be a linear park running perpendicular to the walkway that can accommodate SuDS responding to the gas pipeline zone, allotments and areas of informal open space, all well overlooked with active frontages.

A new sports facility and sports pitches will be provided and a new primary school will also be located within this area, with areas of ground identified for future flexibility and potential expansion of the campus within the central park.

Easter Linkwood Village

This area will make provision for a higher density housing, mixed with non-residential properties, clustered around the village core with building frontages close to the street edge presenting in places a more continuous frontage. Boundary treatments will predominantly be walls and hard landscaped areas, with street trees and street furniture. Permeability & circulation options will be high.

The village core will have widened streets accommodating occasional parking spaces, pedestrian footways and cycle ways and opportunities for community & village activities such as markets around the village public realm spaces. These will be set between building frontages with a hierarchy delineated by subtle changes in surface colours / textures. There will be parking courts to the rear of apartment buildings in some cases, which will be well overlooked and reduce the visual impact of cars in the public realm.

Frontage Key:

Urban Frontage

Green Frontage

Frontage Key:

Urban Frontage

Green Frontage

Live / Work Opportunities

7.2

A Place to Work

Elgin South will be designed and promoted to actively encourage the provision of jobs within the community and seek to minimise levels of commuting. It will incorporate space that is designed for or can be easily adapted for employment uses. It will facilitate home working. It will have a strategy for attracting and stimulating a wide range of business opportunities that complement the ethos of the community.

Live/work

Self-Build Example 1

Self-Build Example 2

Character Areas

Sense of place, distinctiveness and the strength of identity for Elgin South will be primarily influenced by the physical form of its streets, the surrounding landscape and by the scale and form of the architecture.

The masterplan has been developed with distinctive character areas which are intended to respond to local conditions and the context, for example, of topography, proximity to watercourses and to rural and urban character zones.

The diagram opposite identifies these character areas, described in more detail in following pages.

The 'main' village, Linkwood, has been planned at the centre of the overall development and as the 'main' village, will provide many of the key land uses, in addition to the residential element, within the overall strategy. These will include the Moray Sports Centre which will be located immediately to the west of Linkwood Road and to the east of Core Path EG06 which connects the site with Elgin via an elevated former railway line. In planning for this Regional Sports Centre and the role it will ultimately play across the region and beyond, it is proposed that, in future phases of the development, a road access will also be provided to this from the west and the A941. Details of the road and the route are still to be agreed but it is proposed within the Masterplan that this road should be designed to deter 'rat running' across the villages with traffic calming, as appropriate, designed into the street form.

Closely linked to the Sports Centre will be a site for a new primary school and these land uses will, in effect, form the focus to Linkwood Village with the potential for the school to share facilities with the sports centre. It is proposed that both of these will be provided as part of Phase One of the overall development with scope, subject to the necessary permissions and funding, for both facilities to be provided almost immediately.

The remaining land uses within Linkwood Village will include: a broad range of residential properties, including affordable homes, designed to meet market demand at the time; a site for an additional community hub, which will include services that will be seen as complementary to local facilities already provided for in New Elgin. The final mix of community facilities to be allowed for in the Masterplan will be agreed with representatives of the Council and subject to specific needs at a given time.

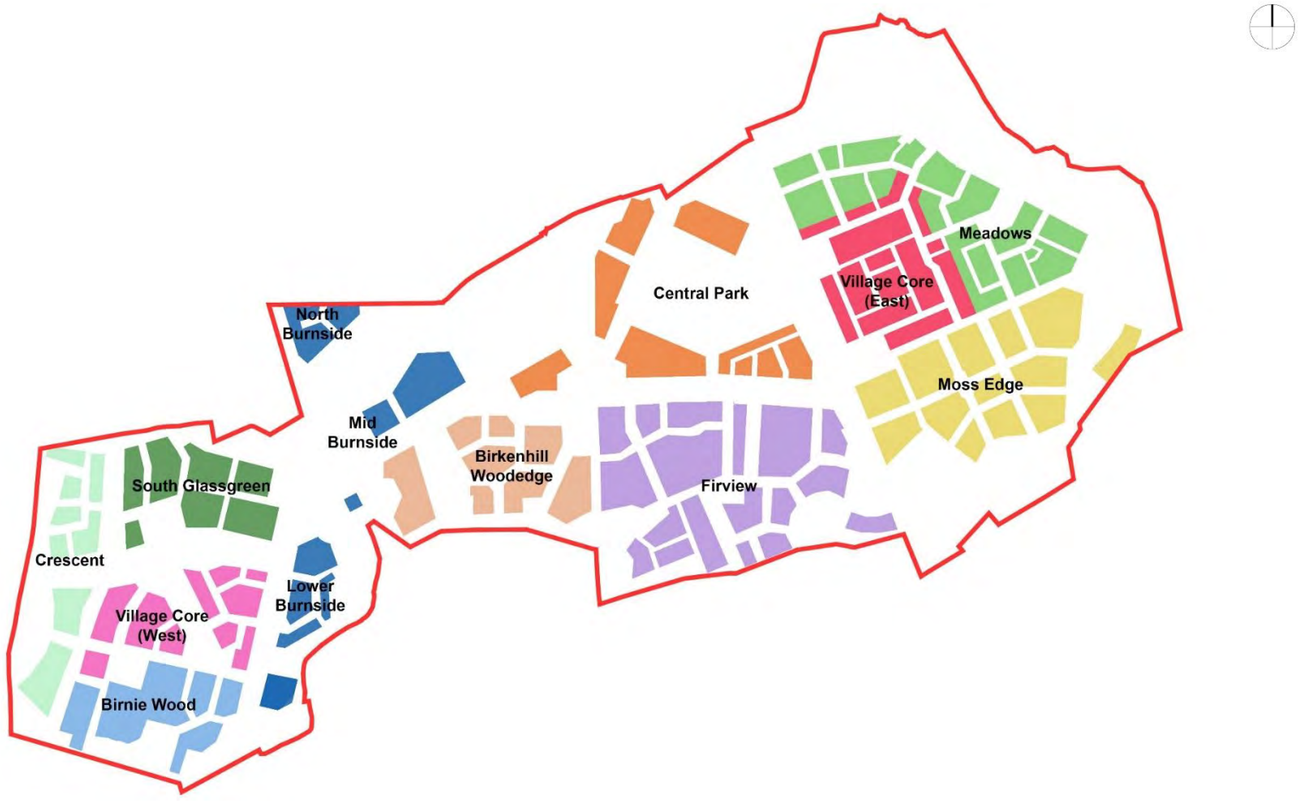
A new linear parkland will be designed to connect all the development sectors of this village with a wider central green set out to the west of the Core Path (EG06). This will form the focus for future 'summer' events within the village and in addition to the Sports Centre and the Primary School, will form a key part of the Public Realm.

The Masterplan envisages two further villages set out to the west and east of Linkwood Village. To the east is Easter Linkwood, where the Masterplan illustrates the potential for a 'satellite' village community set out around a hard landscape public realm focus drawing upon a traditional Scottish style and incorporating features consistent with settlement planning in many parts of Moray and the north of Scotland. A 'square' will be planned as a formal space offering scope for village activities all year round. The public realm associated with this village will include 'traditional' materials for paving and edgings with limited specimen street tree planting introduced for shelter and to provide focal points.

The new tree planting will be designed into the street scene with hard edgings designed to formalise the setting which will also include sitting out areas, possibly associated with bus stops, visitor car parking, cycle racks, etc. The formal tree planting will extend out from the square towards the outer edge of the village where it will meet green links which will provide access to the country path and Core Path network. This green 'outer ring' approach to Easter Linkwood will be reflected across all three villages as it picks up the characteristics of the mature tree lined Linkwood Road and the wider setting to the site.

However, to reinforce the green edge new residential development will also be set back from the main roads (Linkwood Road and the A941) to allow for the introduction of linear open spaces and other facilities to be provided along these corridors. These will include a new cemetery which will be planned as a gateway from the south to Easter Linkwood, reflecting again one of the attributes of many of Scotland's traditional villages, as well as potentially small scale business/community opportunities within gateway buildings.

In contrast to Easter Linkwood, Wester Linkwood, the second satellite village community, located to the west of Linkwood Village, will be planned with a central green space at its core reflecting the characteristics of other historic settlements across Moray with more of a soft landscape led approach to the planning of this village. This approach will include more tree planting than in Easter Linkwood and less formal with the roads extending out from the central green incorporating grass verges which will provide the setting for informal avenues of trees. The street scenes could also include verges widening out to create drying greens to help form variety and interest in the urban form and relief to the standard street widths.



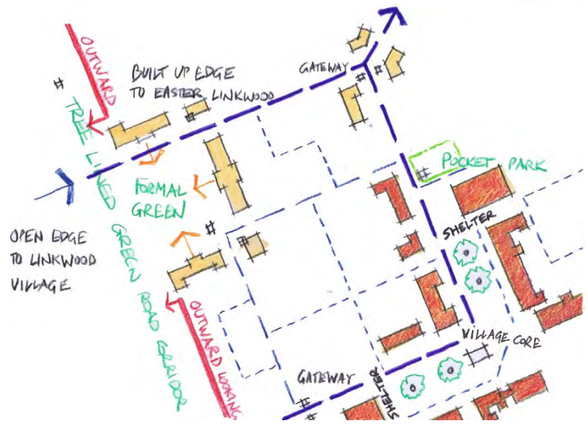
Character Areas | Village Core East

The Masterplan

LEGEND

- ROAD HIERARCHY - 1
- ROAD HIERARCHY - 2
- ROAD HIERARCHY - 3
- ROAD HIERARCHY - 4
- ROAD HIERARCHY - 5
- ROAD HIERARCHY - 6 (EMERGENCY ACCESS)
- PATH NETWORK - EXISTING AND PROPOSED
- C POTENTIAL CROSSING POINTS (EXISTING ROADS)

Connections & Local Context



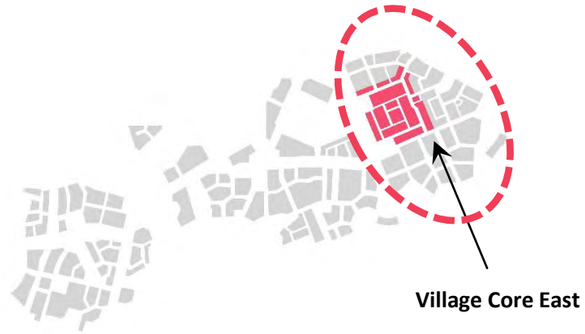
Urban Design Code / Concept

Public Realm

Mixed use ground floor opportunity

Avenue of Trees

Culross Historic Centre & New Public Realm



Village Core East

- Mixed use higher density village core to Easter Linkwood.
- Higher density residential to ensure 24 hr activity and passive surveillance of public access.
- Scale predominantly 2-3 storey
- Contained urban spaces as focus of community activity.
- Linear frontages along the high street within the Village Core

Public Realm & Landscaping

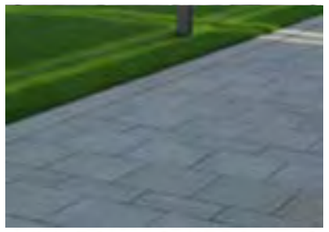
Street Frontage with varied building heights

Streetscape Illustration - Mixed Use

Public Realm & Landscaping

Character Areas | Village Core East

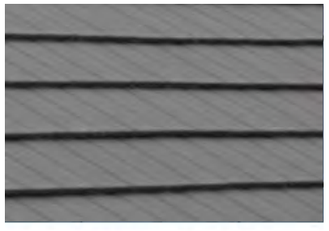
Materials
The materials within this area will follow the following pallette:



Urban Realm Finishes

Coloured Feature Render

Feature Walls



Tiles (Slate effect)

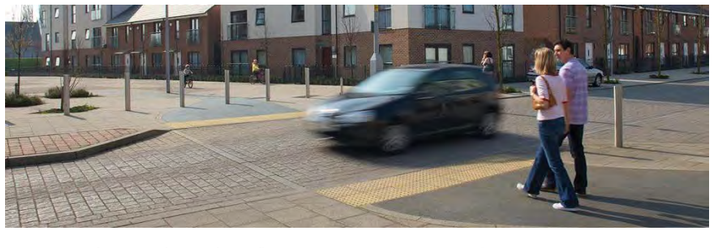
Render

Masonry Features

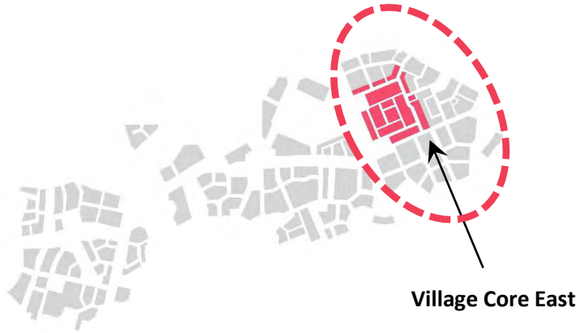
Avenue of Trees, hard landscaping, street furniture

Open space, pedestrian pathway set back from Principle Street

Masonry walls / railings



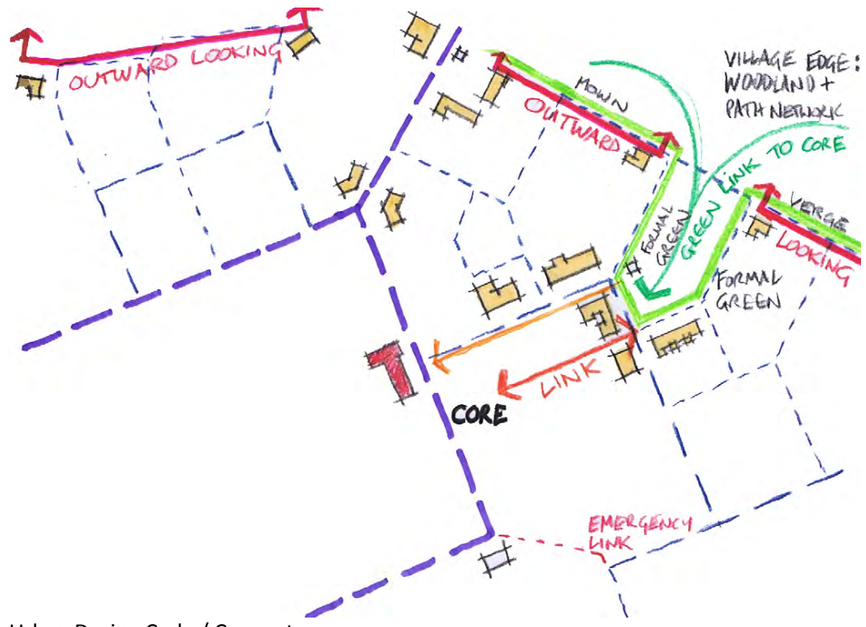
Street calming shared surface streets, narrowing's, connectivity



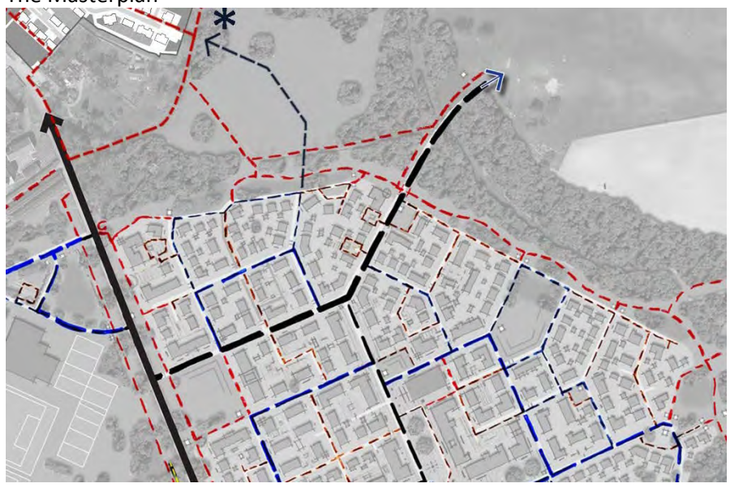
Key Features:

- Increased hard landscaping and up to date take on the 'traditional village' core.
- Formal green urban setting to Linkwood Road acknowledging Linkwood Steading frontage.
- Pedestrian and cycle parallel avenue connections and future boulevard tree lines to be provided.
- Gateway 'book end' key community buildings to be positioned to define and 'shelter' village urban L shaped core.
.
- Multi-purpose square to have flexible surface space to allow for different village uses and activities over the course of the year i.e Christmas trees, summer fete & village markets.
- Higher density and increased building massing to primary routes and key road hierarchy spines to main streets within more regular urban block form.
- Mixed use, live-work possibility and non residential ground floor opportunities to residential blocks to provide activated edges to urban core.
- Street furniture and boundary treatment to be robust for increased footfall and broad demographic.

The Masterplan



Urban Design Code / Concept



Connections & Local Context

LEGEND

- ROAD HIERARCHY - 1
- ROAD HIERARCHY - 2
- ROAD HIERARCHY - 3
- ROAD HIERARCHY - 4
- ROAD HIERARCHY - 5
- ROAD HIERARCHY - 6 (EMERGENCY ACCESS)
- PATH NETWORK - EXISTING AND PROPOSED
- C POTENTIAL CROSSING POINTS (EXISTING ROADS)

Houses grouped around open space

Apartment block with varying ridgeline

Meadows

- Housing fronting onto open landscape and woodland to north east
- Medium-lower density residential
- Scale predominantly 1-2 storey

Informal pathway

Residential housing fronting onto open space

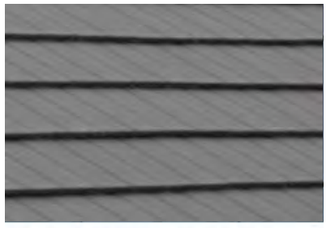
Residential housing fronting onto open space

Materials
The materials within this area will follow the following pallette:

Slate

Coloured Render

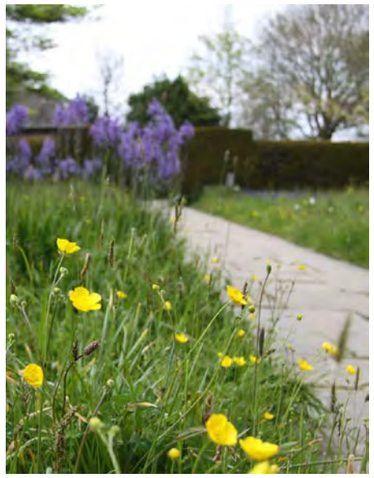
Feature Walls at Key Points



Tiles

Render

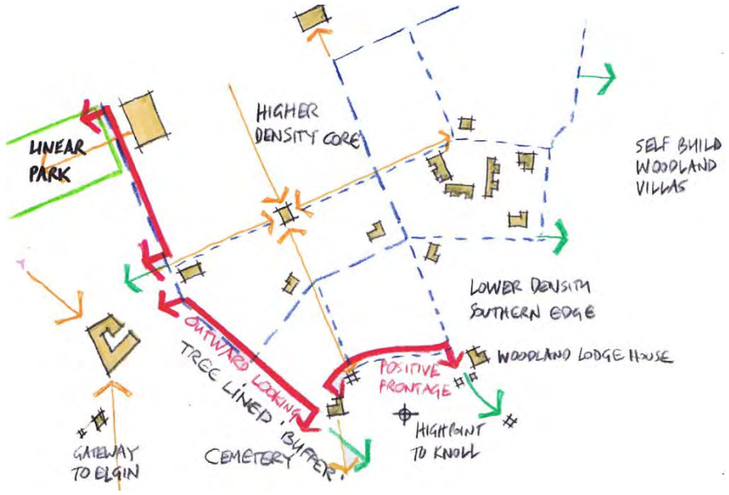
Timber Feature Walls



Key features:

- Outward looking housing edge to NE of development frontage.
- Green landscape ‘finger’ to extend into development edge.
- Strong linkages to main East Village Core.
- Mown verge to development edge and new perimeter path network.
- NE ‘gateway cluster’ defined to accommodate future phased connection and gateway to A96.
- Strong connectivity and more regular grid-form towards Village Core East.
- Strong visual and physical pedestrian and cycle links to the surrounding landscape.
- Strong connections with Linkwood Road and proposed developments to the north.

The Masterplan



Urban Design Code / Concept

Connections & Local Context

Hedge lined boundary

Tree lined / meadow edge

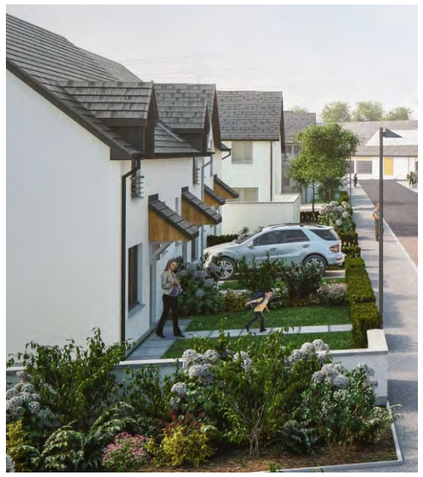
Moss Edge

- Planted boundaries to south-east edge
- Medium-lower density residential
- Scale predominantly 1-2 storey
- Houses within woodland setting

Frontages facing onto greenspace

Frontages facing onto open space

Pedestrian path links



Hedge/wall treatment to frontages

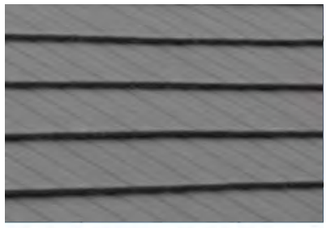
Character Areas | Moss Edge

Materials
The materials within this area will follow the following pallette:

Slate

Coloured Feature Panels

Post & Wire / Beech hedging



Tiles

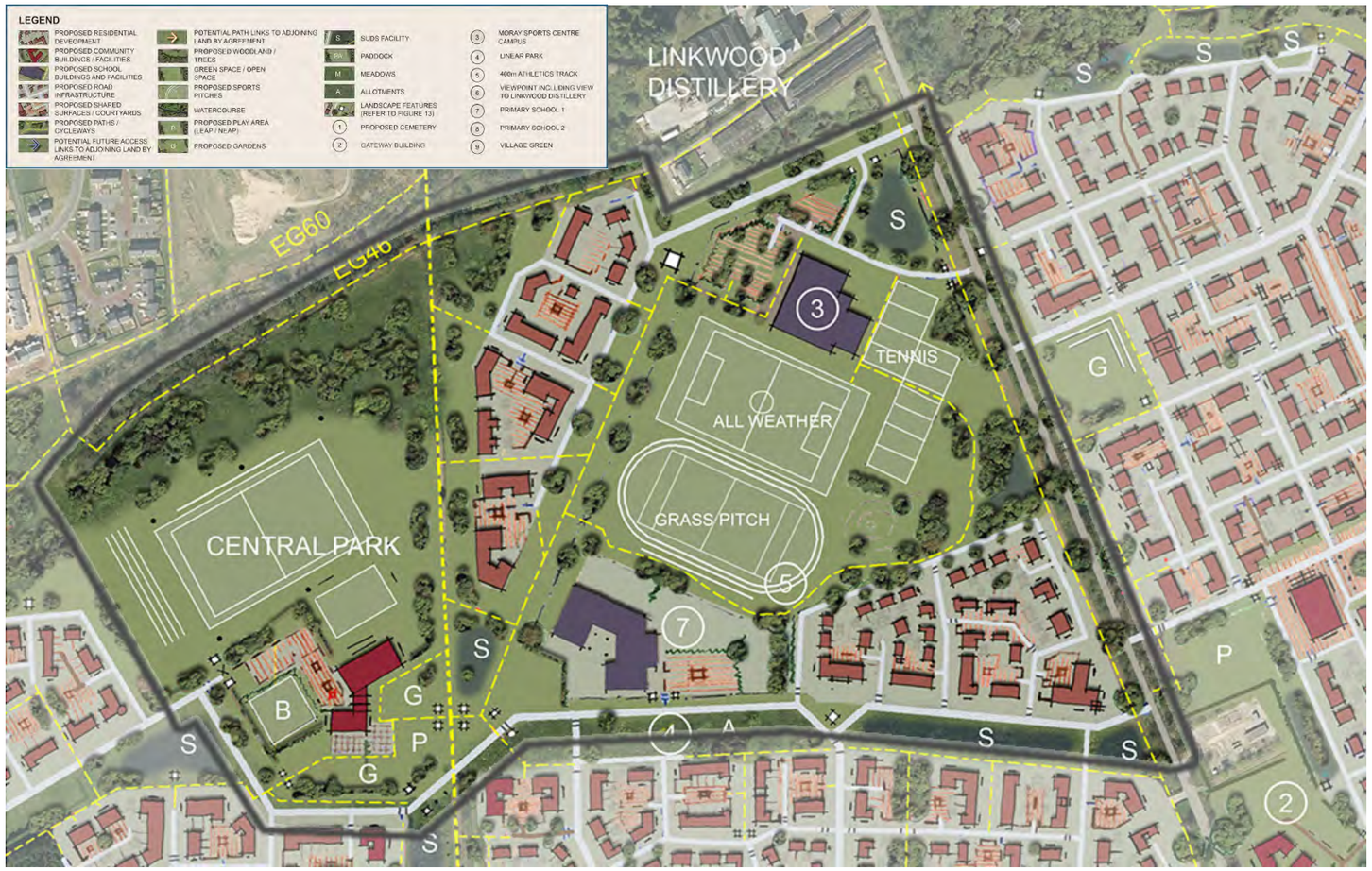
Render

Timber Feature Walls

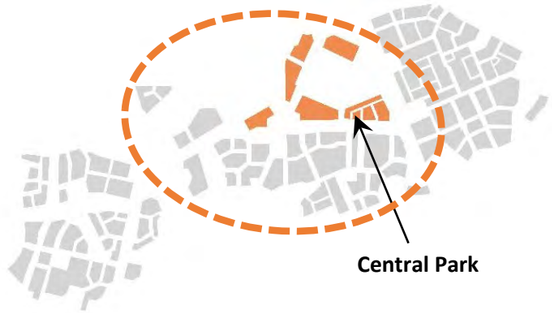
Key Features:

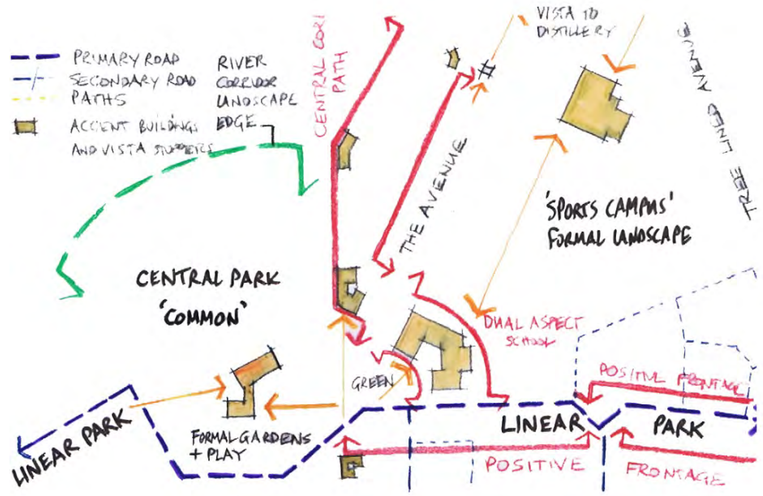
- Tree lined landscape buffer to proposed Cemetery site
- Lower density and self build woodland villa opportunities to S/SE edges.
- Higher density development to increase towards core to the north
- Higher density more regular urban pattern towards core
- Linear park stand off area and ‘green square’ at access gateway to be defined by ‘key building’
- Gateway building to cemetery north point at ‘thin end of wedge’.
- Positive outlook to all public edges.

Character Areas | Central Park

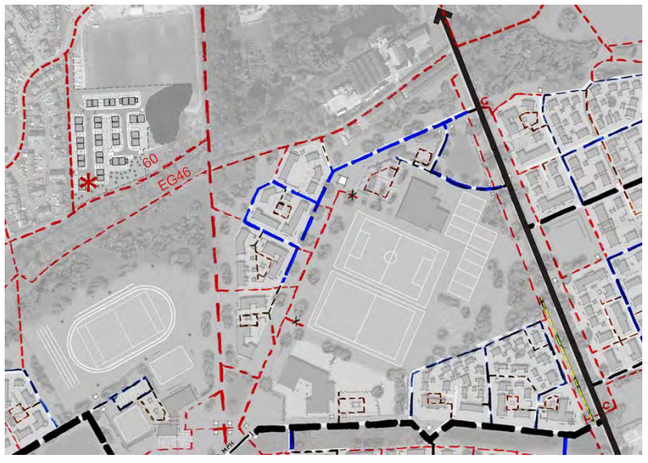


The Masterplan

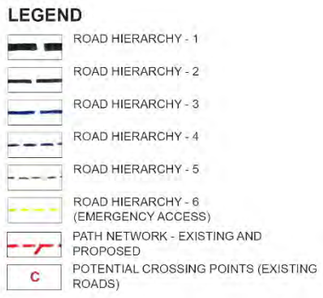




Urban Design Code / Concept



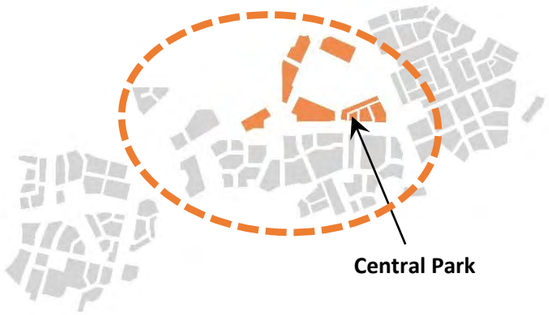
Connections & Local Context



Avenue of Trees

Buildings in the Park

Playing Fields



Central Park

- Community buildings including new Sports Centre & primary school.
- Provides a range of densities.
- Predominantly medium density residential housing
- Connection with existing disused railway line as pedestrian footpath link

Open space, pathway, street furniture

Osterley Sports and Athletics Centre

Cycle path / connectivity

Buildings in the Park

Buildings in the Park

Character Areas | Central Park

Materials
The materials within this area will follow the following pallette:

Tiles

Metal Cladding

Timber Feature Walls

Standing Seam Roof

Coloured Render

More Contemporary Features

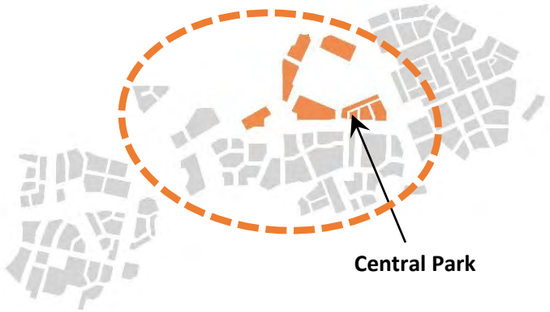
Pedestrian path link with soft landscaping

Playing fields / sports pitches

Disused railway

Cycle stand

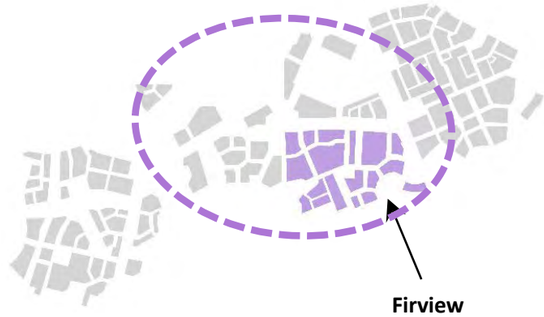
Street furniture

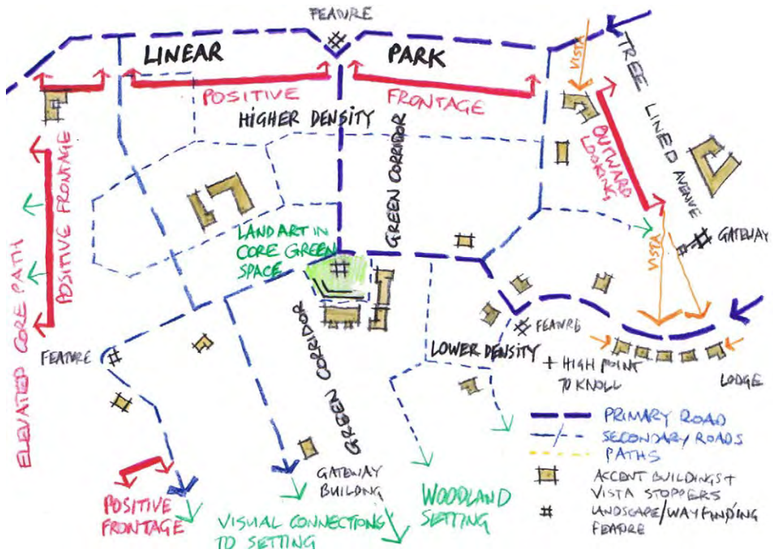


Key Features:

- Sports Campus and 'Health Hub' setting to be considered with Education proposal
- Shared space and facilities to be considered when designs come forward to allow full day activity and use between school and Sports Centre
- Land art opportunity in core green space
- Multi aspect school site to maximise 'green transportation' possibilities whilst satisfying vehicle service and public access requirements.
- 'The Avenue' vista geometry to be adhered to in terms of routes and development edges with N/S core path.
- Central Park 'Common' to provide a strong balance between formal and informal landscaping to sit alongside 'secure' sports fields. Clarity in use and public space 'ownership' required
- A high degree of physical and visual connectivity across central park required and appropriate screening and secure fencing to sports pitches.
- Passive surveillance and 24hr use to be considered in terms of perceived safety.
- Formal setting to HUB core and vehicle/pedestrian intersection crossover to be satisfied.
- More contemporary residential material palette to be considered in terms of park buildings materials and Education, Sports and 'Health HUB' setting.

The Masterplan



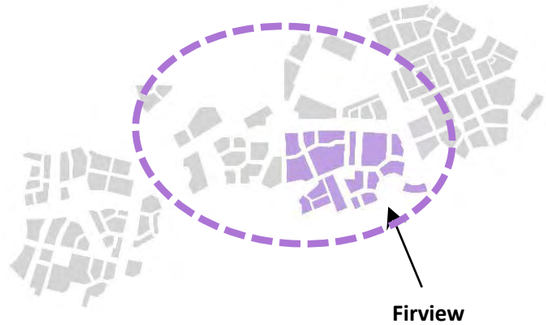


Urban Design Code / Concept

Connections & Local Context

Aerial photograph of Ladyhill, Elgin

Housing at Dunkinty, Elgin



Firview

- Higher, medium & lower density residential
- Scale predominantly 2-3 storey
- Linear frontage along green corridor within Linkwood Village
- Connection with existing disused railway line as pedestrian footpath link
- Lower density housing to woodland Edge

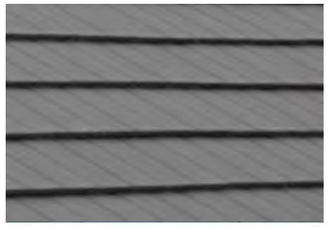
Character Areas | Firview

Materials
The materials within this area will follow the following pallette:

Slate

Coloured Render

Post & Wire / Beech hedging



Tiles

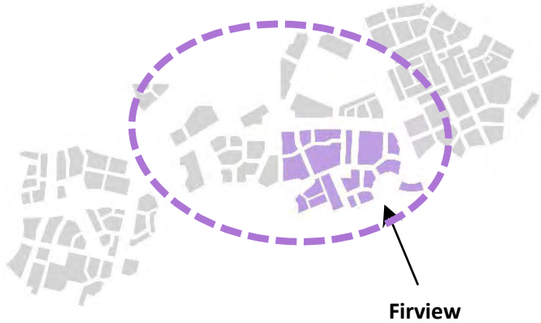
Render

Timber Feature Walls

Feature Wall

Hedge lined boundary

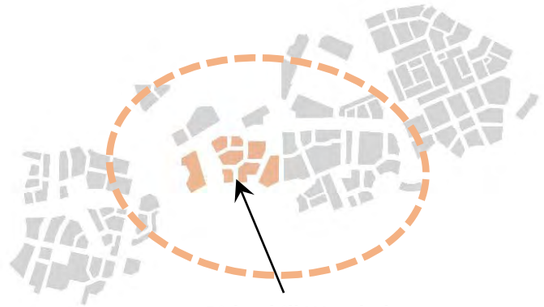
Loc Block to Parking / Shared surface areas

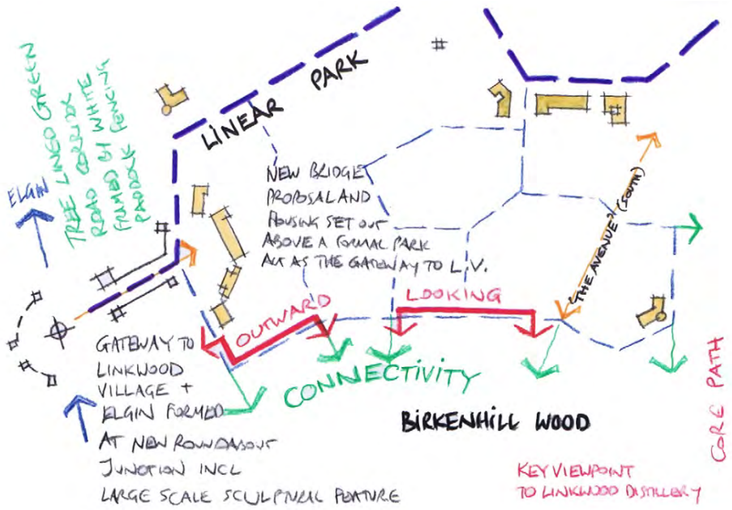


Key Features:

- Higher density positive frontage to linear park north edge.
- Land art opportunity in core green space.
- Positive frontage and passive surveillance to core path.
- Lower density and self build opportunities to development south edge and crescent edge to Linkwood Road.
- Urban form to reflect and respect existing knoll land form and high point topography.
- Gateway points and tree lined avenue to Linkwood Road to define village character edge.

The Masterplan





Urban Design Code / Concept

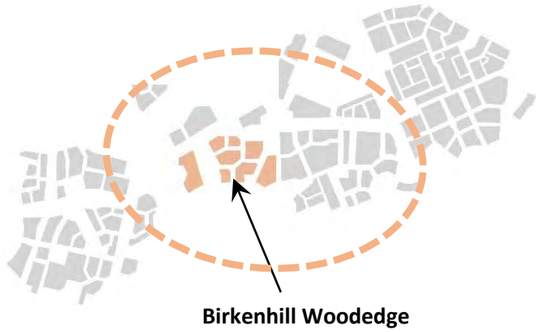
LEGEND

- ROAD HIERARCHY - 1
- ROAD HIERARCHY - 2
- ROAD HIERARCHY - 3
- ROAD HIERARCHY - 4
- ROAD HIERARCHY - 5
- ROAD HIERARCHY - 6 (EMERGENCY ACCESS)
- PATH NETWORK - EXISTING AND PROPOSED
- C POTENTIAL CROSSING POINTS (EXISTING ROADS)

Connections & Local Context

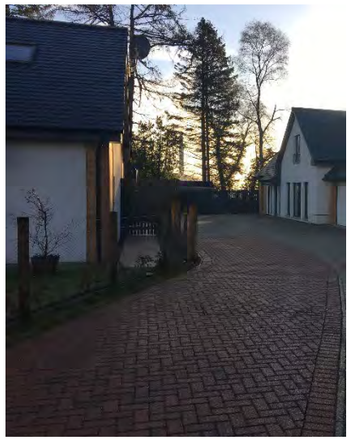
Green Avenue pathway / Cycle path

Rear courtyard parking



Birkenhill Woodedge

- Housing integrated within woodland setting
- Medium density residential
- Scale predominantly 1-2 storey responding to topography and landscape elements
- Streets designed to follow contours



Character Areas | Birkenhill Woodedge

Materials
The materials within this area will follow the following pallette:

Slate

Coloured Render

Post & Wire / Beech hedging

Tiles

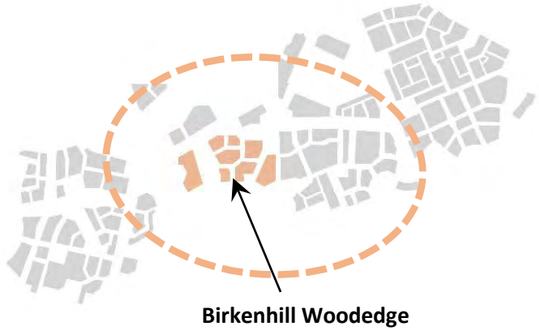
Render

Timber Feature Walls

Feature Wall

Hedge lined boundary

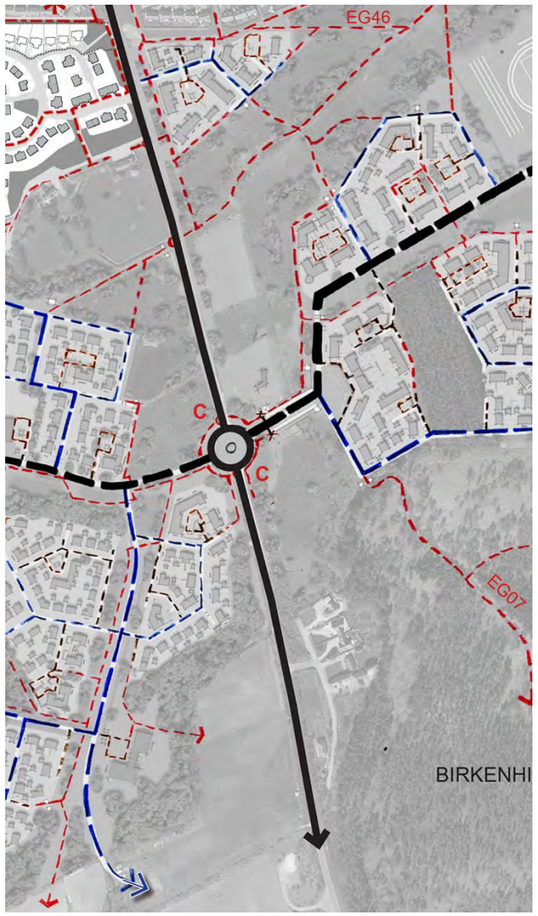
Loc Block to Parking / Shared surface areas



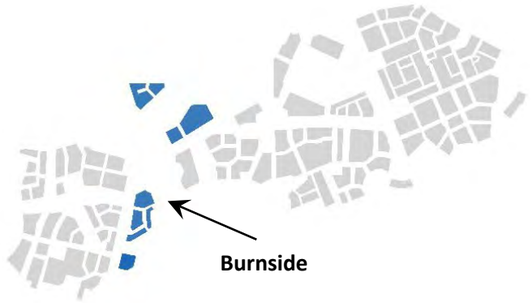
Key Features:

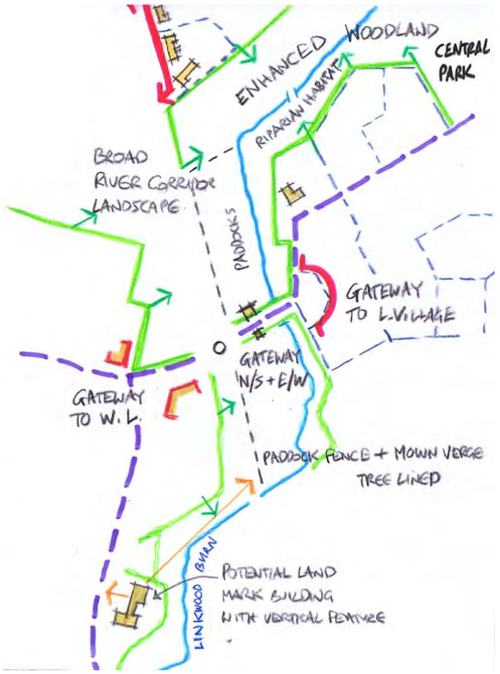
- Connectivity to setting and allowing future south access/connections.
- Linear Park to be maximised in terms of multi-use open space, SUDs and setting to Central Park edges.
- New bridge proposal and housing set out above more formal park acting as a village gateway.
- Tree lined road corridor framed by paddock fencing along Elgin approach corridor.
- 'The Avenue South' aligned between Birkenhill Wood viewpoint and Linkwood Distillery pagoda.
- Core path and defined development edge to core path on line of disused railway.
- Existing woodland pocket allowing positive amenity and informal circulation.

The Masterplan



Connections & Local Context

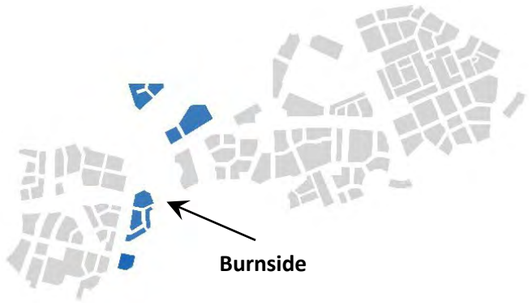




Urban Design Code Concept

LEGEND

- ROAD HIERARCHY - 1
- ROAD HIERARCHY - 2
- ROAD HIERARCHY - 3
- ROAD HIERARCHY - 4
- ROAD HIERARCHY - 5
- ROAD HIERARCHY - 6 (EMERGENCY ACCESS)
- PATH NETWORK - EXISTING AND PROPOSED
- C POTENTIAL CROSSING POINTS (EXISTING ROADS)



Burnside

- Medium density residential housing
- Adjacent to Linkwood Burn and potential primary school
- Scale predominantly 1-2 storey

Suggested built form examples

Materials
The materials within this area will follow the following pallette:

Roof Tiles

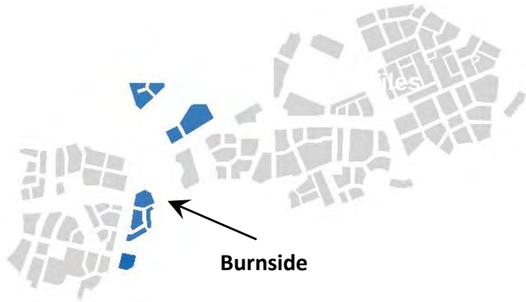
Coloured Render

Masonry Feature Walls

Coloured Timber

White Render

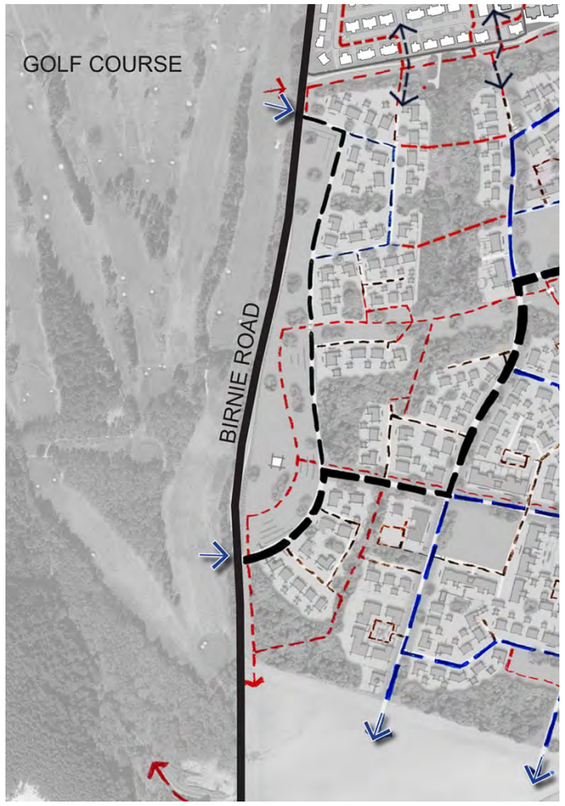
Timber Feature Cladding



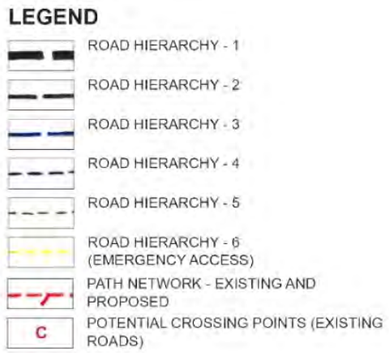
Key Features:

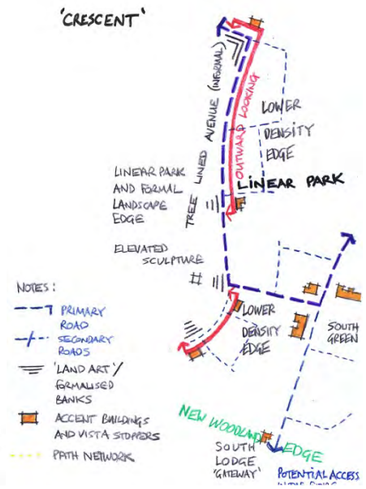
- Landmark building potential to south Burnside
- Paddock and meadow setting to all housing parcels
- Lower density housing – predominantly 1.5 storey other than potentially higher at gateways
- Paddock fence and mown hedge – tree lined consistent with setting and offset to A941
- Gateway N/S and E/W and crossing of burn to be defined by access and urban form
- Riparian habitat to burn edges and enhanced woodland
- Broad river/burn corridor landscape.
- Predominantly 'cluster' development form derived from agricultural typologies

The Masterplan



Connections & Local Context





The Crescent

Crescent

- Low density residential houses
- Adjacent to areas of advanced planting
- Footpath links to green corridor
- Views to the west overlooking the golf course
- Links from Birnie Road
- Connected to zoned development areas to north

Materials
The materials within this area will follow the following pallette:

Slate

Coloured Render

Masonry Feature Walls

Roof Tiles (Slate Effect)

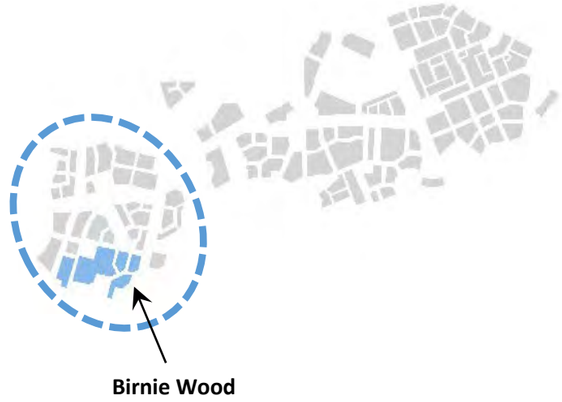
White Render

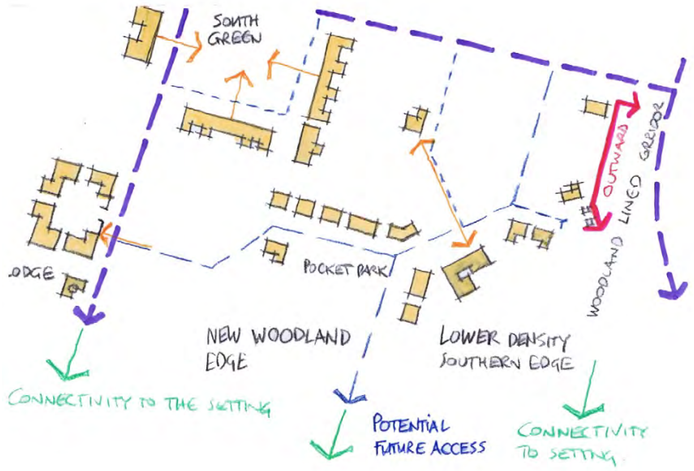
Timber Feature Cladding

Key Features:

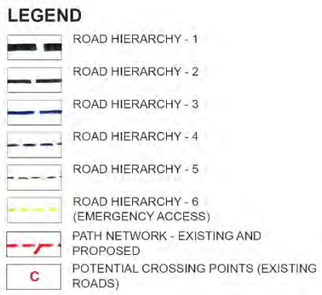
- Linear Park and formal landscape edge to west
- Softer 'green' corridor and boundary treatments
- Informal landscaped avenue to access route
- Lower density to south western edge
- Allowing for higher quality natural materials to southern edge – self build opportunities
- Positive frontage to western edge looking towards golf course
- Land art ground modelling opportunity to positively respond to changing topography and crescent outlook
- Accent buildings and 'vista stoppers' to define development form

The Masterplan





Urban Design Code / Concept

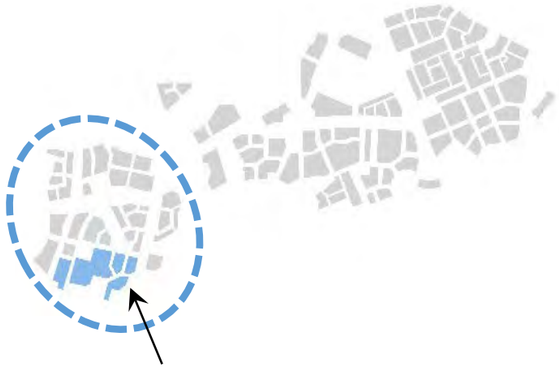


Connections & Local Context

Green Access Corridor

Houses overlooking open space

Houses fronting onto 'Square'



Birnie Wood

- Predominantly medium density 1-2 storey houses
- Located at edge of existing Birnie woodland
- Footpath connections to South and woodland walks

Passive surveillance of Playpark

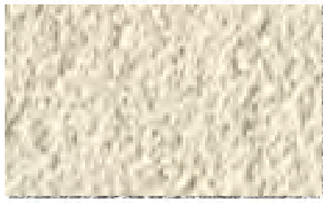
Houses overlooking open space

Positive frontage

Character Areas | Birnie Wood

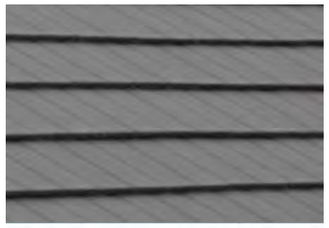
Materials
The materials within this area will follow the following pallette:

Traditional Roof Details



Coloured Render

Post & Wire / Beech hedging



Tiles

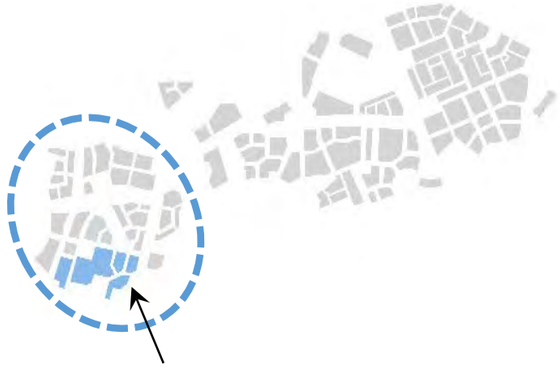
Render

Traditional Roof Features

White render garden wall

Hedge lined boundary

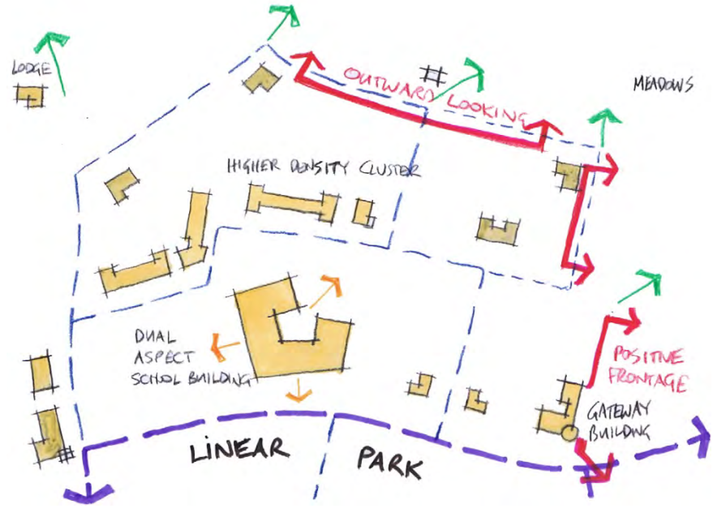
Paving



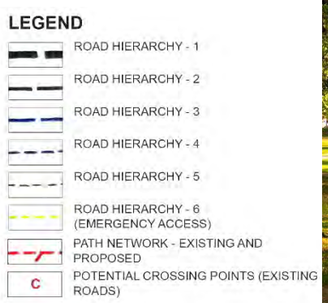
Key Features:

- Softer 'green' corridor and boundary treatments.
- Connectivity to setting and allowing future south access/connections.
- Lower density to southern edge.
- Allowing for higher quality natural materials to southern edge – self build opportunities.
- 'South Green' village green in addition to open space associated with school site.
- Positive frontage to woodland planting to southern edges.
- Strong east west green pedestrian, cycle & road connection to define edge with Village core west.
- Woodland lined corridor to linear park (gas main zone) with positive frontage required.

The Masterplan



Urban Design Code / Concept



Connections & Local Context

Safe routes to school

Primary School overlooking open space

South Glassgreen

- Mixed use medium density buildings
- New primary school
- Footpath links to green corridor
- Connected to existing development to north
- Adjacent to green corridor running east-west

Houses overlooking open space / play park

Houses adjacent to school grounds

Positive frontage

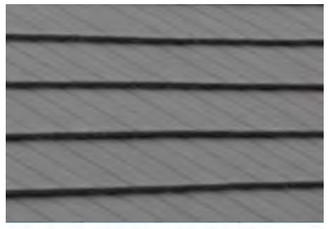
Character Areas | South Glassgreen

Materials
The materials within this area will follow the following pallette:

Gable Features at Key Locations

Cladding

Post & Wire / Beech hedging



Tiles

Render

Dormer Feature

White render garden wall

Hedge lined boundary

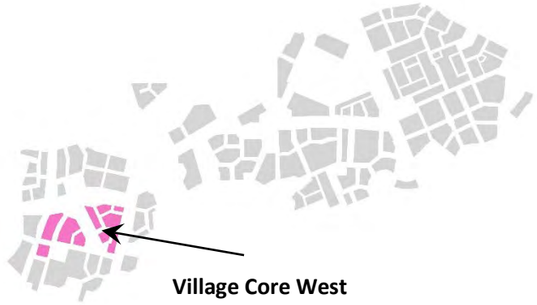
Loc Block to Parking / Shared surface areas

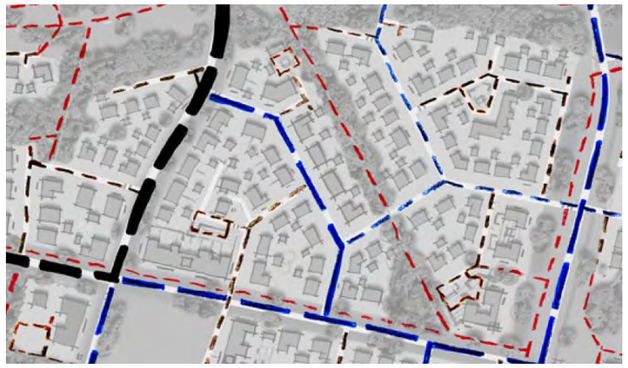
South Glassgreen

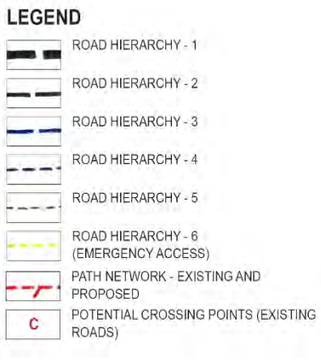
Key Features:

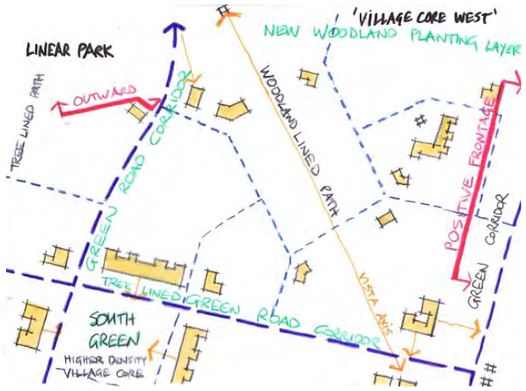
- School site and key ‘central’ setting presenting a community focus.
- Dual aspect school building and associated school and residential amenity spaces.
- Gateway building to A941 corridor presenting definition and threshold to this character area.
- Outword looking and positive frontage to northern edge, existing and proposed developments.
- A941 development edge and landscaping to provide appropriate engagement with arrival to Elgin.

The Masterplan









Connections & Local Context

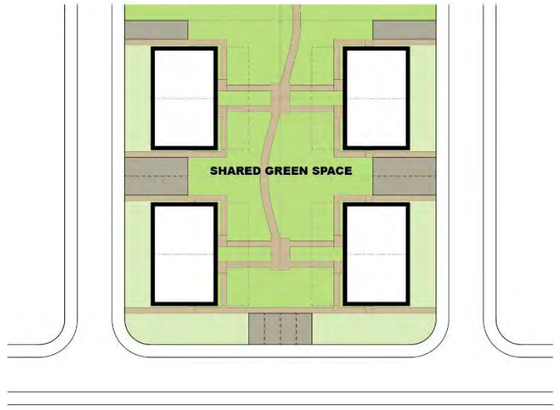
Urban Design Code Concept

Public Realm Examples – Village Green

Public Realm & Landscaping

Village Core West

- Medium density residential housing
- Scale predominantly 1-2 storey
- Adjacent to green corridor running east-west
- Street design to follow contours



Communal Shared Gardens Option in Retirement Area Pockets

Materials
The materials within this area will follow the following pallette:

Roof Tiles

Coloured Timber Feature Cladding

Coloured Render

Masonry Feature Walls

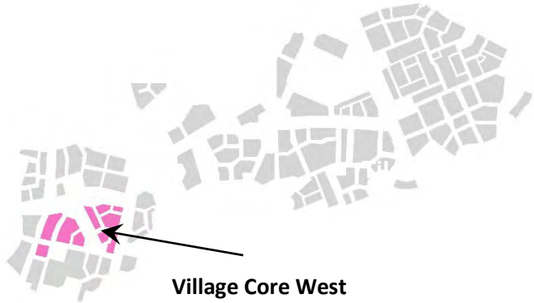
White Render

Timber Feature Cladding

Soft landscaping

Open space

Boundary hedges



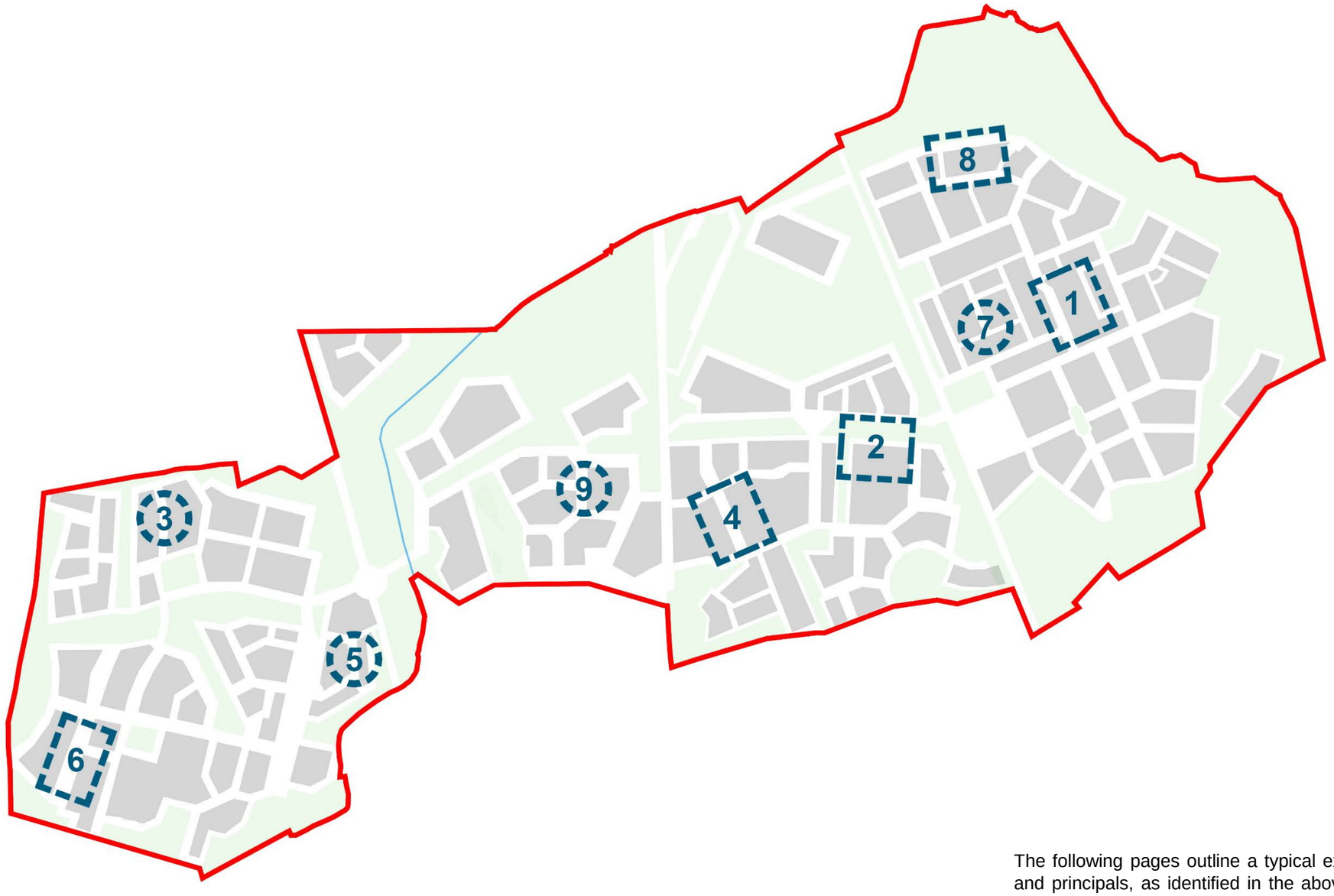
Key Features:

- Softer 'green' corridor and boundary treatments
- Strong east west green pedestrian, cycle & road connection to define edge with Village core west
- Allotments space within central linear park corridor
- New woodland planting layer to northern edge to South Glassgreen
- Lower density to southern edge.
- Woodland lined path to NW vista axis.
- Higher density village core to 'South Green'

Residential Streets

Parking design code examples:

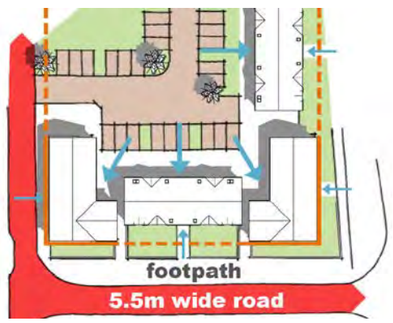
7.4



The following pages outline a typical example streets conditions and principals, as identified in the above plan showing example locations. These will be explored in more detail through the future planning applications relative to each phase as each comes forward.

1. Principal Street - Apartments (rear courtyard parking)

Principal frontage to principal street condition which may form a bus route or main vehicular arterial route. This may predominantly relate to apartments which front onto a main vehicle route or avenue where the car parking and vehicle servicing is off the main route within courtyard or grouped parking areas.



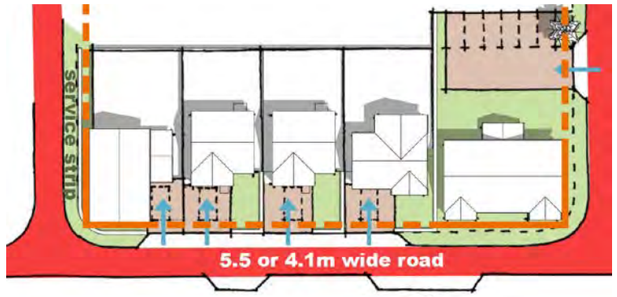
2. Principal Street - Terrace (rear access and principal frontage)

Principal frontage to principal street condition which may form a bus route or main vehicular arterial route. This may predominantly relate to terrace, semi-detached or detached properties which have a principal frontage onto a main vehicle route where the vehicle access to the property is from a rear road or lane. The principal frontage may have pedestrian access only via front gardens or side access.

3. Local Street - Corner bookend blocks with 6m set-back houses (front access)

Principal frontage to residential local street conditions with driveways being designed predominantly behind the principal build line. This will mainly relate to semi-detached and detached properties where direct driveway access is required and designed in set-back areas of circa 6m deep. This may also relate to book-end house types which conceal the parking due to the extended build-line projecting closer to the footpath line.

4.1m* – 5.5m wide road (*with passing places, and provision for footway and/or service strip).



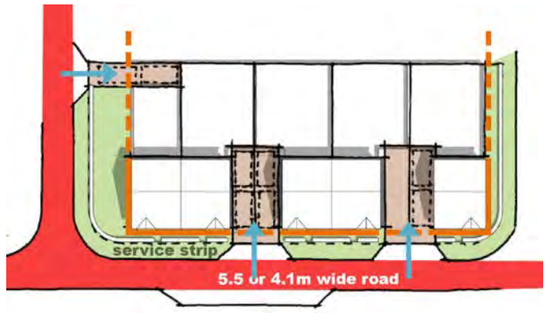
Key:

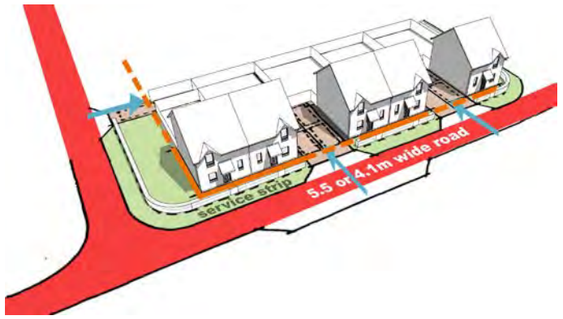
Main road | Principal access | Build line | Parking bay/space/ driveway/court | Secondary access | Projected build line

4. Local Street – Semi-detached example (front access)

Principal frontage to residential local street conditions with driveways being designed predominantly behind the principal build line. This will mainly relate to semi-detached and detached properties where direct driveway access is required and designed in set-back areas of circa 6m deep.

4.1m*-5.5m wide road (*with passing places, and provision for footway and/or service strip).

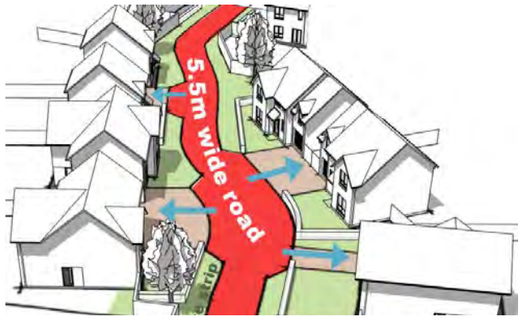




5. Linking Street (front access)

Principal frontage to the linking street which will have a shared surface and less formal arrangement in relation to the houses proposed.

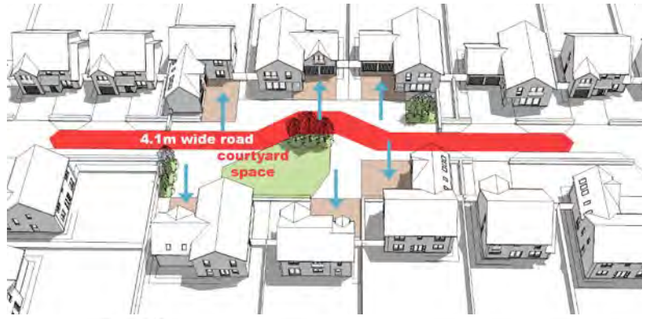
Varied road widths (subject to vehicle swept paths and passing provision) of between 4.1m and 5.5m).

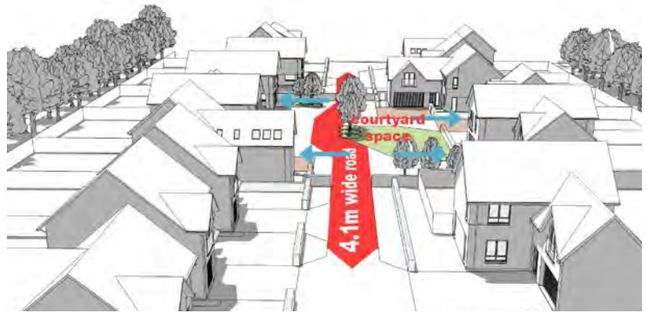


6. Linking Street - Home Zone (front access)

Principal frontage to the linking street, which will have a narrow yet varying width shared surface comprising trees, planters and street furniture to limit traffic speed. This can provide a less formal arrangement in relation to the houses proposed. Streets accommodate two way traffic and surface colours vary to distinguish between preferred uses of the parts of the shared surface.

Varied road widths (subject to vehicle swept paths and passing provision) of between 4.1m and 5.5m).





Key:

Main road | Principal access | Build line | Parking bay/space/ driveway/court | Secondary access | Projected build line

7. Square (Public Courtyard)

Principal frontage is onto the street and the houses will be mainly terrace, semi-detached, and detached houses, some with integral garages.

These streets connect between the linking streets or avenues. The local street has been designed in anticipation of quieter road conditions and reduced traffic movement. The local street measures 5.5m wide with a 2.5m wide pavement on one or both sides. These streets may have opportunity for less formal street parking between planting and other screening measures.

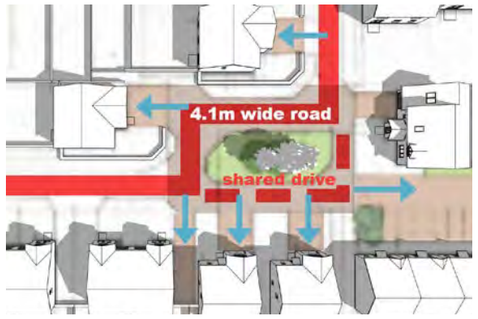
8. Lane (Single Sided)

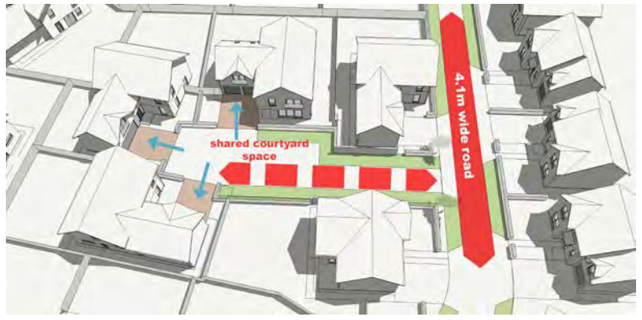
As a part of the streets hierarchy we have designed connecting streets and shared court areas to have a grouping and block pattern which reflects the informal and more organic arrangements found in many traditional villages and farm steadings. Some of these lane spaces provide further connectivity within and through the site to increase permeability by car, foot or bicycle.

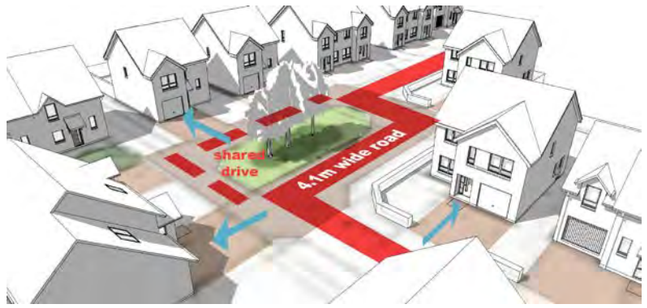
In some areas we have designed courtyard clusters of 5 houses or less where the grouping of buildings which form more private and sheltered courts would be shared by a maximum of only 5 families.

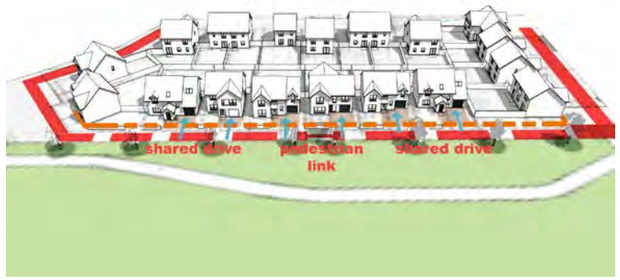
9. Private Courtyard (Front access housing)

Shared spaces with front access to properties off a shared surface courtyard. Cars in front drives can be obscured with hedges and by building positions. Driveways will be distinguished against the courtyard with a varying colour or surface.









Key:

Main road

Principal access

Build line

Parking bay/space/ driveway/court

Secondary access

Projected build line

8.0

sustainability statement

Sustainability Statement

Elgin South - principles

The Elgin South Masterplan aims to create a sustainable development, where people will aspire not just to live, but to work and play. The Masterplan presents the opportunity to deliver approximately 2,500+ private and affordable homes within three village communities over a 30 year period, along with two primary schools, cemetery and the Moray Sports Centre facility. Elgin South will promote sustainable principles, including environmental safeguarding, social cohesion, good accessibility and resource efficiency.

Location

The masterplanned approach to Elgin South will ensure that no home is far from greenspace and parklands providing for the creation of a healthy, inclusive and active community. Sustainable travel choices are to be provided where the priority is accessible, safe and welcoming places and spaces for pedestrians, cyclists and public transport firstmost, whilst still catering for the private car.

Biodiversity and new areas of habitat will be created through enhanced woodland planting and the creation of a meadows and riparian areas, all designed to respond to and enhance the site's existing watercourses and tree belts.

The site's location naturally gives a south-facing aspect. This, coupled with the general layout and considered approach to orientation, massing and profile of individual buildings will all ensure the most benefit from natural day lighting and passive heat opportunities. Varying densities across the site will make the best use of available land, with higher density at village cores and a mix of uses and activities.

Energy-efficient homes

Every home will be energy efficient at the time of delivery and with high levels of insulation and air tightness adopted from a fabric first approach from the outset. Each dwelling will be constructed in accordance with the latest Building Regulations including the current (2015) Silver 'Lite' Energy Standards and keep in line with appropriate requirements. Maximum waste recycling, combined with high standards of construction (subject to Construction Environmental Management Plans) will ensure that all opportunities are taken to move towards a low environmental impact and footprint.

We are currently looking at all the wider options for heat and power transmission for the site but have discounted a district combine heat and power network. An energy strategy for Elgin South is still being developed that can utilise the natural resources in and around the development to ensure that we comply with both current and future CO2 emission reduction targets for housing, commercial and community buildings whilst also ensuring that construction work itself takes into account the additional measures required to ensure that the use of energy and fuel costs arising from these works are both minimised across the lifetime of the Masterplan. A number of Low and Zero Carbon Technologies are proposed which go some way to displace the dependence on traditional grid-based energy supplies. The resulting energy systems shall provide residential, community and commercial buildings with a balanced utility network delivering decentralised locally secure energy. The proposed system could utilise a mix of low and zero carbon technologies including:

- Communal Air Source/Ground Source Heat Pumps (ASHP/GSHP)
- Individual Air Source/Ground Source Heat Pumps
- Photovoltaic panels (PV)
- Solar Thermal panels
- Battery Storage (in line with usage of PV panels)
- Mechanical Ventilation Heat Recovery Systems (MVHR)
- Waste Water Heat Recovery systems (WWHR)
- Flue Gas Heat Recovery systems.

Our aim is to deliver a sustainable low and ultimately carbon neutral development. Given the timescales and challenges involved in delivering this vision, the need for flexibility and adaptability should be recognised, as it progresses from planning to design and ultimately to construction and occupation. Whilst incorporating the above mentioned Low and Zero Carbon technologies throughout both the Affordable Housing, Private Housing, Public and Community buildings within the Masterplan we will also ensure that at all times where possible, we will endeavour to reduce our carbon footprint by utilising measures such as using locally sourced materials and locally sub-contracted supply chain, recycled materials, designing for re-use and deconstruction, designing for less waste on site, off site manufacturing and other sustainable processes. Water demand is to be managed through a demand management strategy to include metering and low flow fittings, with grey-water recycling and rainwater harvesting where feasible and in managed buildings.

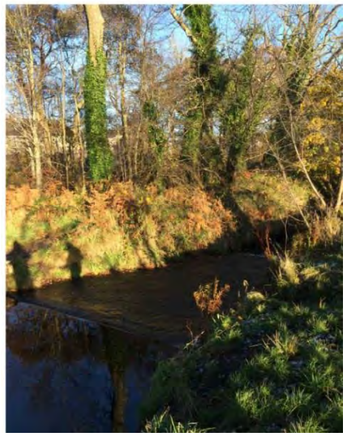
Policy Requirements

The Masterplan proposals will conform to the requirements of LDP Policy PP2 Climate Change and its Supplementary Guidance which aims to contribute to reducing greenhouse gas emissions, make efficient use of land and infrastructure, optimise accessibility to active travel options and create quality well-connected open spaces, landscaped areas and avoid increased flood risk. A detailed Sustainability Statement will support future planning applications.

Elgin South will contribute positively to sustainable development and its design at a masterplan level and more detailed level will illustrate this. As construction will take approximately 30 years to complete, advances in technology can also be incorporated into the proposals to minimise the potential impacts of the development whilst seeking to maximise opportunities for sustainability in the future.






9.0

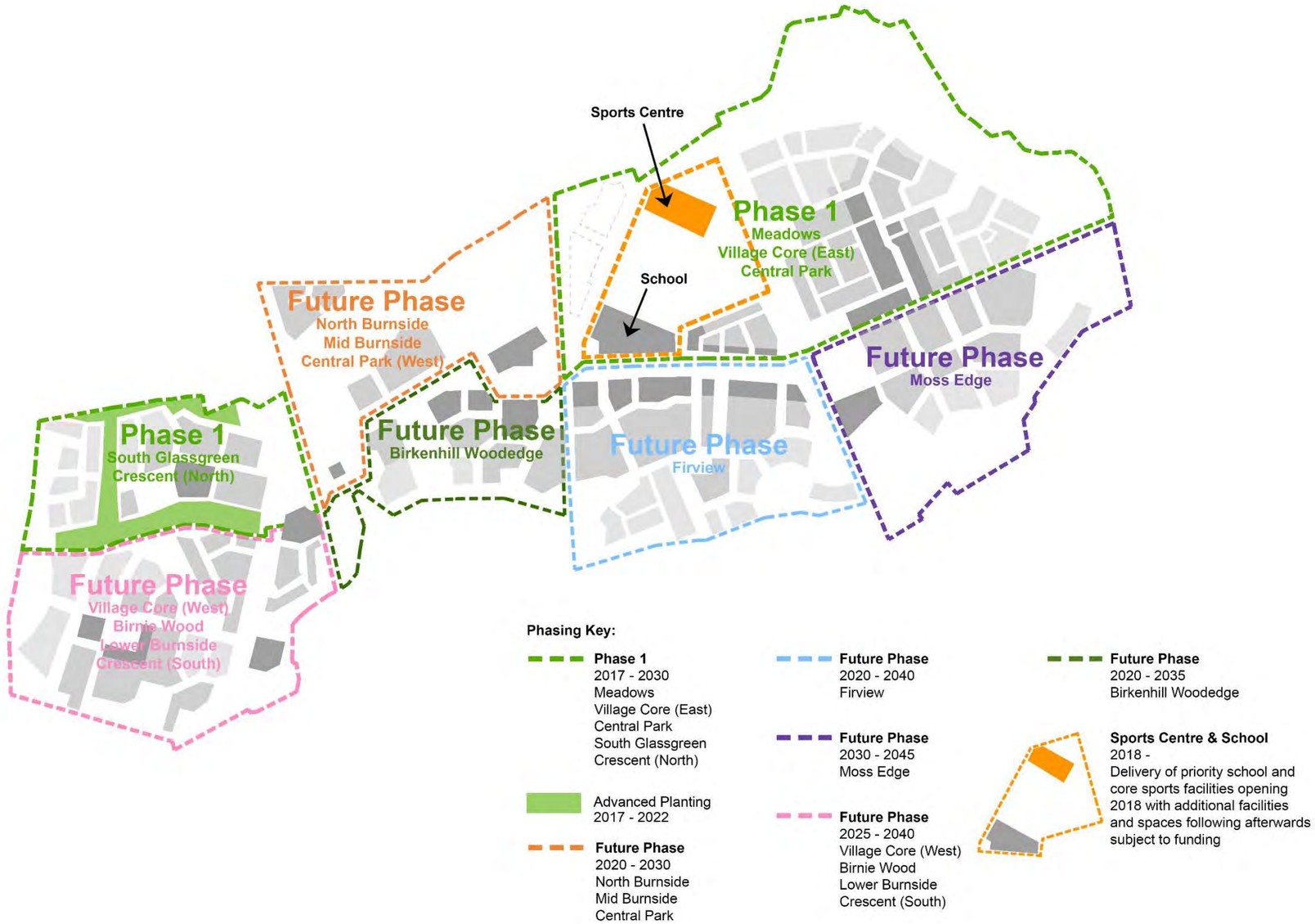
phasing

Phasing

Elgin South phasing plan indicates the potential release of development phases across the masterplan area with an assumed construction commencement of 2017/18. The phasing of the site is driven by the acute need for a new primary school for the area along with the delivery of a new regional sports facility. The development of the wider site presents itself in a logical order shaped by the existing pattern of field boundaries and roads, development constraints and landscape requirements along with the desire to create a variety of permeable block sizes within the Easter Linkwood, Wester Linkwood and Linkwood villages which best reflect the surrounding local character.

The early development of the primary school along with the regional sports facility ensures that any development will commence within the north eastern corner of the site known as Easter Linkwood and allow physical and visual connection to Elgin. The development of housing within Wester Linkwood would be a latter part of the first phase and would aid in the longer term identification and promotion of a second primary school site for the area.

Later phases will come forward in the short, mid and long term as market and infrastructure demands, aimed at delivering a logical and sequential series of planned extensions to the south of the City while ensuring each of the phases had their own sense of identity and community.



10.0

appendices

Appendix 10.1

POLICY CONTEXT TABLE

Moray Local Development Plan 2015		
Policy	**Requirements**	**Masterplan Response**
Elgin LONG	• In order to indicate the general long term direction of housing development two areas have been identified as LONG, to the north east and south of Elgin • A strategic approach has been taken in Elgin in recognition of its role in the settlement hierarchy as the focus for growth, to support the enabling action of the Moray Economic Strategy, to encourage population growth and to reflect Elgin's overarching importance within the regional economy recognised in the Elgin City for the Future Project • It is not proposed that these sites are developed during the currency of the Local development Plan. However, should any of the triggers for early release apply part of a LONG site may be brought forward under Policy H2 - Long Term Housing Designations (LONG) provided; o A masterplan has been agreed with the Council and site specific requirements for the designation have been met	• The masterplan is for the LONG 2 South designation and sets the context for the strategic expansion of the south of Elgin. It will assist with the long-term promotion of the growth of Elgin over the next 20-30 years and support the Moray Economic Strategy.

Elgin LONG 2 South	• Landscape and Planting Strategy to be prepared
	• Planting before development commences
	• Take account of mitigation measures from Carol Anderson Report of Oct 2013
	• Address habitat creation
	• Area west of A941 to be final phase
	• Flood Assessment required
	• Buffer strip of 6m between watercourse and development
	• Habitat survey required
	• Masterplan to include;
	  o Vision for site
	  o Spatial Framework
	  o Broad Design Principles
	  o Landscape and open space proposals
	  o Transportation and accessibility strategy
	  o Infrastructure requirements and delivery strategy
	  o Phasing proposals
		• The masterplan has been prepared in response to these requirements
		• Springfield Properties' vision for Elgin South has been driven by a desire to create a fully accessible, high quality community which will be seen to 'fit into the landscape' setting and not appear as urban sprawl. The design process acknowledges the key constraints and opportunities inherent in this landscape with the development form presented responding to these to offer the potential to create a unique sense of place defined by the setting and which will be seen to be complementary to the wider community of Elgin, now and in the future.
		• Please refer to the main masterplan document for further details including Landscapes of South Elgin analysis and diagrams.

PP1 – Sustainable Economic Growth	• Development will be supported which;
	• Supports the Moray Economic Strategy
	  o Contributes towards the delivery of sustainable economic growth
	  o Transition of Moray to low carbon economy
		• The masterplan makes provision for sustainable strategic growth on land identified for the long term expansion of Elgin. This will support the Moray Economic Strategy
		• Please refer to the main masterplan document for further details including Sustainability Statement.

PP2 – Climate Change	• Development to be in sustainable locations • Accessibility to active travel options and public transport to be optimised • Quality open spaces, landscaped areas and green wedges to be created that are well connected • Sustainable construction techniques and materials to be utilised and encourage energy efficiency through orientation and design of buildings • Where practical install low and zero carbon generating technologies • Prevent further development that would be at risk of flooding	• The site is in a sustainable location. It is identified in the Local Development Plan. The masterplan area has been the subject of a Strategic Environmental Assessment (SEA) Screening Report by the Council which came to the view that an SEA is not required because the masterplan is unlikely to have any significant environmental effects • A sustainable transport strategy is part of the masterplan which also incorporates the quality and layout of open space required

	• Where practical use decentralised and local renewable or low carbon sources of heat and power • Minimise disturbance to carbon rich soils • Provide Sustainability Statements in accordance with Supplementary Guidance	• Please refer to the main masterplan document for further details including Sustainability Statement. • Development is being kept away from areas at risk of flooding and a Flood Risk Assessment is provided with the masterplan • The detailed proposals for the individual phases will incorporate proposals to address the balance of the policy re carbon reduction/impacts
PP3 - Placemaking	• Incorporate key principles of Designing Streets, Creating Places and Councils supplementary guidance on Urban Design • Create places with character, identity and sense of arrival • Create safe pleasant places • Be well connected with walkable neighbourhoods • Include buildings and open spaces of high standards of design • Have streets designed to consider pedestrians first, cars last and minimise the visual impact of the car on street scene • Ensure building front onto streets with public fronts and private backs • Maintain and enhance natural landscape features and distinctive character of the area • Provide new green spaces which connect to green and blue networks	• The masterplan has been prepared in response to these requirements • Please refer to the main masterplan document for further details including our Design Principles section.

ED8 – Tourism Facilities and Accommodation	• The Council will generally support proposals which contribute towards Moray's role as a tourist area. Proposals will require to;
	  o Be compatible with policies to protect the built and natural environments
	  o Provide adequate infrastructure
	  o Demonstrate a locational need for a particular site
		• The proposed Regional Sports Centre will make a very valuable and significant contribution towards Moray's role as a tourist area

H1 – Housing Land	• Land is designated to meet strategic requirements for 2013-2025 • Proposals on designated sites to include information re comprehensive development of the whole site • Proposals to comply with site development requirements within settlement plans and policies and Councils policy on Placemaking and Supplementary Guidance • Capacity figures are indicative	• The masterplan sets the context for the long term development of the Elgin LONG 2 South designation and sets out the principles guiding the development of the whole site • The detailed applications for the individual phases will be supported by information to address the more detailed policy requirements applicable at the time of the applications
H2 – Long Term Housing Designations (LONG)	• Designations set out the direction of growth and to assist forward planning of infrastructure and landscaping • Not relied on to meet current housing requirements to 2025 • Earlier release will be considered where shortfall is identified in annual Housing Land Audit • Release must not compromise masterplanned approach and appropriate access, infrastructure and landscaped setting to be secured	• The masterplan is being produced to ensure that detailed proposals for the individual phases do not compromise an overall masterplanned approach to the development of the LONG 2 South designation as a whole • It is recognised that applications for individual phases will need to address any Housing Land Audit issues/constraints/triggers that apply at the time of the applications
H8 – Affordable Housing	• 25% of total to be affordable housing • Supplementary Guidance to provide further details re policy	• Proposals for affordable housing will be addressed as part of the detailed applications for individual phases • Springfield has a proven track record in Elgin and elsewhere regarding the delivery of affordable housing • Discussions have already commenced with the relevant officers in the Councils housing team regarding an appropriate mix of affordable housing for phase 1

H9 – Housing Mix/Accessible Housing	• Meet needs identified in Councils Housing Needs and Demand Assessment • Provide a range of housing of different types and sizes • Provide a proportion of wheelchair accessible housing • Supplementary Guidance to provide further details re policy	• Proposals for accessible housing will be addressed as part of the detailed applications for individual phases
E1 – Natura 2000 Sites and National Nature Conservation Sites	• Appropriate Assessments required for development likely to have significant impact on Natura 2000 sites • Development will only be approved where no adverse effect on integrity of site • Development affecting National Park, Ste of Special Scientific Interest or National Nature Reserve will only be permitted where objectives of designation, integrity of area will not be compromised or adverse effects outweighed by social, environmental or economic benefits	• The masterplan does not impact on any of the sites covered by this policy
E2 – Local Nature Conservation Sites and Biodiversity	• Development likely to have significant adverse impact on Local Nature Reserves, native woodlands, raised peat bog, wetlands, protected species, wildlife sites or other local valuable habitat or conflict with objectives of Local Biodiversity Action Plan will be refused unless there are clear public or locational benefits • Habitat surveys may be required • Proposals should protect and where appropriate create natural and semi natural habitats • Links to blue and green networks to be included wherever possible	• The masterplan does not impact on the sites covered by this policy • A Phase 1 Habitat and Protected Species Survey has been produced and is part of the masterplan • The masterplan provides for habitat protection and enhancements along with comprehensive blue and green infrastructure networks
E3 – Protected Species	• Proposals which would have an adverse effect on European protected species and nationally protected bird species will not be approved unless no alternative solution and proposal required to preserve public health or safety • Proposals having adverse effects on badgers or setts to be accompanied by Badger Protection Plan	• The Phase 1 Habitat and Protected Species Survey did not produce any evidence of potential adverse effects on Protected Species • Limited evidence of otter, squirrel and badger activity was found and there is likely to be the need for further survey work as part of the detailed applications for the individual phases
E4 – Trees and development	• TPO's will be placed on potentially vulnerable trees of significant amenity value • Woodland removal will only be permitted where it would achieve significant clearly defined public benefits • Requirements of supplementary guidance to be met	• The masterplan will not impact on the existing Linkwood TPO along part of the north boundary of the masterplan area • There will be no woodland removal and the masterplan makes provision for very significant additional tree planting
E5 – Open Spaces	• ENV designations will be safeguarded unless proposal is for public use outweighing value of the designation, development sited to minimise impacts, there is excess of type of ENV designation in area or alternative provision of equal or greater benefit will be made available • New green space to be provided at rate of minimum of 30% for sites of 201 residential units and above • New green spaces to be overlooked with frontages, accessible, well connected to green/blue corridors and public transport, safe, inclusive, welcoming, well maintained, support principles of Policy PP3 - Placemaking	• The masterplan does not impact on any ENV designations • Greenspace will be provided at an overall rate to meet and exceed policy requirements. • Please refer to the main masterplan document for further details of key frontages, connectivity and greenspaces.
E7 – Areas Of Great Landscape Value (AGLV) And Impacts Upon The Wider Landscape	• Amongst other things new development should be designed to reflect the landscape characteristics and qualities identified in the Landscape Character Assessment of the area in which they are proposed	• The masterplan does not impact on any AGLV designations • Please refer to the main masterplan document for further details as contained within the Landscapes of South Elgin section.

E9 – Settlement Boundaries	• Settlement boundaries represent the limit to which settlements can expand during the plan period • Development outwith boundaries not normally acceptable unless on a LONG site under Policy H2 – Long Term Housing Designations	• The masterplan relates to a LONG site as allocated for development within the LDP.
E10 – Countryside Around Towns	• Development with Countryside Around Towns will be refused unless, amongst other things, the proposal relates to a LONG designation under Policy H2 - Long Term Housing Designations	• The masterplan relates to a LONG site as allocated for development within the LDP.
BE1 – Scheduled Monuments And National Designations	• Development proposals will be refused where they will adversely affect nationally important archaeological sites or their settings unless there are economic benefits of national importance • Development proposals adversely affecting archaeological sites of local importance will be refused unless it can be demonstrated that there are local public benefits outweighing the value of the designation and there are no suitable alternatives for the development and there is adequate mitigation proposed	• The masterplan will not impact on any nationally important archaeological sites or their settings • A Written Scheme of Investigation (WSI) has been agreed with the Councils archaeological advisors to evaluate the potential for any local archaeological interest on the site • The WSI is part of the masterplan. • Please refer to the main masterplan document for further details including Historical Environment and Archaeology section.
BE2 – Listed Buildings	• Council will encourage the protection, maintenance, enhancement and active use of listed buildings • Development will be refused which would have a detrimental effect on the character, integrity or setting of a listed building	• The masterplan will not have any adverse impact on the character, integrity or setting of a listed building and this is confirmed in the SEA Screening Report produced by the Council • The report does make reference to Linkwood House where the house, ancillary building, boundary wall, gate piers and gates are all category C listed buildings. However the Screening report states that the impact on these will be mitigated by the existing woodland screening the Listed Buildings from the development site • Please refer to the main masterplan document for further details including Historical Environment and Archaeology section.
EP2 – Recycling Facilities	• New development must provide adequate space for water storage, recycling and collection systems • Waste Management Plan will be required for major applications	• This will be addressed as part of the detailed proposals/applications for the individual phases
EP5 – Surface Water Drainage: Sustainable Urban Drainage Systems (SUDS)	• All sites should be drained by SUDS • Drainage systems should contribute to enhancing existing blue and green networks • Specific arrangements to be made to avoid permanent SUDS features becoming silted up • Provision for long term maintenance of SUDS to be agreed with Council in consultation with SEPA and Scottish Water • Drainage Assessment (DIA) required for more than 10 houses • Councils Flood Team will prepare Supplementary Guidance on surface water and flooding	• The drainage proposals for the masterplan area will incorporate SUDS • A Drainage Strategy forms part of the masterplan • The detailed applications for the individual phases will incorporate the details of the applicable SUDS proposals and will be supported by Drainage Impact Assessments (DIA's) • Please refer to the main masterplan document for further details including the Sustainable Drainage Strategy.
EP6 - Waterbodies	• Adverse impacts on water environment to be avoided and opportunities for restoration to be sought • Proposals impacting on water features will only be approved where report provided to demonstrate that impacts will be acceptable • Buffer strip of at least 6m to be provided between any new development and all water features • Buffer strips to link to blue/green networks	• A Flood Risk Assessment is part of the masterplan and development is being kept away from flood risk areas • A Drainage Strategy is also part of the masterplan to provide for SUDS • Buffer strips have been incorporated as required
EP7 – Control of Development in Flood Risk Areas	• New development not to take place if it would be at significant risk of flooding from any source or would materially increase the possibility of flooding elsewhere	• A Flood Risk Assessment is part of the masterplan and development is indicated as being kept away from flood risk areas as required • Please refer to the main masterplan document for further details including Flooding sections.

	• Limitations on development will apply in accordance with the risk framework in Scottish Planning Policy for areas with less than 0.1% (no risk), 0.1%-0.5% (low to medium risk) and 0.5% or above (medium to high risk) • Flood Risk Assessment (FRA) required in areas considered to be at risk from flooding	
EP8 - Pollution	• Development that may cause significant pollution in terms of noise, air, water and light emissions will only be approved where detailed assessment reports are provided demonstrating how the pollution can be appropriately mitigated	• The SEA Screening Report produced by the Council did not identify any significant pollution issues • As a result of discussions with Council officers Noise and Air Quality Assessments have been produced and are part of the masterplan. Please see the relevant sections within the main document. • Please refer to the main masterplan document for further details including Sustainability Statement. SEPA PPG's and construction best practices would be adhered to.
EP9 – Contaminated Land	• Development on potentially contaminated land can be approved where it can be demonstrated through investigation, assessment and mitigation that the level of risk is acceptable	• Please refer to the main masterplan document for further details including the Contaminated Land section.
EP10 – Foul Drainage	• All development within or close to settlements of more than 2000 population equivalent will require to connect to public sewerage system unless connection not possible due to lack of capacity	• Connection will be to the public sewerage system for all of the masterplan area. • Discussions with Scottish Water are ongoing to assess network capacities and upgrades as required.
EP11 – Hazardous Sites	• Council will have regard to presence of major hazard sites and will apply the PADHI (Planning Advice for Development near Hazardous Installations) methodology for planning applications within the consultation zones around these sites	• There is a high pressure gas pipeline across the site and safeguarding distances have been discussed with Council officers. • Please refer to the main masterplan document for further details including gas pipeline safeguarding section.
EP12 – Air Quality	• Proposals which may adversely affect air quality to a level which could cause harm to human health and wellbeing or the natural environment must demonstrate how such impacts will be mitigated	• The SEA Screening Report by the Council did not identify this as an issue for the masterplan site • As a result of discussions with Council officers an Air Quality Assessment have been produced and are part of the masterplan • Please refer to the main masterplan document for further details including Air Quality section.
T1 – Transport Infrastructure Improvements	• Amongst other things priority will be given to; o Improving the A941 route (Lossiemouth to Elgin to Craigellachie) o Improving the transport network within Elgin where there is evidence of positive economic benefits including the release of sites designated in the Local Development Plan o Proposals compromising the implementation of these priorities will not be acceptable	• The masterplan will not compromise these priorities • Following the detailed assessment of the relationship between the masterplan proposals and the operation of the existing transportation networks, where appropriate, suitable interventions will be investigated • Please refer to the main masterplan document for further details including Access and Circulation
T2 – Provision Of Access	• New development must provide the highest level of access for end users and meet the following criteria; o Maximise connections and routes for pedestrians and cyclists o Provide access to public transport services and bus stop infrastructure where appropriate o Provide appropriate vehicle connections o Provide safe entry and exit from development for all road users	• The masterplan has been prepared according to the principles contained within local and national policy documents including Designing Streets. Accordingly, a key objective of the masterplan is to advance transportation interventions which promote trip making by sustainable modes of transport and in particular, walking, cycling and public transport, while at the same time providing a functional and hierarchical road network to allow safe access, to, from and within the development for car users.

	o Provide appropriate mitigation/modification to existing transport networks where required o Mitigate against any unacceptable landscape or environmental impacts o Give consideration to aspiration core paths and active travel audits o Enhance permeability and connectivity o Transport Assessments and Travel plans will be required when considered appropriate • Significant travel generating proposals will only be supported where; o Direct links to walking and cycling networks are available o Access to public transport networks would involve walking no more than 400m o There would not be a detrimental effect on the capacity of the strategic road and/or rail network o A Transport Assessment identifies satisfactory mechanisms for meeting sustainable transport requirements and no detrimental impact on the performance of the overall network • Access proposals that have a significant adverse impact on the surrounding landscape and environment will be refused	• Detailed consideration has also been made within the masterplan into the opportunities for providing transportation connections between Elgin South and surrounding areas, including the current southern extent of Elgin, ongoing and proposed developments, and for the purposes of the potential long term future expansion of Elgin, to the south of the masterplan southern boundary. • Please refer to the main masterplan document for further details including Access and Circulation.
T6 – Traffic Management	• Amongst other things there will be a presumption against new direct access onto the A941 except where required to support the provisions of the Development Plan • The Council will consider the case for such junctions where significant regional economic growth benefits can be demonstrated • Consideration will be given to the traffic impact, appropriate road design and traffic management requirements	• A Transport Assessment will inform the detailed phases of design. Both the overall masterplan and subsequent phases of development will be associated with the creation of supporting road infrastructure including the introduction of a new four arm roundabout on the A941. This new roundabout will both facilitate vehicle movements between the component parts of the masterplan but will also provide a 'Gateway' to Elgin from the A941 and thereby potentially facilitating economic growth. In addition, based on current road design and traffic management best practice, 'interventions' will be proposed to facilitate movements to, from and within the site for vehicles and other road users.
T7 – Safeguarding And Promotion of Walking, Cycling, And Equestrian Networks	• Development proposals that would have an unacceptable impact on access rights, core paths, rights of way, long distance routes and other access routes that cannot be adequately mitigated will not be permitted. Where a proposal will affect any of these, it must; o Incorporate the route within the site layout and the routes amenity must be maintained or enhanced o Provide alternative access that is no less attractive and is safe and convenient for the public to use	• The development of a multi-modal access strategy promoting trip making by walking, cycling and public transport is a fundamental component of the masterplan. Consistent with Policy T7, an Access and Movement Strategy and the development of 'sustainable' transport networks will be promoted. Any proposed, new infrastructure to advance sustainable trip making will also build upon and reinforce the use of the existing core path network and existing 'Rights of Way.'
R3 – Neighbourhood And Local Shops, Ancillary Retailing, And recreation Or Tourist related Retailing	• Proposals for neighbourhood and local shops, ancillary retailing and recreation or tourist related retailing will generally be acceptable in the following circumstances; o Small shops intended to primarily serve the convenience needs of a local neighbourhood o Ancillary retailing to a commercial or industrial business. Ancillary is defined as 10% of total gross floorspace and up to 1000sqm gross total of retail floorspace o Specialist retailing associated with an existing or proposed recreation or tourist development o These types of retailing are exempt from the sequential assessment	• Any proposals for retailing would be within the categories described in this policy which would be exempt from the sequential assessment.
IMP1 – Developer Requirements	• Scale density and character must be appropriate to surrounding area • Development must be integrated into the surrounding landscape • Road, cycling and public transport must be provided at a level appropriate to the development	• This policy is applicable to all development proposals and reiterates many of the requirements of the policies above which also apply across the masterplan area • It is considered that the comments above cover the points listed in this policy

	• Acceptable water and drainage provision must be made and SUDS must be used for surface water drainage • Where appropriate development should demonstrate how renewable energy systems will be incorporated • Provision to be made for additional areas of open space • Details of arrangements for the long term maintenance of landscape and amenity open spaces to be provided • Conservation and where possible enhancement of natural and built environmental resources must be achieved • Avoid areas at risk of flooding • Address any potential risk of pollution • Address and sufficiently mitigate any contaminated land issues • Do not sterilise significant workable reserves of minerals • Make acceptable arrangements for waste management	

IMP2 – Development Impact Assessments	• Impact Assessments will be required for planning applications in the following circumstances;
	  o Environmental Assessment (EA) – for developments likely to have significant environmental effects under the regulations
	  o Transport Assessment (TA) – for developments generating a significant increase in the number of trips being made
	  o Other Assessments – e.g. noise, air quality, flood risk, drainage, bat, badger, other species and habitats
		• An SEA Screening Report has been produced by the Council which came to the view that an SEA is not required because the masterplan is unlikely to have any significant environmental effects
		• EIA Screening Opinions will be sought as applicable for the detailed proposals relating to the individual phases
		• The detailed proposals for the individual phases will also be supported by other assessments as relevant e.g. transport, flooding, drainage, noise, species, habitats, archaeology etc

IMP3 – Developer Obligations	• Contributions will be sought where in the view of the Council a development would have a measureable adverse or negative impact on existing infrastructure, community facilities or amenity and such contributions would have to be appropriate to reduce, eliminate or compensate for their the impact	• Developer Obligations will be dealt with as part of the detailed proposals for the individual phases
Urban Design - Supplementary Guidance		
The Council has produced Supplementary Guidance on Urban Design under the umbrella of Scottish Planning Policy (SPP), Creating Places, Designing Streets and Local Development Plan Principal Policy PP3 Placemaking. The guidance sets out principles to be followed under the headings of Movement, Buildings and Open Space. It also sets out what the Council considers should be included in a masterplan.		
Movement	To promote development that is integrated and connected to the surrounding area and within itself, and offers a variety of modes of travel	• To enhance the level of connectivity, particularly for advancing sustainable trip making to and from surrounding areas, the masterplan will promote the integration of the transportation networks associated with the development proposals with existing infrastructure including the core path network.
	Development must be based on a permeable movement framework which accommodates desire lines and is well-connected internally and externally with the adjacent street and footpath networks and allows for future connections	• The masterplan will promote a permeable movement framework to facilitate safe and efficient access for trip making both within and between the site and surrounding areas based on a hierarchical network of connected pathways and roads. These pathways will be developed in accordance with current standards and will be both designed and located to be suitable for all users, including those with a mobility impairment. A key component of this strategy is the proposed use, and development of a shared footway/cycleway, of

		the historic disused railway line between Elgin and the south towards Aviemore, which follows a north-south alignment roughly through the central area of the masterplan. The masterplan envisages that the future use of this route along with a series of connecting linkages will form the core building block for providing an access strategy promoting sustainable trip making.
	A hierarchy of street types must be developed with each street type classified according to its character and capacity (i.e. street, lane, court)	• Consistent with the design tenets identified in Designing Streets, the masterplan has been developed to provide a hierarchy of street types which will be located and designed in accordance with the function or purpose of the road, be it a 'Principal Avenue' or a 'Courtyard'.
	Promote the concept of a 'walkable neighbourhood'	• A network of footways and footpaths providing quick, efficient and safe linkages between the different constituent parts of the overall masterplan development has been prepared. Infrastructure will also be introduced to cater for the needs of the mobility impaired as well as for the able bodied, including children, to advance a healthier lifestyle for instance by promoting walking to school. These 'interventions' range from the use of tactile paving at junctions to the development of a way-finding strategy through the use of signage linking development areas to the main trip-ends such as school, shops, sport centre and bus halts.
	Parking provision must not dominate the streetscape	• Please refer to the main masterplan document for further details – Parking Principles.
	Traffic safety should be built into the development by slowing traffic down	• In accordance with Designing Streets, road infrastructure will be designed, 'to be safe and attractive places'. In addition, mechanisms will be introduced to match the functionality of the street with an appropriate vehicle speed which drivers should adhere to. Whatever mechanisms are proposed to achieve the appropriate speed for a particular type of street will be discussed with council officers. Potential mechanisms to achieve this objective could range from the promotion of a 20mph speed limit in the vicinity of the proposed primary school to the use of street furniture, road markings and signage.
	Support sustainable travel by encouraging walking and cycling and providing for public transport	• The masterplan has been prepared with special consideration being given to promoting trip making by sustainable modes of transport. This objective is evidenced in a number of ways including the provision of a network of footways and foot/cycle paths. These linkages will not only connect the different parts of South Elgin but will also provide the opportunity to promote longer distance trip making by sustainable modes of transport by connecting with existing sustainable infrastructure such as the existing core path network. These sustainable networks will also provide efficient access to the public transport bus halts so that each house is within 400m of a bus stop in accordance with current guidance.
	Design for an inclusive environment (i.e. access for all)	• Again consistent with the key principles underpinning Designing Streets, the movement framework and the proposed transport networks have been developed and located to be accessible for use by all users from the able bodied to the mobility impaired and children. This objective will be evidenced in a number of ways, from the use of tactile paving and street furniture to the use of lighting to enhance the overall feeling of safety for users of the network of foot and cycleways.

	Reduce street clutter	• Our Design Principles and placemaking will be consistent with the key principles underpinning Designing Streets. Detailed proposals will come forwards as part of future development phases.
	Design for maximum environmental benefit (i.e. respond to prevailing wind conditions to maximise on-street shelter).	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
Buildings	Ensure development reflects the identity and character of the place, and that individuals' can easily navigate their way around by using markers such as vistas and focal points.	• Please refer to the main masterplan document for further details including Design Principles.
	Development must reflect an understanding of the context of the surrounding built and natural environment	• Please refer to the main masterplan document for further details including Design Principles and Landscape of Elgin South
	Development must incorporate a mix of housing types and sizes and a density appropriate to the site's context	• Please refer to the main masterplan document for further details including Design Principles and densities diagram
	Buildings should be arranged in perimeter blocks with private backs and public frontages	• Please refer to the main masterplan document for further details including Design Principles and key frontages diagram
	Buildings must front onto the street to ensure active frontages	• Please refer to the main masterplan document for further details including Design Principles and key frontages diagram
	Public and private space must be clearly defined	• Please refer to the main masterplan document for further details including Design Principles and Masterplan drawing
	Built-in features that use architectural devices and materials should provide focal points to guide people through the development	• An example materials palette and wayfinding details are included within the main masterplan document
	House types should reflect local characteristics	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Buildings should be designed to 'turn a corner' to address another street and provide natural surveillance	• Please refer to the main masterplan document for further details including Design Principles and contextual information for active frontages
	The relationship between the scale of buildings, massing, materials and boundary treatment should reflect the street hierarchy and provide a sense of containment	• Please refer to the main masterplan document for further details including Design Principles and densities diagram
	Buildings along prominent streets, key frontages and corners must reinforce the character and identity of a place	• Please refer to the main masterplan document for further details including Design Principles and key frontages diagram
	Buildings should be orientated to maximise visual connections with the surrounding area	• Please refer to the main masterplan document for further details including Design Principles and contextual information for active frontages
	Buildings should maximise environmental benefits (i.e. passive solar gain).	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles

Open Space and Landscaping	To promote places that are responsive to the natural environment and offer safe, quality recreational opportunities	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
	Incorporate and respond to natural features (i.e. knolls, ridge lines) through layout and mix of building heights	• Please refer to the main masterplan document for further details including Design Principles and Landscape of Elgin South
	Use land efficiently to avoid layouts that result in left over space	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Provide different types of open space (i.e. recreational or play, amenity or leisure and private)	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Open spaces must be fit for purpose and linked together by footpaths and cycle paths	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Open spaces, footpaths and parking areas should be overlooked by buildings to provide natural surveillance	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Encourage biodiversity by considering a range of planting including retained, enhanced and new	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Proposals must include provision for public art	• Please refer to the main masterplan document for further details including Design Principles and contextual information
	Design open spaces to maximise environmental benefits (i.e. building height will impact on the amount of light reaching the public realm).	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
Masterplan Requirements	• Masterplan to show the following; o Integration of landscape character and topography with street layout and built form o Street and block structure: relationship between streets, squares and open spaces; variety of street character types derived from Elgin's historic environment; street orientation that captures vistas/panoramas of views or important buildings/building lines; and, connectivity to surrounding area o Street hierarchy: network of movement patterns which prioritises pedestrians over cars and service and emergency vehicles and, promotes healthy lifestyles o Relationship between buildings and open spaces, taking account of the interface between the external façade of the building, its internal use and the open space o Distribution/intensification of activities/uses to reinforce the street hierarchy and create active street edges o Density, height, massing and bulk of buildings o Key building locations o Building orientation based on the principle of 'public fronts and private backs' to create active frontages and maximise natural surveillance and crime prevention o Relationship between the street layout and built form to the historic/cultural context and stakeholder interests	• We can confirm that to promote good placemaking the proposal will adhere to the six qualities of successful places which require places to be: distinctive, welcoming, adaptable. resource efficient, safe and pleasant and easy to move around. Please refer to masterplan document

	o Integration of micro-climate/energy efficiency (e.g. prevailing wind direction, passive solar gain); o Promote healthy lifestyles and biodiversity through a rich variety of open space and green and blue networks o SUDS techniques relevant to the context o Basis for the provision of other infrastructure elements such as utilities o Phasing strategy	
Design Code with Masterplan	• Design Code should provide information on; o Parking (and how this will be accommodated off street and on street) o Frontage codes (key principles for building frontages and set back) o Density and building heights (location and range of building heights and density) o Key and focal buildings (characteristics of key buildings); o Street hierarchy and codes (details of street design and character, in line with street hierarchy) o Key spaces/open spaces (key characteristics of civic and green spaces) o Public art (integration of public art into the development); o Building types (the range of building types including mixed use blocks) o Pattern of development (key principles that define distinct character areas within the development) o Palate of materials within distinct character areas (buildings and streets) o Sustainability principles (examples of energy, materials, water conservation, SUDs and waste benchmarks)	• Please refer to the main masterplan document for further details including Design Principles and contextual information.

Climate Change – Supplementary Guidance

The Council has produced Supplementary Guidance on Climate Change under the umbrella of The Climate Change Act 2009, Scottish Planning Policy (SPP), and Local Development Plan Principal Policy PP2 Climate Change. The guidance sets out an overview of what to aim for under the headings of Resource Efficiency, Energy Efficiency and Renewables, Green Infrastructure, Active Travel, Climate Change Adaptation and Flooding and Surface Water Drainage.

Resource Efficiency	• Development of brownfield sites • Proximity to services and employment • Connectivity to public transport network • Creation of quality open spaces • Appropriate density levels to make efficient use of land while reflecting site conditions	• The masterplan is for the LONG 2 South designation and sets the context for the strategic expansion of the south of Elgin. It will assist with the long-term promotion of the growth of Elgin over the next 20-30 years with new transportation linkages, appropriate densities relative to the site's context.
Energy Efficiency and Renewables	• Development is designed in accordance with the energy hierarchy • Insulation and air tightness in buildings should be maximised • Passive solar design principles incorporated into development • Installation of on site renewable technologies	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
Green Infrastructure	• Retain any existing trees and green spaces on site • Design green infrastructure into every development • Plant native species • Create green spaces on flat roofs	• Please refer to the main masterplan document for further details including the Habitat, Ecology and Trees section.

	• Connect developed green areas to surrounding green areas	
Active Travel	• Creation of safe off road routes linking to existing walking/cycling networks • Where appropriate prepare travel plans	• A key component of the masterplan is the development of a holistic approach to the formation of the various modal transport networks. Although there are a number of transportation networks, namely walking, cycling and the hierarchical road network, these should not be seen as operating in isolation but as part of an overall and inter-linked transportation network providing safe and efficient access not only for trip making within the masterplan but also facilitating connections to external areas. • To promote Active Travel, Travel Plans will be prepared at appropriate junctures within the delivery timeframe for the masterplan. These will identify mechanisms to promote trip making by sustainable modes of transport by providing details of, for instance, the bus timetable and access routes to bus stops and routes to the main destinations such as the railway station and schools.
Resource Efficiency	• Promoting the use of sustainably sourced/low impact materials • Reducing waste through the reuse and recycling of demolition and construction waste and the incorporation of accessible recycling facilities within new development • Design in water efficient measures • Best practice in soil handling during construction, especially in regard to carbon- rich and prime agricultural soils	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
Climate Change Adaptation	• Development should be avoided in areas that are vulnerable to the effects of climate change including areas at significant risk from flooding, landslip and coastal erosion • Demonstrate how the proposed development will be adaptable to potential future changes in use or occupancy	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles
Flooding and Surface Water Drainage	• Maximise site specific opportunities using water management measures such as SUDS • Measures to consider include rainwater harvesting, permeable paving, ponds and swales, green roofs and roof gardens • Proposals should be integrated with the landscaping for the development • Where a development is adjacent to watercourse buffer strips and tree planting will be required to reduce run off and sedimentation that can impact on water	• Please refer to the main masterplan document for further details including Sustainability Statement and Design Principles. The details of these sustainability measures would be incorporated into any future planning application as the development design is more brought on

Springfield Properties

Proposed Development at Elgin

Flood Risk Assessment

Final

March 2016

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1 Introduction

Kaya Consulting Ltd. has been commissioned by Springfield Properties PLC to carry out an assessment of the risk of flooding of a proposed masterplan development site in Elgin South. The site is a greenfield site, located to the south of the town of Elgin. The Burn of Linkwood and a series of small drains flow through the site. A flood risk assessment is required to assess the risk of flooding from the adjacent watercourses, surface runoff from groundwater and local drainage.

Consultation of the SEPA third generation flood map indicates that there is a high (1 in 10 year) risk of fluvial and pluvial flooding at the site; this is concentrated around the watercourses that flow through or along boundaries of the site.

The scope of work includes the following;

- Site visit and walkover survey;
- Hydrological analysis of the Burn of Linkwood and other watercourses in close proximity to the site;
- Construction of a mathematical model of the Burn of Linkwood and prediction of flood levels;
- Flood risk assessment based on the above; and
- Preparation and submission of a technical report summarising findings of the study along with recommendations.

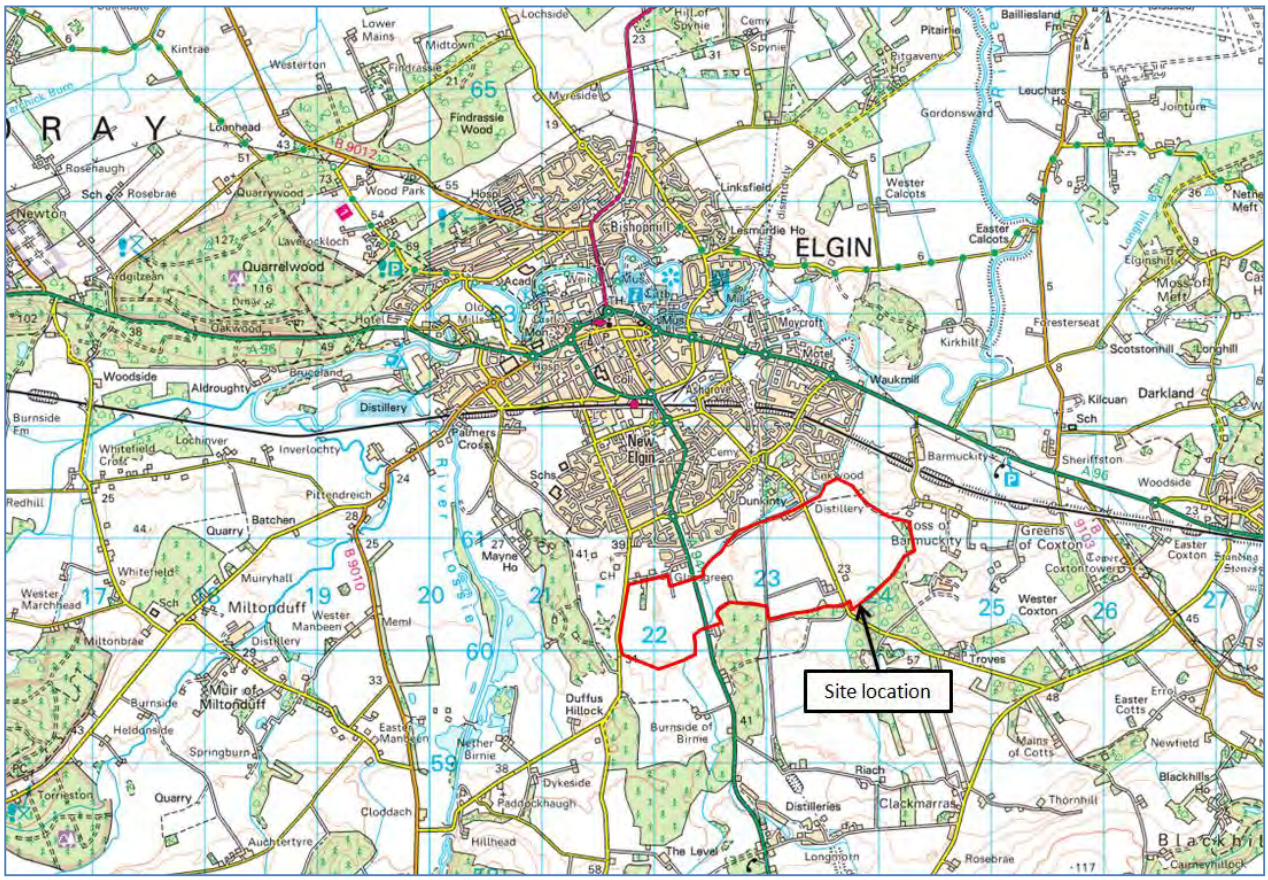
The assessment includes consideration of the 1 in 200 year event for residential development and 1 in 1000 year event for critical infrastructure (school).

Information made available to Kaya Consulting Ltd. for the study includes the following:

- Location plan showing layout of existing site;
- Site topographical survey; and
- River cross-section survey data collected for the purpose of this assessment

A general location map of the site is shown in Figure 1. The work carried out to assess the flooding risk of the site and main findings of the study are summarised in the following sections.

Figure 1: General site location



2 Legislative and Policy Aspects

2.1 National Planning Policy

The current version of the Scottish Planning Policy (SPP) was published in June 2014 and replaces the previous version which was published in February 2010. The SPP sets out national planning policies which reflect Scottish Government's priorities for operation of the planning system and for the development and use of land. It relates to:

- the preparation of development plans;
- the design of development, from initial concept through to delivery; and
- the determination of planning applications and appeals.

The National Planning Framework (NPF) provides a statutory framework for Scotland's long term spatial development and sets out the Scottish Government's spatial development priorities for the next 20 to 30 years. The SPP sets out the policy that will help to deliver the objectives of the NPF.

Some extracts from the SPP are listed below:

Policy Principles

255. The planning system should promote:

- *a precautionary approach to flood risk from all sources, including coastal, water course (fluvial), surface water (pluvial), groundwater, reservoirs and drainage systems (sewers and culverts), taking account of the predicted effects of climate change;*
- *flood avoidance: by safeguarding flood storage and conveying capacity, and locating development away from functional flood plains and medium to high risk areas;*
- *flood reduction: assessing flood risk and, where appropriate, undertaking natural and structural flood management measures, including flood protection, restoring natural features and characteristics, enhancing flood storage capacity, avoiding the construction of new culverts and opening existing culverts where possible; and*
- *avoidance of increased surface water flooding through requirements for Sustainable Drainage Systems (SuDS) and minimising the area of impermeable surface.*

256. To achieve this, the planning system should prevent development which would have a significant probability of being affected by flooding or would increase the probability of flooding elsewhere. Piecemeal reduction of the functional floodplain should be avoided given the cumulative effects of reducing storage capacity.

257. Alterations and small-scale extensions to existing buildings are outwith the scope of this policy, provided that they would not have a significant effect on the storage capacity of the functional floodplain or local flooding problems.

Key Documents

- *Flood Risk Management (Scotland) Act 2009*
- *Updated Planning Advice Note on Flooding*
- *Delivering Sustainable Flood Risk Management (Scottish Government, 2011).*
- *Surface Water Management Planning Guidance (Scottish Government, 2013).*

Delivery

258. Planning authorities should have regard to the probability of flooding from all sources and take flood risk into account when preparing development plans and determining planning applications. The calculated probability of flooding should be regarded as a best estimate and not a precise forecast. Authorities should avoid giving any indication that a grant of planning permission implies the absence of flood risk.

259. Developers should take into account flood risk and the ability of future occupiers to insure development before committing themselves to a site or project, as applicants and occupiers have ultimate responsibility for safeguarding their property.

Development Planning

260. Plans should use strategic flood risk assessment (SFRA) to inform choices about the location of development and policies for flood risk management. They should have regard to the flood maps prepared by Scottish Environment Protection Agency (SEPA), and take account of finalised and approved Flood Risk Management Strategies and Plans and River Basin Management Plans.

261. Strategic and local development plans should address any significant cross boundary flooding issues. This may include identifying major areas of the flood plain and storage capacity which should be protected from inappropriate development, major flood protection scheme requirements or proposals, and relevant drainage capacity issues.

262. Local development plans should protect land with the potential to contribute to managing flood risk, for instance through natural flood management, managed coastal realignment, washland or green infrastructure creation, or as part of a scheme to manage flood risk.

263. Local development plans should use the following flood risk framework to guide development. This sets out three categories of coastal and watercourse flood risk, together with guidance on surface water flooding, and the appropriate planning approach for each (the annual probabilities referred to in the framework relate to the land at the time a plan is being prepared or a planning application is made):

- ***Little or No Risk** – annual probability of coastal or watercourse flooding is less than 0.1% (1:1000 years)*
  - *No constraints due to coastal or watercourse flooding.*
- ***Low to Medium Risk** – annual probability of coastal or watercourse flooding is between 0.1% and 0.5% (1:1000 to 1:200 years)*
  - *Suitable for most development. A flood risk assessment may be required at the upper end of the probability range (i.e. close to 0.5%), and for essential infrastructure and the most vulnerable uses. Water resistant materials and construction may be required.*
  - *Generally not suitable for civil infrastructure. Where civil infrastructure must be located in these areas or is being substantially extended, it should be designed to be capable of remaining operational and accessible during extreme flood events.*
- ***Medium to High Risk** – annual probability of coastal or watercourse flooding is greater than 0.5% (1:200 years)*
  - *May be suitable for:*
    - *residential, institutional, commercial and industrial development within built-up areas provided flood protection measures to the appropriate standard already exist and are maintained, are under construction, or are a planned measure in a current flood risk management plan;*
    - *essential infrastructure within built-up areas, designed and constructed to remain operational during floods and not impede water flow;*
    - *some recreational, sport, amenity and nature conservation uses, provided appropriate evacuation procedures are in place; and*
    - *job-related accommodation, e.g. for caretakers or operational staff.*
  - *Generally not suitable for:*
    - *civil infrastructure and the most vulnerable uses;*

- *additional development in undeveloped and sparsely developed areas, unless a location is essential for operational reasons, e.g. for navigation and water-based recreation, agriculture, transport or utilities infrastructure (which should be designed and constructed to be operational during floods and not impede water flow), and an alternative, lower risk location is not available; and*
- *new caravan and camping sites.*

- *Where built development is permitted, measures to protect against or manage flood risk will be required and any loss of flood storage capacity mitigated to achieve a neutral or better outcome.*
- *Water-resistant materials and construction should be used where appropriate. Elevated buildings on structures such as stilts are unlikely to be acceptable.*

Surface Water Flooding

- *Infrastructure and buildings should generally be designed to be free from surface water flooding in rainfall events where the annual probability of occurrence is greater than 0.5% (1:200 years).*
- *Surface water drainage measures should have a neutral or better effect on the risk of flooding both on and off the site, taking account of rain falling on the site and run-off from adjacent areas.*

Development Management

264. It is not possible to plan for development solely according to the calculated probability of flooding. In applying the risk framework to proposed development, the following should therefore be taken into account:

- *the characteristics of the site;*
- *the design and use of the proposed development;*
- *the size of the area likely to flood;*
- *depth of flood water, likely flow rate and path, and rate of rise and duration;*
- *the vulnerability and risk of wave action for coastal sites;*
- *committed and existing flood protection methods: extent, standard and maintenance regime;*
- *the effects of climate change, including an allowance for freeboard;*
- *surface water run-off from adjoining land;*
- *culverted watercourses, drains and field drainage;*
- *cumulative effects, especially the loss of storage capacity;*
- *cross-boundary effects and the need for consultation with adjacent authorities;*
- *effects of flood on access including by emergency services; and*
- *effects of flood on proposed open spaces including gardens.*

265. Land raising should only be considered in exceptional circumstances, where it is shown to have a neutral or better impact on flood risk outside the raised area. Compensatory storage may be required.

266. The flood risk framework set out above should be applied to development management decisions. Flood Risk Assessments (FRA) should be required for development in the medium to high category of flood risk, and may be required in the low to medium category in the circumstances described in the framework above, or where other factors indicate heightened risk. FRA will generally be required for applications within areas identified at high or medium likelihood of flooding/flood risk in SEPA's flood maps.

267. Drainage Assessments, proportionate to the development proposal and covering both surface and foul water, will be required for areas where drainage is already constrained or otherwise problematic, or if there would be off-site effects.

268. Proposed arrangements for SuDS should be adequate for the development and appropriate long-term maintenance arrangements should be put in place.

2.2 Moray Council Local Development Plan 2015

The Moray Council Local Development Plan was adopted in June 2015 and will be used to determine future developments within the local authority. Within the Plan there are two policy documents which address Flooding and Drainage directly, EP7 "Control of Development in Flood Risk Areas" and EP5 "Surface Water Drainage: Sustainable Urban Drainage Systems (SUDS).

Policy EP5 states the following:

New development should not take place if it would be at significant risk of flooding from any source or would materially increase the possibility of flooding elsewhere. Proposals for development in areas considered to be at risk from flooding will only be permitted where a flood risk assessment to comply with the recommendations of National Guidance and to the satisfaction of both the Scottish Environment Protection Agency and the Council is provided by the applicant. This assessment must demonstrate that any risk from flooding can be satisfactorily mitigated without increasing flood risk elsewhere. Due to continuing changes in climatic patterns, the precautionary principle will apply when reviewing any application for an area at risk from inundation by floodwater.

The following limitations on development will also be applied to take account of the degree of flooding as defined in Scottish Planning Policy;

a) In areas of little to no risk (less than 0.1%) there will be no general constraint to development.

b) Areas of low to medium risk (0.1% to 0.5%) will be considered suitable for most development. A flood risk assessment may be required at the upper end of the probability range (i.e. close to 0.5%), and for essential civil infrastructure and most vulnerable uses. Water resistant materials and construction may be required. Areas within this risk category will generally not be suitable for civil infrastructure. Where civil infrastructure must be located in these areas or is being substantially extended, it should be designed to be capable of remaining operational and accessible during extreme flooding events.

c) Areas of medium to high risk (0.5% or above) may be suitable for:

- *Residential, institutional, commercial and industrial development within built up areas provided flood protection measures to the appropriate standard already exist and are maintained, are under construction, or are a planned measure in a current flood management plan;*
- *Essential infrastructure within built up areas, designed and constructed to remain operational during floods and not impede water flow;*
- *Some recreational, sport, amenity and nature conservation uses, provided appropriate evacuation procedures are in place and*
- *Job related accommodation e.g. for caretakers or operational staff.*

Areas within these risk categories will generally not be suitable:

- *Civil infrastructure and most vulnerable uses;*
- *Additional development in undeveloped and sparsely developed areas, unless a location is essential for operational reasons, e.g. for navigation and water based recreation, agriculture, transport or utilities infrastructure (which should be designed to be operational during floods and not impede water flow), and*
- *an alternative, lower risk location is not available and*
- *New caravan and camping sites.*

Where development is permitted, measures to protect against or manage flood risk will be required and any loss of flood storage capacity mitigated to achieve a neutral or better outcome.
Water resistant materials and construction should be used where appropriate. Elevated buildings on structures such as stilts are unlikely to be acceptable.

2.3 National Indicative River and Coastal Flood Map (Scotland)

The SEPA third generation flood map shows the likely extent of flooding for high, medium and low likelihood for fluvial, pluvial (surface water) and tidal flows. Consultation of the map indicates that there is a high (1 in 10 year) risk of fluvial and pluvial flooding at the site; this is concentrated around the watercourses that flow through and along boundaries of the site.

2.4 SEPA Technical Flood Risk Guidance

The latest version of SEPA 'Technical Flood Risk Guidance for Stakeholders' would need to be consulted when undertaking flood risk assessments (current version is 8, February 2014). This technical guidance document is intended to outline methodologies that may be appropriate for hydrological and hydraulic modelling and sets out what information SEPA requires to be submitted as part of a Flood Risk Assessment.

SEPA Policy 41 sets out roles and responsibilities of SEPA and Planning Authorities.

2.5 Flood Risk Management (Scotland) Act 2009

The Flood Risk Management (Scotland) Act 2009 came into force on 26 November 2009. The Act repealed the Flood Prevention (Scotland) Act 1961 and introduces a more sustainable and streamlined approach to flood risk management, suited to present and future needs and to the impact of climate change. It encourages a more joined up and coordinated process to manage flood risk at a national and local level.

The Act brings a new approach to flood risk management including a framework for coordination and cooperation between all organisations involved in flood risk management, new responsibilities for SEPA, Scottish Water and local authorities in relation to flood risk management, a revised and streamlined process for flood protection schemes, new methods to enable stakeholders and the public to contribute to managing flood risk; and SEPA to act as a single enforcement authority for the safe operation of Scotland's reservoirs.

2.6 Controlled Activities Regulations

The Water Environment (Controlled Activities) (Scotland) Amended Regulations 2013 (CAR) brings new controls for discharges, abstractions, impoundments and engineering works in or near inland waters. Any such work requires authorisation (licence) from the Scottish Environment Protection Agency (SEPA) who are responsible for the implementation of the Act. The Regulations include a requirement that surface water discharge must not result in pollution of the water environment. It also makes Sustainable Drainage Systems (SuDS) a requirement for new development, with the exception of runoff from a single dwelling and discharges to coastal waters.

2.7 Climate Change

The SPP states that "*planning system should promote a precautionary approach to flood risk from all sources, including coastal, water course (fluvial), surface water (pluvial), groundwater, reservoirs and drainage systems (sewers and culverts), taking account of the predicted effects of climate change.*"

One of the sustainable policy principles within the National Planning Framework is supporting climate change mitigation and adaptation including taking account of flood risk.

SEPA recommend a 20% increase in peak flow for the 0.5% AEP (1:200) event, in accordance with DEFRA (Department of Environment, Food and Rural Affairs) and recent Scottish Government research. Although the 2009 climate change predictions (UKCP09) provides information on spatial variations, for current studies a 20% increase in peak flows is assumed.

It is recommended that any site drainage design considers future estimates of increased precipitation and follows an adaptive approach.

The Climate Change (Scotland) Act 2009 also makes reference to adaptation to climate change.

3 Site Location and Description

The proposed development site measures approximately 205 ha and is located to the south of the town of Elgin, a detailed location plan is shown in Figure 2. The site is predominantly greenfield, consisting farmland and areas of scrub vegetation. Photo 1 and Photo 2 show general land use within the site.

The site is bounded to the north by the Burn of Linkwood, a distillery and existing residential dwellings. Farmland and a drain to the east, Birkenhill Woods and farmland to the south and Elgin Golf Course to the west. The A941, Linkwood Road and a dismantled railway all dissect the site, generally running in a north-south direction. The dismantled railway, shown in Photo 3, is raised around 3 m above surrounding ground levels and effects floodplain flows within the site.

The general topography of the site, based on LiDAR data, is shown in Figure 3. Ground levels within the site are relatively flat, with land generally falling towards the Burn of Linkwood, which flows through the site. The highest ground elevation in the site is 38m AOD (Above Ordnance Datum) and is located at the western boundary of the site. The lowest elevation is 11m AOD located in the north eastern corner of the site, close to a tributary of the Burn of Linkwood. The dismantled railway forms a raised embankment that runs through the centre of the site. The land to the north of the site slopes south towards the Burn of Linkwood. A large bund runs along the south western boundary of the site, see Figure 4.

The Burn of Linkwood enters the site from the south west corner of the site, the burn runs along the southern boundary before flowing under the A941 via a 6.5 m wide arch bridge. The channel runs north, parallel with the A941 before entering a sharp meander and flowing north east along the northern boundary of the site. The burn flows under 2 agricultural crossings before reaching Linkwood Road which crosses the channel via a 4.2 m wide road bridge, it should be noted that the deck of the dismantled railway crossing has been removed. In addition to the above, a small weir is also located within the channel between A941 and Linkwood Road. Upstream of Linkwood Road the channel passes a distillery as shown in Photo 4 and Photo 5. Upon exiting the site, the burn flows 900m to the north east and joins the River Lossie. There is a lade that removes water from the burn upstream of the dismantled railway to provide water for the distillery; this is shown in Photo 6.

There are two small drains which act as tributaries to the Burn of Linkwood:

- A small channel draining Elgin Golf course close to the south western boundary of the site;
- A small channel draining Moss of Barmuckity to the south east of the site.

A small unnamed watercourse runs along the north western boundary of the site, the channel passes under the A941 before flowing eastwards within a “lade” style channel. The lade channel runs parallel with the Burn of Linkwood before passing through the dismantled embankment and entering into a dam associated with the distillery.

Figure 2: Detailed site location

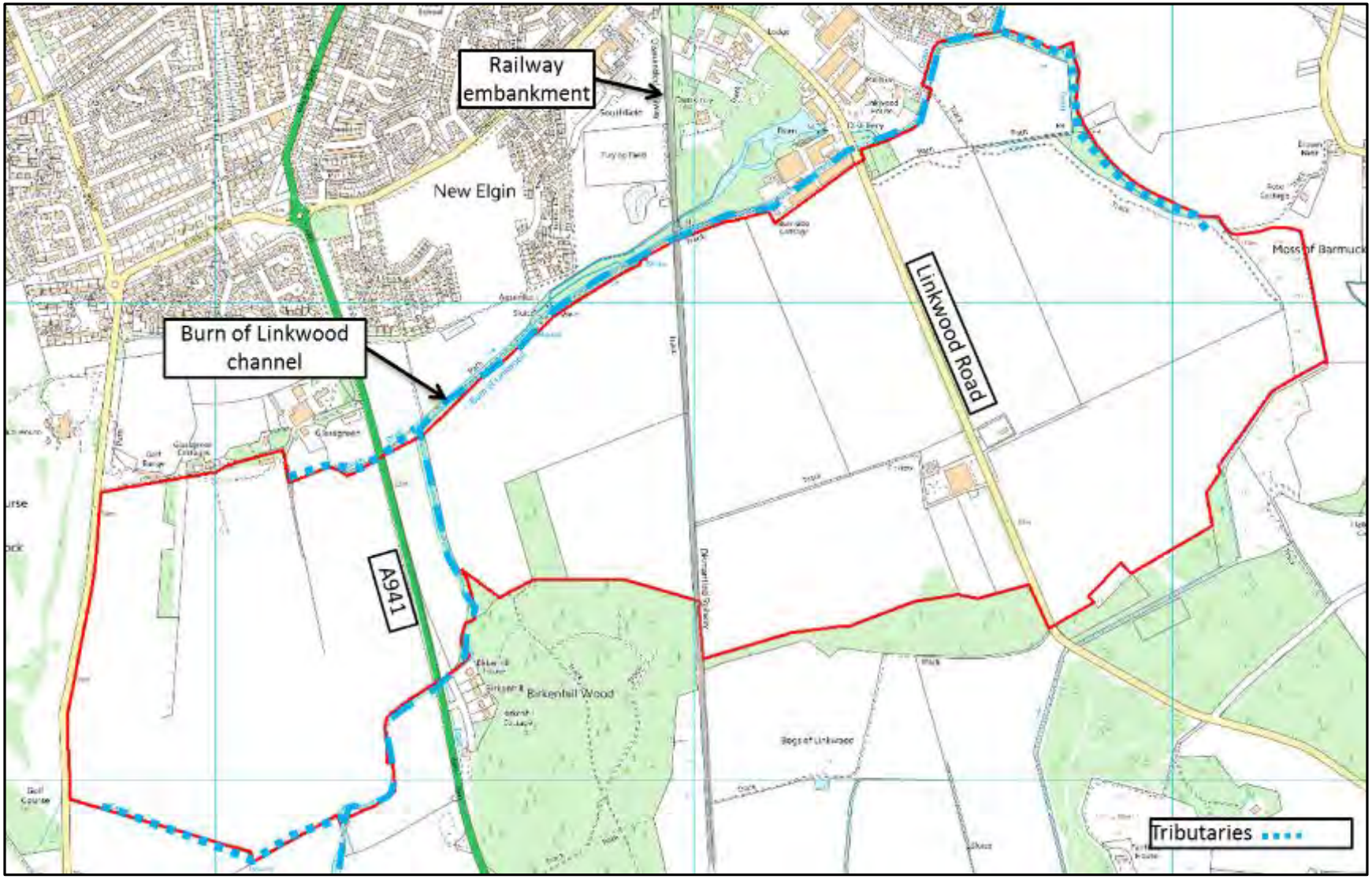


Figure 3: Site topography created from LiDAR data.

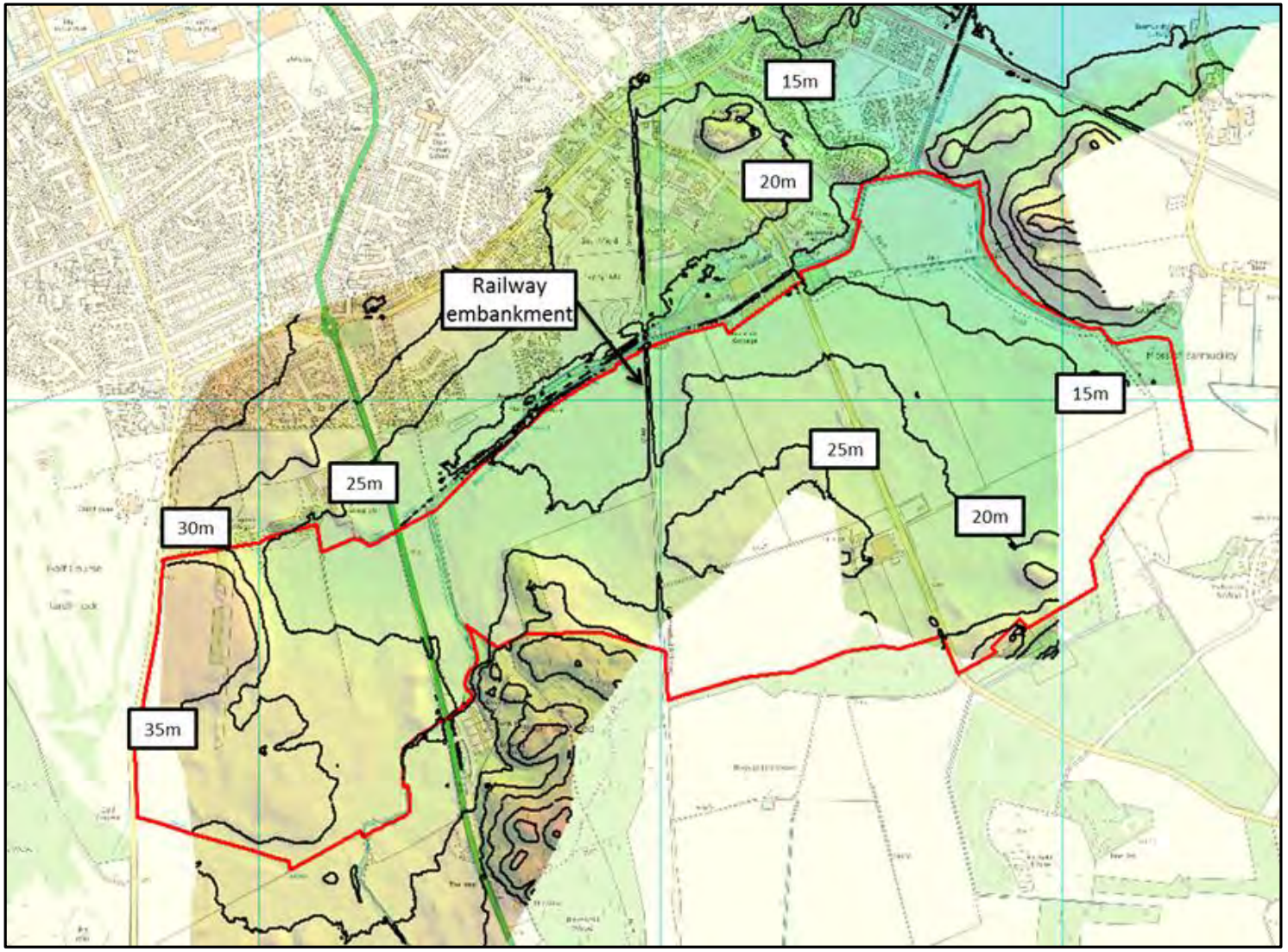


Figure 4: Topography along south west corner of site showing embankment along drain channel

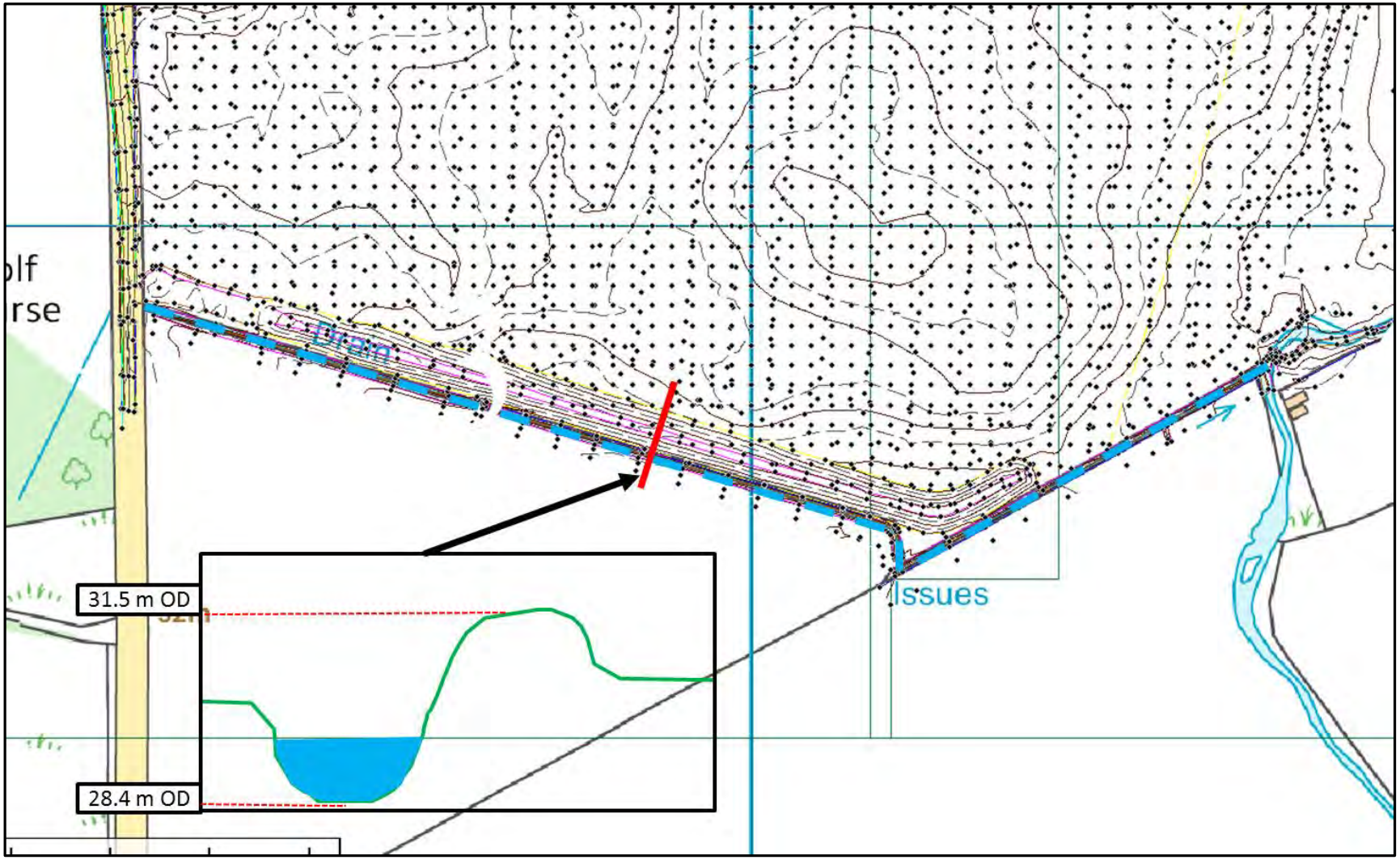


Photo 1: Part of the development site

Photo 2: Part of the development site

Photo 3: The dismantled railway embankment that dissects the site

Photo 4: A section of the Burn of Linkwood

Photo 5: The Burn of Linkwood as it flows past the distillery

Photo 6: The lade taking water from the burn to the distillery

4 Hydrological Analysis

Design flows are calculated for:

- Burn of Linkwood;
- Drain to the north east of the site;
- Drain to the north west of the site; and
- Drain to the south west of the site;

4.1 Estimation of design flows for the Burn of Linkwood

The Burn of Linkwood enters the south west of the site before running parallel to the A941 and forming the northern boundary of the site. Based on the Flood Estimation Handbook (FEH) CD-ROM Version 3 the catchment area of the burn is 24.4km^2 where it exits the north east corner of the site. Other key catchment characteristics are shown in Table 1.

Table 1: Catchment characteristics for the Burn of Linkwood at the north east corner of the site

Parameter	Value
EASTING (m)	323600
NORTHING (m)	861550
AREA (km^2)	24.42
ALTBAR (m)	132
ASPBAR (°)	353
ASPVAR	0.38
BFIHOST	0.733
DPLBAR (m)	7.92
DPSBAR (m/km)	84.5
FARL	0.948
FPEXT	0.0729
FPDBAR	0.692
FPLOC	0.714
LDP	14.84
PROPWET	0.42
SAAR (mm)	790
SAAR4170 (mm)	860
SPRHOST	25.34
URBCONC1990	-
URBEXT1990	0.0041
URBLOC1990	-
URBCONC2000	0.556
URBEXT2000	0.0091
URBLOC2000	0.757

Given the size of the catchment, the design flow is estimated based on the FEH Rainfall-Runoff method, ReFH2 method and statistical Pooling Group Analysis, with results shown in Table 2. The pooling group had to be significantly refined due to such a poor representation, as such the pooling group flows have been disregarded. ReFH2 which has recently been calibrated for Scotland was also included in the analysis, the approach produced a significantly smaller flood peak.

Based on the above assessment, and using the most conservative flow from the three methods, the FEH Rainfall-Runoff was used for the assessment; giving a 200 year flow estimate of 19.02 m^3/s.

The effects of climate change are considered by increasing the 200 year design flow by 20%.

Design flows for the 1 in 1000 year event were also estimated based on the FEH Rainfall-Runoff method, giving a flow estimate of 27.9 m^3/s. It is noted that estimating such high return period flows have a very high degree of uncertainty.

Table 2: Design flow estimates for the Burn of Linkwood

Method	200 year return period flow (m^3/s)	200 year return period flow + 20% (m^3/s)
FEH Rainfall-Runoff[a]	19.02	22.82
ReFH2[b]	9.36	11.23
Pooling Group Analysis	6.89	8.27

[a] *Critical Storm Duration = 9.7 hours*
[b] *Storm Duration = 9 hours*

4.2 Estimation of design flows for the drain to the north east of the site

The unnamed watercourse flows along the eastern boundary of the site. Based on the Flood Estimation Handbook (FEH) CD-ROM Version 3 the catchment area of the burn is 0.96km^2 immediately prior to the watercourse joining the Burn of Linkwood. Other key catchment characteristics are shown in Table 3.

Given the size of the catchment, the design flow is estimated based on the FEH Rainfall-Runoff method, the ReFH2 method and the Institute of Hydrology (IH) small catchment method (Report 124).

The different flow estimation methods provide a range of flow estimates. The most conservative flow derived from the three methods is used for the assessment, giving a 200 year flow estimate of 0.87m^3/s.

The effects of climate change are considered by increasing the 200 year design flow by 20%.

Design flows for the 1 in 1000 year event were also estimates based on the FEH Rainfall-Runoff method, giving a flow estimate of 0.9 m^3/s. It is noted that estimating such high return period flows have a very high degree of uncertainty.

Table 3: Catchment characteristics for the unnamed watercourse to the east of the site

Parameter	Value
EASTING (m)	323700
NORTHING (m)	861550
AREA (km^2)	0.96
ALTBAR (m)	25
ASPBAR (°)	30
ASPVAR	0.56
BFIHOST	0.874
DPLBAR (m)	1.21
DPSBAR (m/km)	27
FARL	1
FPEXT	0.1358
FPDBAR	0.606
FPLOC	0.689
LDP	2.59
PROPWET	0.42
SAAR (mm)	697
SAAR4170 (mm)	758
SPRHOST	16.68
URBCONC1990	-
URBEXT1990	0
URBLOC1990	-
URBCONC2000	-
URBEXT2000	0
URBLOC2000	-

Table 4: Design flow estimates for the unnamed watercourse to the east of the site

Method	200 year return period flow (m^3/s)	200 year return period flow + 20% (m^3/s)
FEH Rainfall-Runoff[a]	0.59	0.71
ReFH2[b]	0.16	0.19
IH124[c]	0.87	1.04

[a] *Critical Storm Duration = 5.1 hours*
[b] *Storm Duration = 17 hours*
[c] *SAAR = 697mm, Area = 0.96km^2, SOIL = 0.40*

4.3 Estimation of design flows for the drain to the north west of the site

The drain joins the Burn of Linkwood to the east of the A941. Based on the Flood Estimation Handbook (FEH) CD-ROM Version 3 the catchment area of the drain is 0.55 km^2 immediately prior to the drain joining the Burn of Linkwood. Other key catchment characteristics are shown in Table 5.

Table 5: Catchment characteristics for the unnamed drain in the north west of the site

Parameter	Value
EASTING (m)	322350
NORTHING (m)	860650
AREA (km^2)	0.55
ALTBAR (m)	36
ASPBAR (°)	100
ASPVAR	0.63
BFIHOST	0.899
DPLBAR (m)	0.92
DPSBAR (m/km)	28.8
FARL	1
FPEXT	0.1136
FPDBAR	0.491
FPLOC	0.519
LDP	1.71
PROPWET	0.42
SAAR (mm)	690
SAAR4170 (mm)	762
SPRHOST	14.75
URBCONC1990	-
URBEXT1990	0.0023
URBLOC1990	-
URBCONC2000	0.5
URBEXT2000	0.0114
URBLOC2000	1.046

Given the size of the catchment, the design flow is estimated based on the FEH Rainfall-Runoff method, the ReFH2 method and the Institute of Hydrology (IH) small catchment method (Report 124).

The different flow estimation methods provide a range of flow estimates. The most conservative flow derived from the three methods is used for the assessment, giving a 200 year flow estimate of 0.53m^3/s.

The effects of climate change are considered by increasing the 200 year design flow by 20%.

Design flows for the 1 in 1000 year event were also estimates based on the FEH Rainfall-Runoff method, giving a flow estimate of 0.88 m^3/s. It is noted that estimating such high return period flows have a very high degree of uncertainty.

Table 6: Design flow estimates for the unnamed drain in the north west of the site

Method	200 year return period flow (m^3/s)	200 year return period flow + 20% (m^3/s)
FEH Rainfall-Runoff[a]	0.32	0.38
ReFH2[b]	0.08	0.10
IH124[c]	0.53	0.64

[a] *Critical Storm Duration = 4.3 hours*
[b] *Storm Duration = 15 hours*
[c] *SAAR = 690mm, Area = 0.55km^2, SOIL = 0.40*

4.4 Estimation of design flows for the drain to the south west of the site

The drain joins the Burn of Linkwood to the west of the A941. Based on the Flood Estimation Handbook (FEH) CD-ROM Version 3 the catchment area of the drain is 0.8 km^2 immediately prior to the drain joining the Burn of Linkwood. Other key catchment characteristics are shown in Table 7.

Given the size of the catchment, the design flow is estimated based on the FEH Rainfall-Runoff method, the ReFH2 method and the Institute of Hydrology (IH) small catchment method (Report 124).

The different flow estimation methods provide a range of flow estimates. The most conservative flow derived from the three methods is the IH124 method which used for the assessment, giving a 200 year flow estimate of 0.75m^3/s. The effects of climate change are considered by increasing the 200 year design flow by 20%.

Design flows for the 1 in 1000 year event were also estimates based on the FEH Rainfall-Runoff method, giving a flow estimate of 1.25 m^3/s. It is noted that estimating such high return period flows have a very high degree of uncertainty.

Table 7: Catchment characteristics for the south west drain

Parameter	Value
EASTING (m)	322350
NORTHING (m)	860650
AREA (km^2)	0.80
ALTBAR (m)	36
ASPBAR (°)	100
ASPVAR	0.63
BFIHOST	0.899
DPLBAR (m)	0.92
DPSBAR (m/km)	28.8
FARL	1
FPEXT	0.1136
FPDBAR	0.491
FPLOC	0.519
LDP	1.71
PROPWET	0.42
SAAR (mm)	690
SAAR4170 (mm)	762
SPRHOST	14.75
URBCONC1990	-
URBEXT1990	0.0023
URBLOC1990	-
URBCONC2000	0.5
URBEXT2000	0.0114
URBLOC2000	1.046

5 Mathematical Modelling of the Burn of Linkwood

A Flood Modeller Pro 1D/2D model of the reach of the Burn of Linkwood was developed to predict the 200 year floodplain at the site.

5.1 Model Setup

The model domain for the 1D/2D model of the Burn of Linkwood is shown in Figure 5. The model contains 52 surveyed cross sections and represents all the key structures impacting flow and floodplain flows upstream and downstream of the site. Six additional cross sections were derived from detailed topographical survey data. An overview of locations of cross sections is shown in Figure 6.

The modelled structures include:

- Road bridges (A941, Linkwood Road and A96);
- Pipe bridge immediately downstream of A941;
- Agricultural crossing downstream of Linkwood Road;
- Access bridge within the distillery site;
- Agricultural crossing upstream of the distillery;
- The dismantled railway which runs through the centre of the site;
- A weir upstream of the distillery; and
- Railway Bridge upstream of the A96.

The structures were modelled using standard bridge units available within Flood Modeller Pro and used the standard parameters.

The floodplain area in the model is represented in Flood Modeller Pro 2D. LiDAR data was available for the site and a check was made to assess the accuracy of the data, the LiDAR data was found to be sufficiently accurate in open areas with less vegetation; however, differences were found between the topographical survey data and LiDAR close to channel banks and in some areas with dense vegetation. As a result, where possible, important topographical features in the 2D domain were based on surveyed data.

There are three 2D domains included the model as shown in Figure 5. Figures 7, 8 and 9 show locations of model cross sections. The size of the 2D domain influences the model run time (the higher the number of grid cells, the longer the run time). Therefore, initially a more extensive 2D domain area was used during model testing and then reduced to exclude areas shown to be significantly outside the flood extent. Link lines have been used to link both domains, a uniform spill coefficient of 1 has been used to represent flow over the channel banks. Where available, top of bank heights have been derived from surveyed topographic levels.

The channel friction (Manning's roughness coefficient, n) was set at 0.045 in the channel bed and 0.065 on the top of channel banks. (Sensitivity to the assumed roughness is presented in Section 5.3). The roughness of the floodplain was set to 0.055, as this consists mainly of short grass and roads.

The downstream boundary was initially set to a water level of 9.5m AOD based on the approximate 200 year water level of the River Lossie (extracted by comparing the SEPA Flood Map extent for River Lossie with LiDAR); however, based on a sensitivity analysis it was determined that a normal depth boundary resulted in a more conservative water level, and hence was used.

The upstream boundary for the Burn of Linkwood and the unnamed watercourse within the north east of the site were set to the calculated design flows from Chapter 4; the timing of hydrographs generated from the FEH Rainfall-Runoff method were set to coincide.

Standard model parameters were adopted and the performance of the model was checked to ensure model stability. The 1D model was run with a 1 second timestep. The 2D model was run with a 3.5m grid cell size, so as to adequately represent the study area, and a 1 second timestep. The 2D model mass balance error was checked for each model run to ensure the model was stable and suitable for use. The 1 in 200 year maximum mass balance error was 3.1%.

The unnamed drain in the north west of the site has been modelled in 1D only as described in Section 6.

Figure 5: Red line outlines showing 2D domains for three active areas

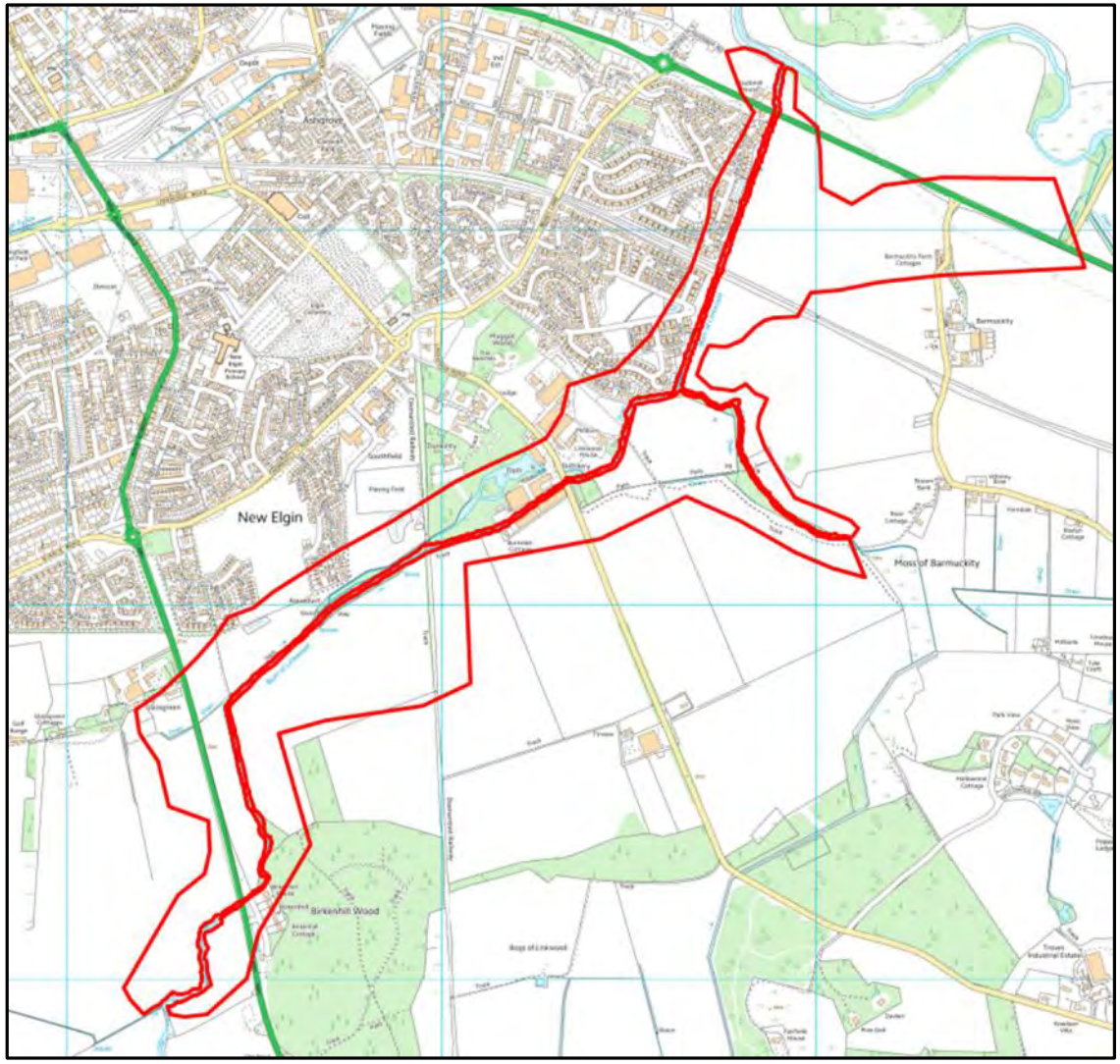


Figure 6: Cross section location map

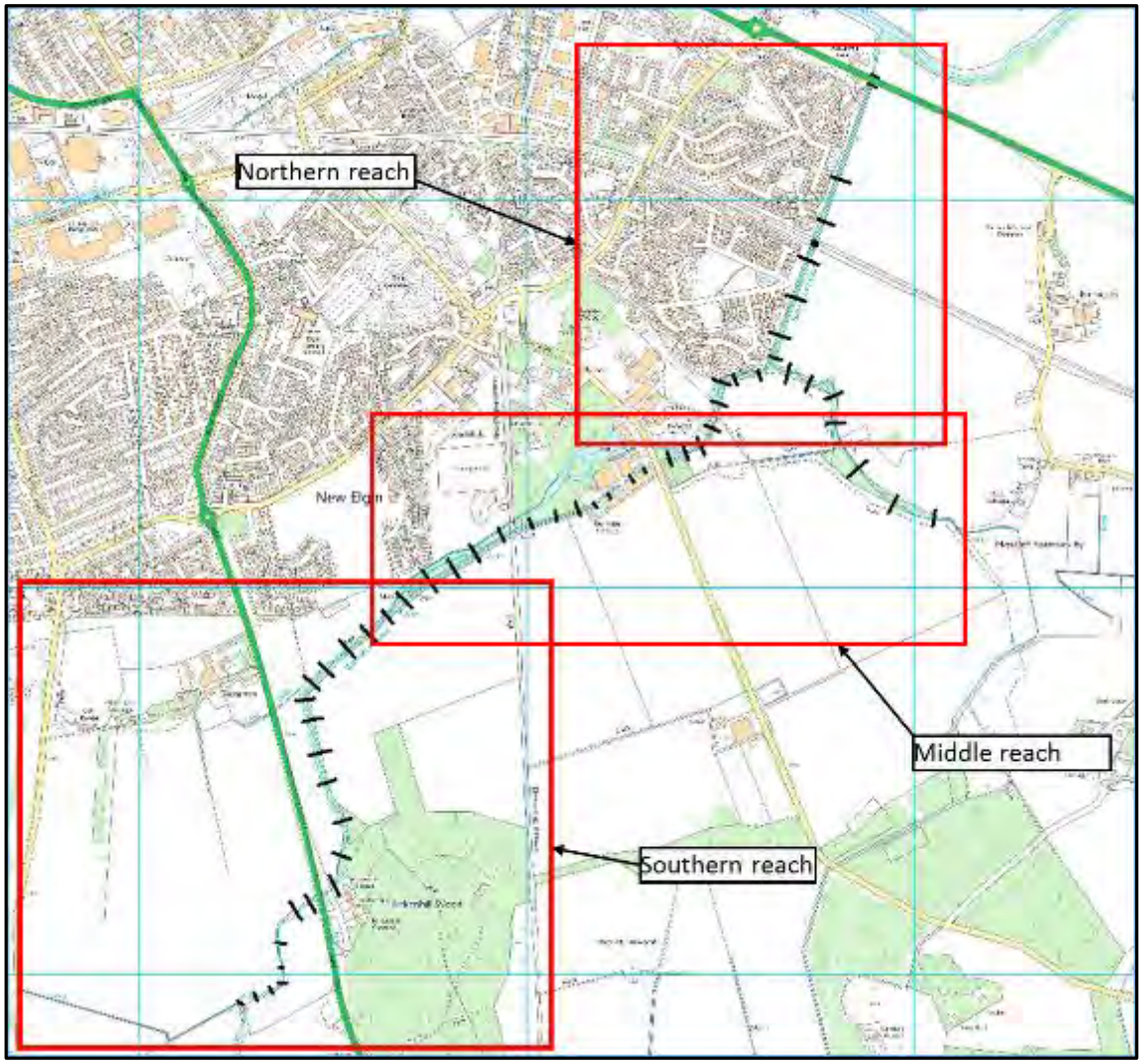


Figure 7: Southern Reach

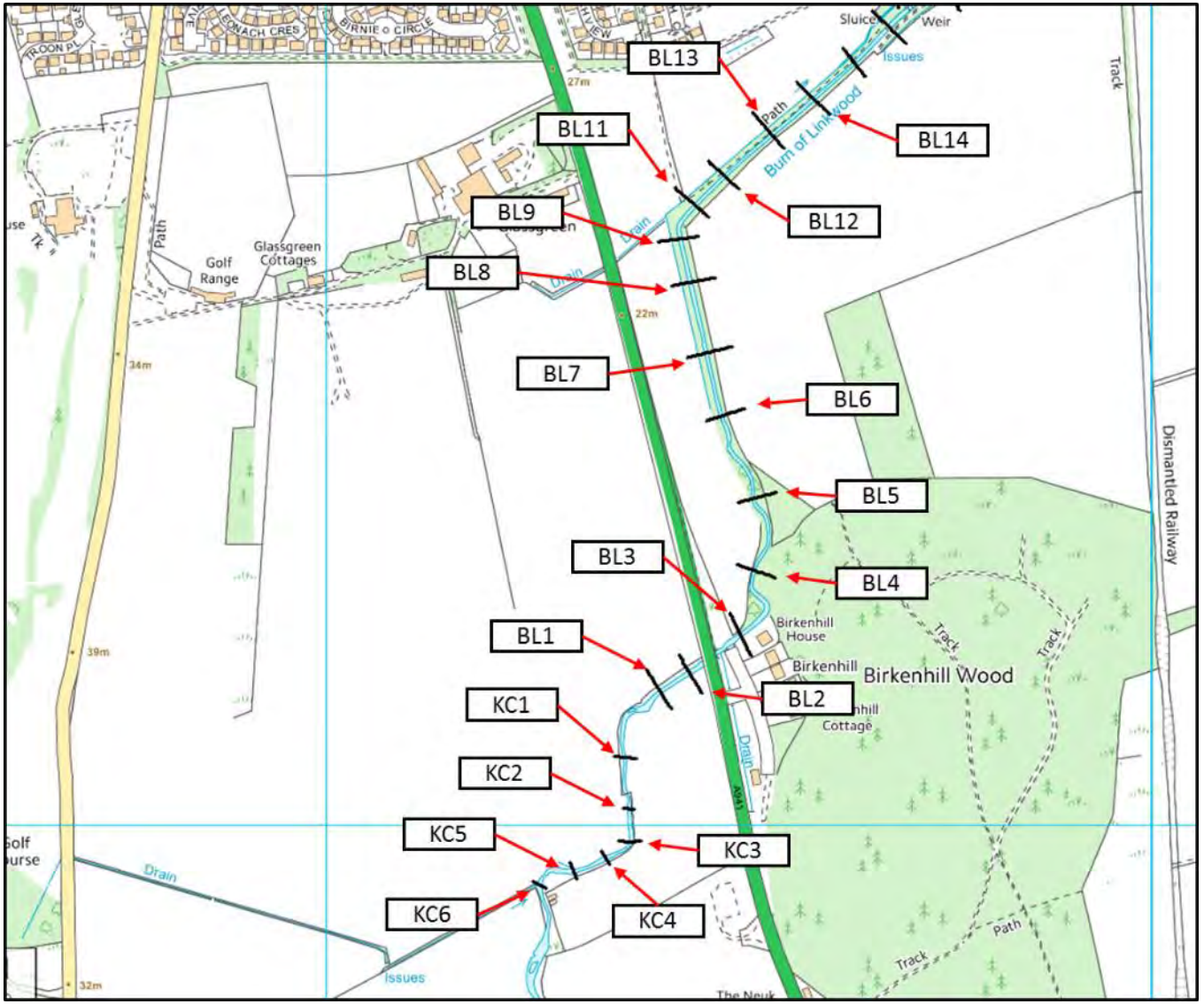


Figure 8: Middle reach

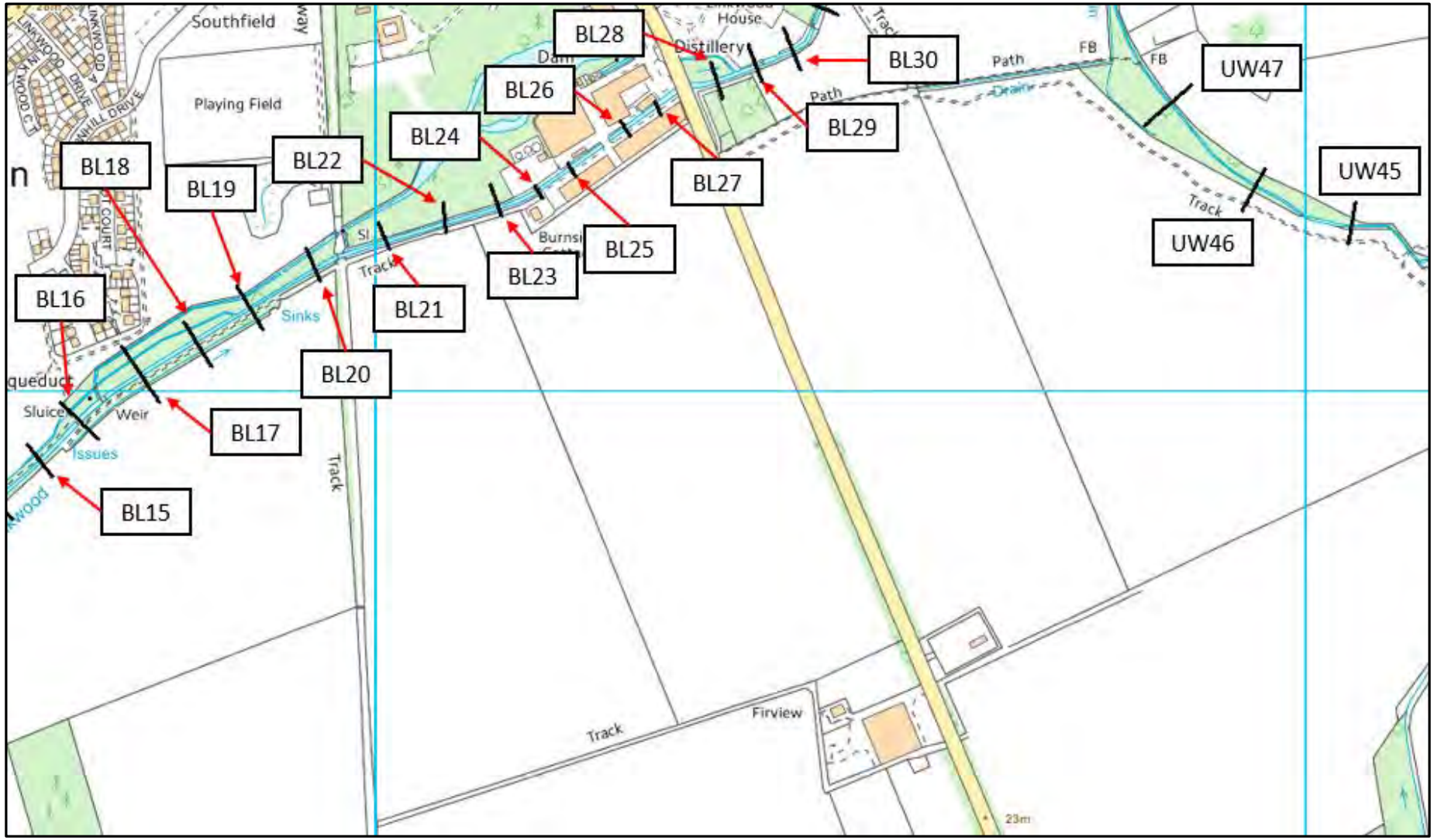
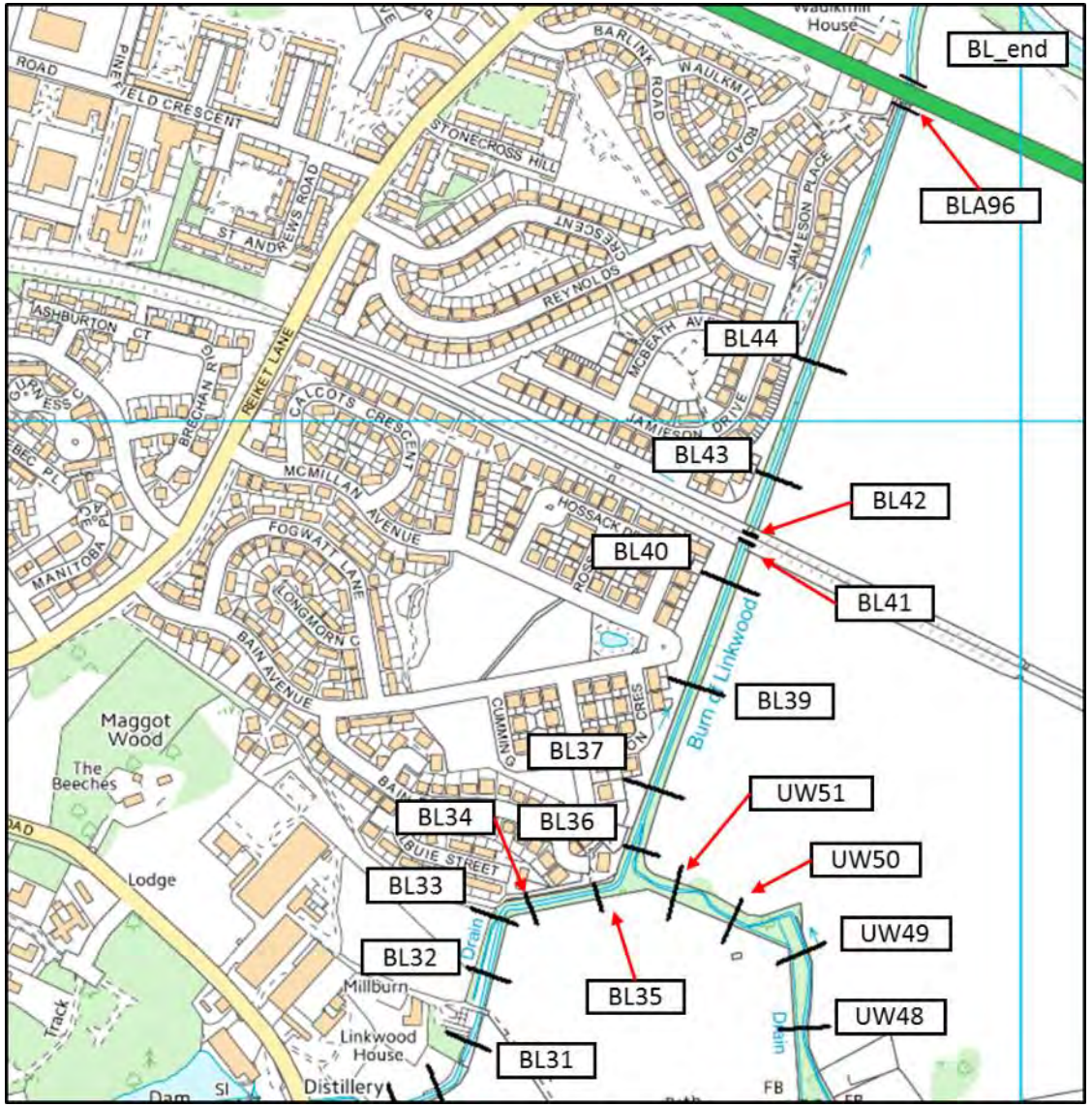


Figure 9: Northern reach



5.2 Model Results

Predicted flood levels for the 200 year flow and climate change scenarios are provided in Table 8. A flood map showing the extent of the 200 year return period event with the proposed development Masterplan overlaid is provided in Figure 10. A long profile of the Burn of Linkwood, with 200 year flood level is shown in Figure 11.

Analysis of the 1D-2D model shows that low lying areas of land upstream of the A941 road bridge are predicted to flood. The bridge is under capacity for the 200 year event. Flood waters are also predicted to overtop both banks immediately downstream of the A941. Overtopping in this area causes flood waters to flow parallel to the channel before either returning to the channel or entering the large floodplain upstream of the dismantled railway embankment. The maximum overland flow velocity in the vicinity of the site is 1.7m/s for the 1 in 200 year event.

The dismantled railway bridge abutments near the middle of the site restrict flood flows and cause backing up of flows within the channel during a 200 year event, resulting in significant flooding of the area upstream of the embankment.

Adjacent to the distillery, the channel capacity reduces and is affected by bridge crossings and overtopping of the channel is predicted. Flood waters are predicted to inundate parts of the distillery before following a low lying area of land and propagating towards the north east corner of the site.

In addition to flood waters originating from the Burn of Linkwood channel, flood waters are also predicted to overtop the channel of the small drain within the north east corner of the site. The channel is poorly defined in this area and coupled with backing of peak flows from the Burn of Linkwood, this results in overtopping of the left bank of the channel. Flooding from this area contributes to the floodplain adjacent to the confluence of both watercourses.

A selected number of model cross sections showing the 200 year water levels are provided in Appendix 1.

Table 8: Model results showing maximum water level and velocity for the cross sections throughout the site.

Cross section	200 year water level (m AOD)	200 year velocity (m/s)	200 year plus climate change water level (m AOD)	200 year plus climate change velocity (m/s)
KC6	27.9	1.4	27.9	1.5
KC5	27.5	1.2	27.5	1.3
KC4	27.2	1.0	27.2	1.0
KC3	26.9	1.0	27.0	1.0
KC2	26.6	1.5	26.6	1.8
KC1	26.0	1.5	26.3	1.4
BL1	25.6	1.8	25.7	1.8
BL2	25.6	1.3	25.8	1.3

BL3	24.9	2.0	25.0	2.1
BL4	23.9	2.5	24.0	2.6
BL5	23.3	1.0	23.4	1.0
BL6	23.0	1.4	23.0	1.5
BL7	22.6	1.7	22.6	1.8
BL8	22.2	1.8	22.2	1.8
BL9	21.8	2.5	21.8	2.5
BL11	21.5	1.7	21.6	1.8
BL12	21.4	1.6	21.4	1.7
BL13	21.0	1.5	21.0	1.6
BL14	20.9	1.2	20.9	1.2
BL15	20.6	1.3	20.7	1.3
BL16	20.3	2.0	20.4	2.0
BL17	20.2	1.5	20.2	1.5
BL18	19.5	2.0	19.5	2.1
BL19	19.0	2.7	19.1	2.8
BL20	18.1	2.1	18.2	2.1
BL21	16.8	2.2	16.8	2.3
BL22	16.3	2.0	16.4	2.0
BL23	16.1	1.7	16.1	1.8
BL24	15.9	1.8	15.9	1.9
BL25	15.8	1.6	15.9	1.7
BL26	15.4	2.0	15.4	2.0
BL27	15.2	2.0	15.2	2.0
BL28	14.6	1.8	14.6	1.8
BL29	14.2	2.0	14.3	2.0
BL30	13.9	2.0	14.0	2.0
BL31	13.6	1.7	13.7	1.7
BL32	13.3	1.6	13.3	1.7
BL33	12.9	1.9	13.0	1.9
BL34	12.7	1.9	12.8	1.9
BL35	12.3	1.9	12.4	1.9
BL36	12.2	1.2	12.2	1.2

Figure 10: 1 in 200 year flood map

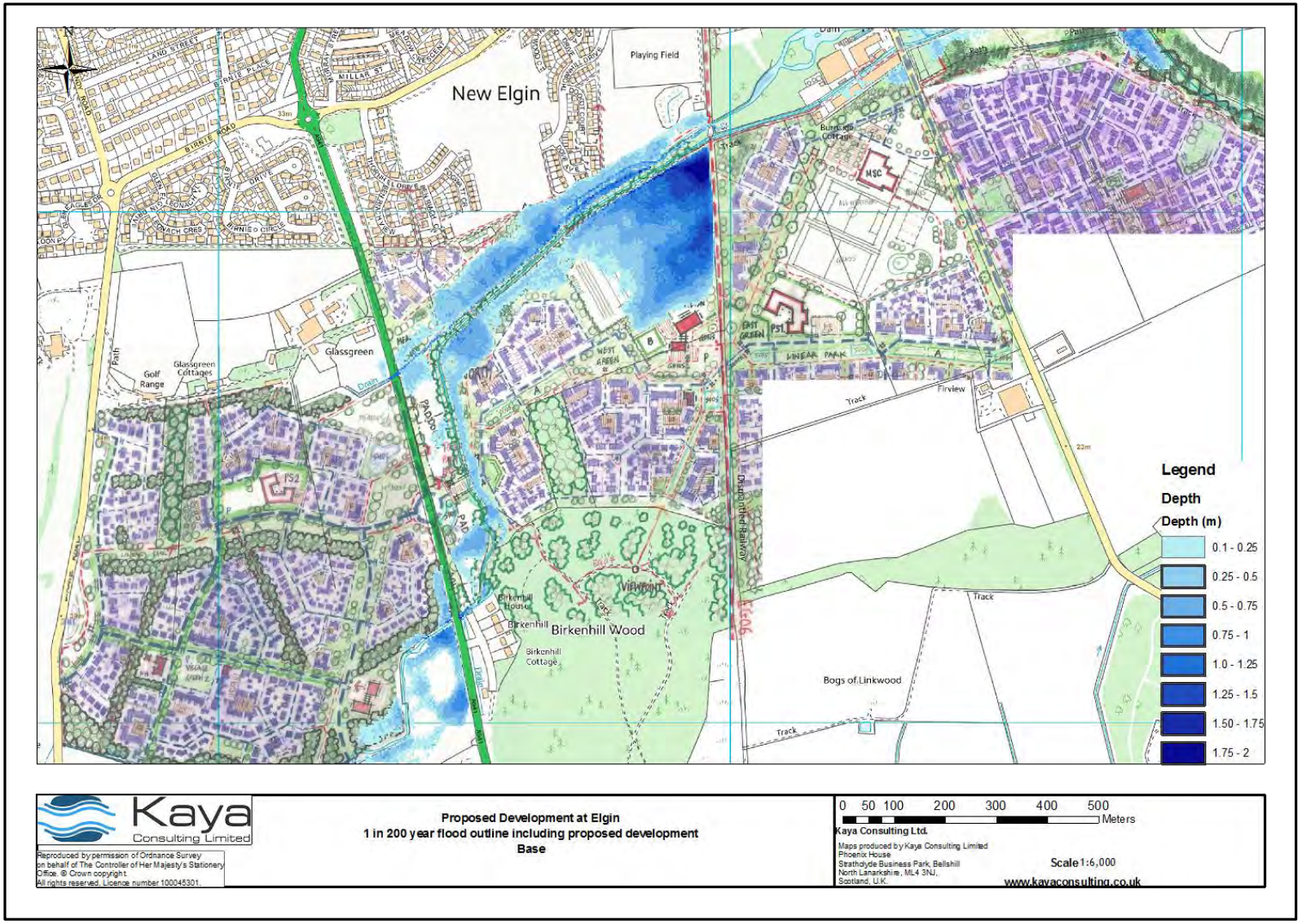
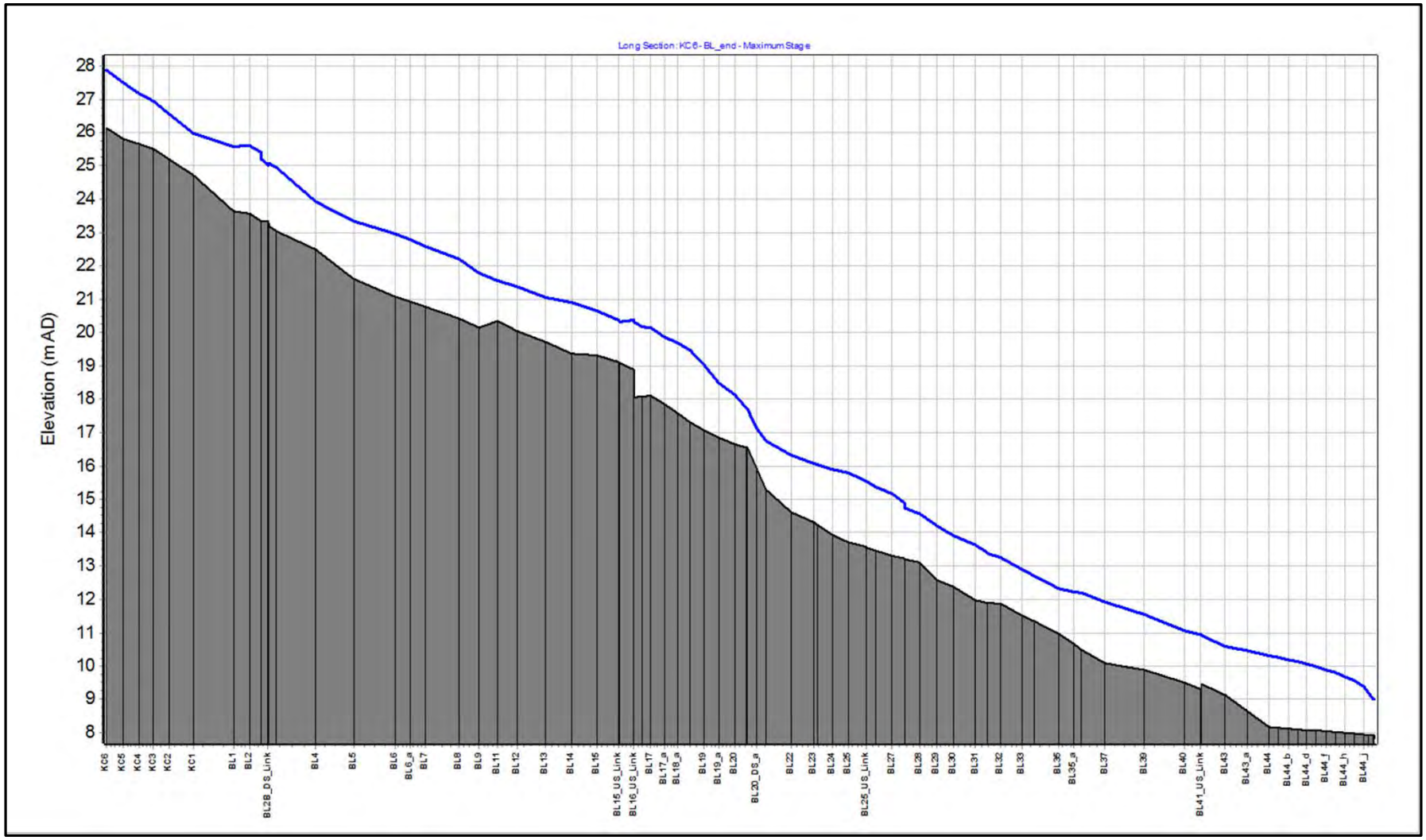


Figure 11: Long profile showing 1 in 200 year water levels



5.3 Sensitivity Analysis

A model sensitivity analysis provides an illustration of the effect of changing key model parameters on the important model outputs (in this case flood levels). By re-running the model changing one input parameter, the effect of that input on the model results can be isolated. Repeating this process to account for several model parameters of interest within the range of their possible input values gives a sensitivity analysis that, when compared with the model assumptions and knowledge of realistic inputs, can provide an indication of the uncertainty associated with the model predictions.

A sensitivity analysis was undertaken considering the following parameters:

- Manning's n of the channel and floodplains, which were varied ±20 % from design values;
- 50% blockages of key structures throughout the length of the site; the A941 bridge, the Linkwood Road bridge and the dismantled railway;
- Downstream boundary.

The scenarios used for the sensitivity analysis are shown in Table 9 with the corresponding water levels for KC6 to BL36, the cross sections that cover the site itself, shown in Table 10.

Table 9: Scenarios used for the sensitivity analysis for the Burn of Linkwood.

Scenario	Manning's *n* (1D)	Manning's *n* (2D)	Blockage (50%)
Base	0.045	0.055	None
1	0.054	0.066	None
2	0.036	0.044	None
3	0.045	0.055	A941 Bridge
4	0.045	0.055	Linkwood Road Bridge
5	0.045	0.055	Dismantled Railway

The sensitivity analysis indicates that varying friction by 20% in both the 1D and 2D domains results in a maximum decrease in water levels of 0.24m and a maximum increase of 0.16m, illustrating that the model is moderately sensitive to a change in channel or floodplain roughness.

The blockage scenarios had a varying, but localised, impact on water levels throughout the site. The water levels increased immediately upstream of the blockage and showed little change in comparison to the base scenario for the rest of the modelled reach. The 50% blockage of the A941 bridge and Linkwood Road bridge increased water levels by 0.31m and 0.27m at the upstream cross sections. The flood extent within the site is not predicted to be significantly influenced by these blockage scenarios.

The 50% blockage of the dismantled railway that runs through the centre of site caused an increase in water levels of 1.96m upstream; this was a substantial increase however it did not overtop the railway embankment and the flood extent on the southern bank of the Burn of Linkwood would remain largely similar.

In addition to the above, a sensitivity analysis was also undertaken to the downstream boundary. The normal depth unit was increased by 100 which resulted in a water level increase of up to 2 m at the downstream model, receding to 0.02 at BL36 (downstream cross section at the site). This shows that water levels at the site are not sensitive to changes to the downstream boundary.

Table 10: Results of the sensitivity analysis showing change in water level under the difference scenarios.

Cross section	Base (m AOD)	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
KC6	27.880	0.07	-0.07	0.00	0.00	0.00
KC5	27.479	0.05	-0.05	0.00	0.00	0.00
KC4	27.173	0.03	-0.03	0.00	0.00	0.00
KC3	26.931	0.05	-0.02	0.06	0.00	0.00
KC2	26.566	0.03	-0.11	-0.04	0.00	0.00
KC1	25.991	0.07	0.15	0.17	0.00	0.00
BL1	25.581	0.10	-0.24	0.30	0.03	0.00
BL2	25.606	0.08	-0.14	0.31	-0.03	0.00
BL3	24.949	0.13	-0.17	-0.08	0.00	0.00
BL4	23.922	0.01	-0.09	-0.07	0.00	0.00
BL5	23.330	0.07	-0.08	-0.03	0.00	0.00
BL6	22.964	0.04	-0.10	-0.04	0.00	0.00
BL7	22.599	0.04	-0.13	-0.04	0.00	0.00
BL8	22.198	0.07	-0.13	-0.02	0.00	0.00
BL9	21.775	-0.01	0.00	-0.03	0.00	0.00
BL11	21.548	0.01	-0.01	0.00	0.00	0.00
BL12	21.370	0.00	0.00	0.00	0.00	0.00
BL13	21.047	0.01	-0.02	0.00	0.00	0.00
BL14	20.893	-0.01	0.00	0.00	0.00	0.00
BL15	20.638	0.00	0.02	0.00	0.00	0.02
BL16	20.334	0.03	-0.09	0.01	0.00	0.05
BL17	20.151	0.02	-0.05	0.03	0.00	0.22
BL18	19.462	0.13	-0.12	0.02	0.00	0.68
BL19	19.044	0.04	-0.08	0.02	0.00	1.04
BL20	18.146	0.16	-0.09	0.01	0.00	1.96
BL21	16.757	0.07	-0.09	0.02	0.00	-0.12
BL22	16.315	0.07	-0.13	0.02	0.00	-0.13
BL23	16.064	0.06	-0.12	0.02	0.01	-0.14
BL24	15.887	0.05	-0.09	0.01	0.01	-0.12
BL25	15.796	0.03	-0.13	0.02	0.04	-0.19
BL26	15.379	0.03	-0.08	0.02	0.16	-0.14
BL27	15.176	0.00	-0.03	0.02	0.27	-0.13
BL28	14.553	0.01	-0.08	0.01	0.01	-0.07
BL29	14.206	0.04	-0.07	0.01	0.00	-0.08
BL30	13.915	0.05	-0.07	0.01	0.00	-0.08
BL31	13.636	0.02	-0.05	0.01	0.00	-0.08

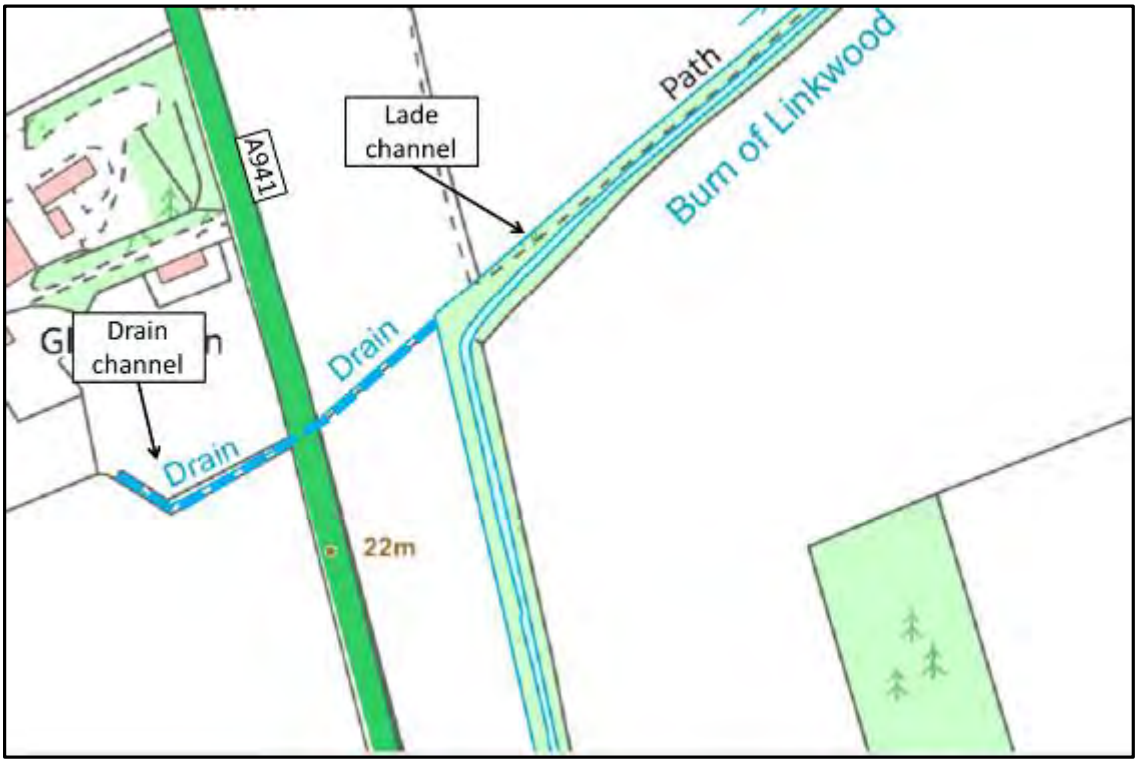
BL32	13.257	0.02	-0.05	0.01	0.00	-0.08
BL33	12.914	0.04	-0.07	0.01	0.00	-0.07
BL34	12.714	0.04	-0.07	0.01	0.00	-0.07
BL35	12.324	0.06	-0.10	0.01	0.00	-0.07
BL36	12.188	0.03	-0.05	0.01	0.00	-0.08

6 Mathematical Modelling of the drain to the north west of the site

As discussed in Section 3, the drain located within the north west corner of the site forms part of the northern boundary of the site. The channel flows eastwards before passing under the A941 and flowing into a “lade” channel which runs parallel to the main Burn of Linkwood.

The Burn of Linkwood is embanked so flood waters from the drain do not enter the channel, see Figure 12. As a result, flood risk from the drain has been assessed separately from the Burn of Linkwood.

Figure 12: North west drain location



6.1 Model Setup

A Flood Modeller Pro 1D model of the drain was developed to predict the 200 year floodplain at the site. The model was constructed based on cross sections derived from the topographical survey. In total 7 cross sections were derived including a cross section specifically surveyed as part of the assessment. Figure 13 shows the location of surveyed model cross sections.

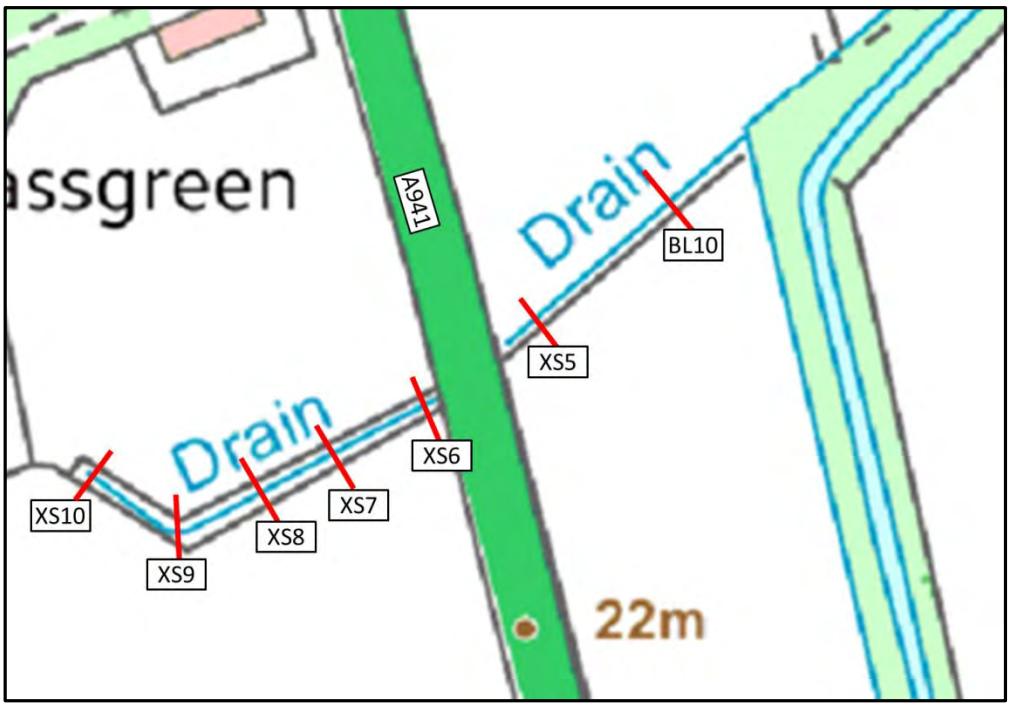
As well as the cross sections, the culvert under the A941 was also surveyed and has been included in the model as an orifice unit using default Flood Modeller Pro parameters,

The channel friction (Manning’s roughness coefficient, n) was set at 0.045 in the channel bed and 0.065 in the banks.

The downstream boundary was initially set to a water level of 20.7 m AOD based on the approximate 200 year water level of the floodplain of the Burn of Linkwood.

The upstream boundary for the drain was set to the calculated design flows from Chapter 4; the model was run in steady state mode.

Figure 13: Location of small drain cross sections



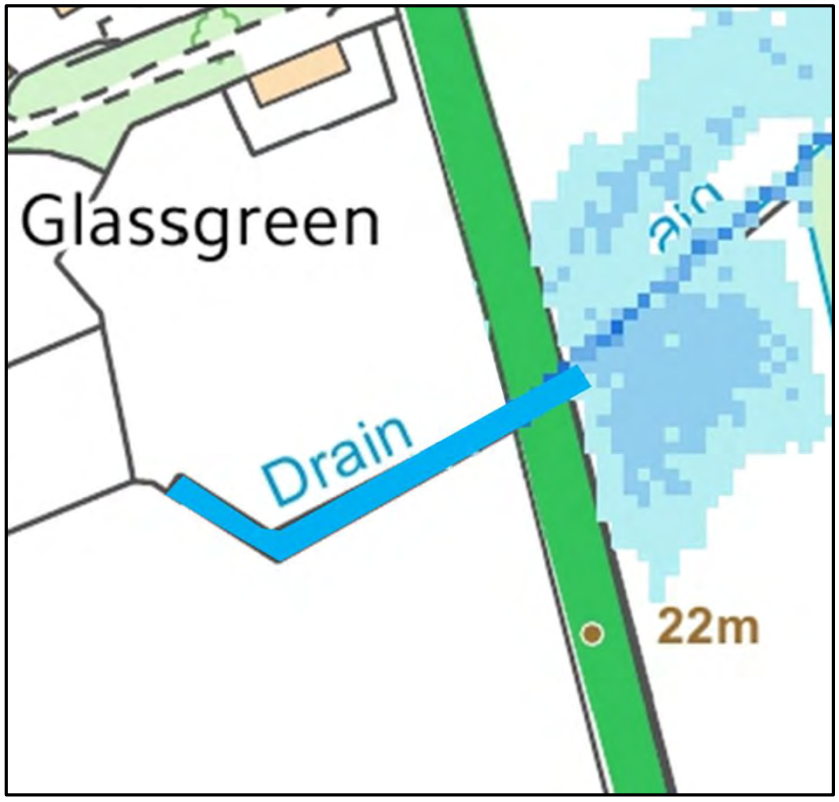
6.2 Model Results and Sensitivity

Model results indicated that flood levels in the drain are significantly affected by water levels in the Burn of Linkwood. Assuming a peak 200 year level of 20.7 m OD for the (steady state) downstream boundary, the drain has sufficient capacity to pass the predicted 200 year flow event and overtopping of the channel within the site is not predicted. Model results are provided in Table 11.

Table 11: 1D model results for the small drain

Cross section	200 year
XS10	20.7
XS9	20.7
XS8	20.7
XS7	20.7
XS6	20.7
XS5	20.7
BL10	20.7

Figure 14: 1 in 200 year flood map of small drain



6.3 Sensitivity Analysis

A sensitivity analysis was undertaken by adjusting friction by +/- 20%, blockage of the A941 culvert by 50% and increasing the downstream boundary water level to 20.8 m OD which is predicted to be the approximate water level in the floodplain downstream of the A941 culvert.

Results showed:

- Altering friction by +/-20% within the channel had no effect on water levels;
- Reducing the capacity of the A941 culvert by 50% increased water levels by up to 0.1 m; and
- Increasing downstream boundary water level to 20.8 m OD (200 year plus climate change flow in Burn of Linkwood), significantly affected water levels with base levels rising to 20.8 m OD throughout the modelled reach.

7 Flood Risk Assessment

The flood risk assessment considers flooding from:

- The Burn of Linkwood and north east drain;
- Drain within north west corner of the site;
- Drain within south west of site;
- Surface water runoff; and
- Groundwater.

Flood mitigation measures are also provided in Section 7.7

7.1 Risk of flooding from the Burn of Linkwood and north east drain

The Burn of Linkwood drains a large catchment to the south of Elgin before passing under the A941 and flowing through the site. The channel passes a dismantled railway embankment and a distillery before flowing under Linkwood Road and away from the site.

The upstream catchment has been delineated using FEH software and the 1 in 200 year and 1 in 200 year plus climate change flows have been calculated based on conservative methods described in Section 4.

A 1D-2D mathematical model of the Burn of Linkwood and a small drain within the north east of the site was constructed using a number of data sources as detailed in Section 5, including the recently undertaken topographical survey.

A flood map showing the extent of the 200 year return period event is provided in Figure 10.

Low lying areas of land upstream of the A941 road bridge are predicted to flood. Flood waters are also predicted to overtop both banks immediately downstream of the road. Overtopping in this area causes flood waters to flow parallel to the channel before either returning to the channel or entering the large floodplain upstream of the dismantled railway embankment.

Flood flows able to pass downstream of the railway embankment are restricted by the dismantled railway abutments which causes backing up of flows and significant flooding of the area upstream of the embankment.

Flows passing downstream of the railway embankment are restricted to approximately 4 m^3/s during the 200 year event. Adjacent to the distillery, the channel capacity reduces and overtopping of the channel is predicted. Flood waters inundate parts of the distillery before following a low lying area of land and propagating towards the north east corner of the site.

In addition to flood waters originating from the Burn of Linkwood channel, flood waters are also predicted to overtop the channel of the small drain within the north east corner of the site. The channel is poorly defined in this area. The channel, coupled with the backing-up of peak flows from the Burn of Linkwood, results in overtopping of the left bank of the channel. Flooding from this area contributes to the floodplain adjacent to the confluence of both watercourses.

Based on modelling work outlined above, areas of the site are predicted to lie within the 1 in 200 year floodplain of the Burn of Linkwood and north eastern drain. The largest area of flooding within the site results from backwatering from a raised railway embankment within the centre of the site. Flood levels would need to reach approximately 20.5-21 m AOD at the centre of the site before water could overtop the embankment. The flood map shown in Figure 10 indicates that the proposed development is located out with the 200 year floodplain extent.

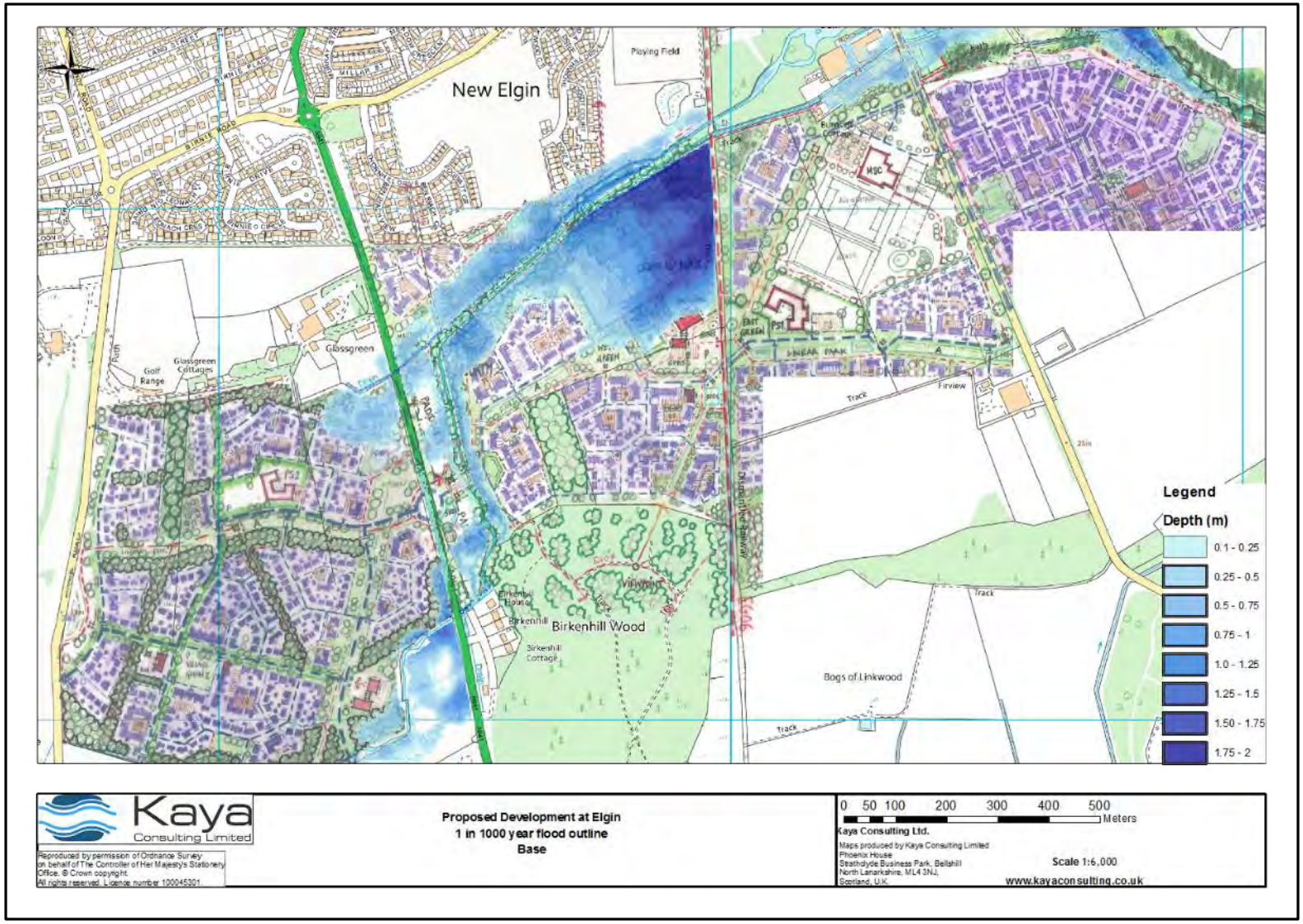
Due to the number of crossings and the effect that the dismantled railway has on water levels at the site a number of sensitivity runs have been undertaken including a 50% blockage to all structures. Results of this assessment are provided in Table 10 which details predicted flood levels throughout the site.

The development masterplan proposes two primary schools and one leisure development located within the site boundary. SPP and the local development plan defines such developments as critical infrastructure indicating that they should not be at risk of flooding for return periods up to the 1000 year event. As a result, a 1000 year design run has been undertaken using the Burn of Linkwood mathematical model.

A flood map for the 1000 year event is provided in Figure 15 below. The map shows increased flooding to low lying areas close to the Burn of Linkwood and upstream of the A941, at the north west drain. However, no areas of critical infrastructure are predicted to flood.

Potential flood management measures are discussed in Section 7.7.

Figure 15: 1 in 1000 year flood map



7.2 Risk of flooding from the north west drain

A small drain forms part of the north west corner of the site. The drain channel rises within a field boundary before flowing along the northern boundary, under the A941 before discharging into the Burn of Linkwood.

A 1D mathematical model of the drain was constructed using Flood Modeller Pro software. A steady state analysis was used to assess 200 year flood risk at the site using an inflow calculated from Section 4 and a downstream boundary set to 20.7 m OD which is based on the results of the 1D-2D linked model of the Burn of Linkwood.

Model results indicated that flood waters in the channel are dictated by river levels in the Burn of Linkwood channel. However, based on a level of 20.7 m OD, flood waters are not predicted to overtop the channel and flooding of the site is not predicted from the north west drain

7.3 Risk of flooding from the south west drain

The drain located within the south west corner of the site forms part of the southern boundary of the site. The channel enters the site through a small culvert under a local road and flows eastwards, entering a culvert under an agricultural crossing, before eventually discharging into Burn of Linkwood, see Figure 4 in Section 3.

The 1 in 200 year flow in the south west drain was estimated using the Flood Estimation Handbook (FEH) Rainfall-Runoff method. The estimated 1 in 200 year un-attenuated flow (i.e., not considering the effect of any upstream culverts) calculated to enter the site was approximately 0.75 m^3/s.

Based on site topographical survey a large embankment separates the site from the channel upstream of the agricultural crossing, the embankment discontinues approximately 80 m downstream of the crossing. The embankment is raised significantly above the channel (around 3 m above the bed of the channel); hence, based on the significant height of the embankment and as flood waters in watercourses of this nature and size would normally not rise by more than 1-2 m, flooding to the site in this reach of the drain is not predicted.

Downstream of the high embankment, the main channel has been measured to be around 5 m wide and around 1.5-1.2 m deep. Using a simple and conservative application of Manning’s Equation, assuming a channel bed slope of 0.001 and Manning's n roughness of 0.045, it was estimated that the 1 in 200 year flood flow can be passed within the 5 m wide channel at a depth of around 0.9 m.

In addition, the Burn of Linkwood has also been modelled adjacent to the confluence with the south west drain. Peak water level output from the model reached 27.9 m OD for the 200 year and 27.9 m OD for the 200 year plus climate change levels. Based on channel topography flood waters at the junction would not be predicted to overtop the channel.

Based on the above, the drain is not predicted to exceed the capacity of the channel and cause flooding to the site.

7.4 Surface water runoff from adjacent land

Catchment analysis was carried out for the area surrounding the site using Ordnance Survey mapping and Global Mapper GIS software.

Surface water from the north of the site would flow in a southerly direction towards the site and into the Burn of Linkwood, flowing along northern boundary of the site.

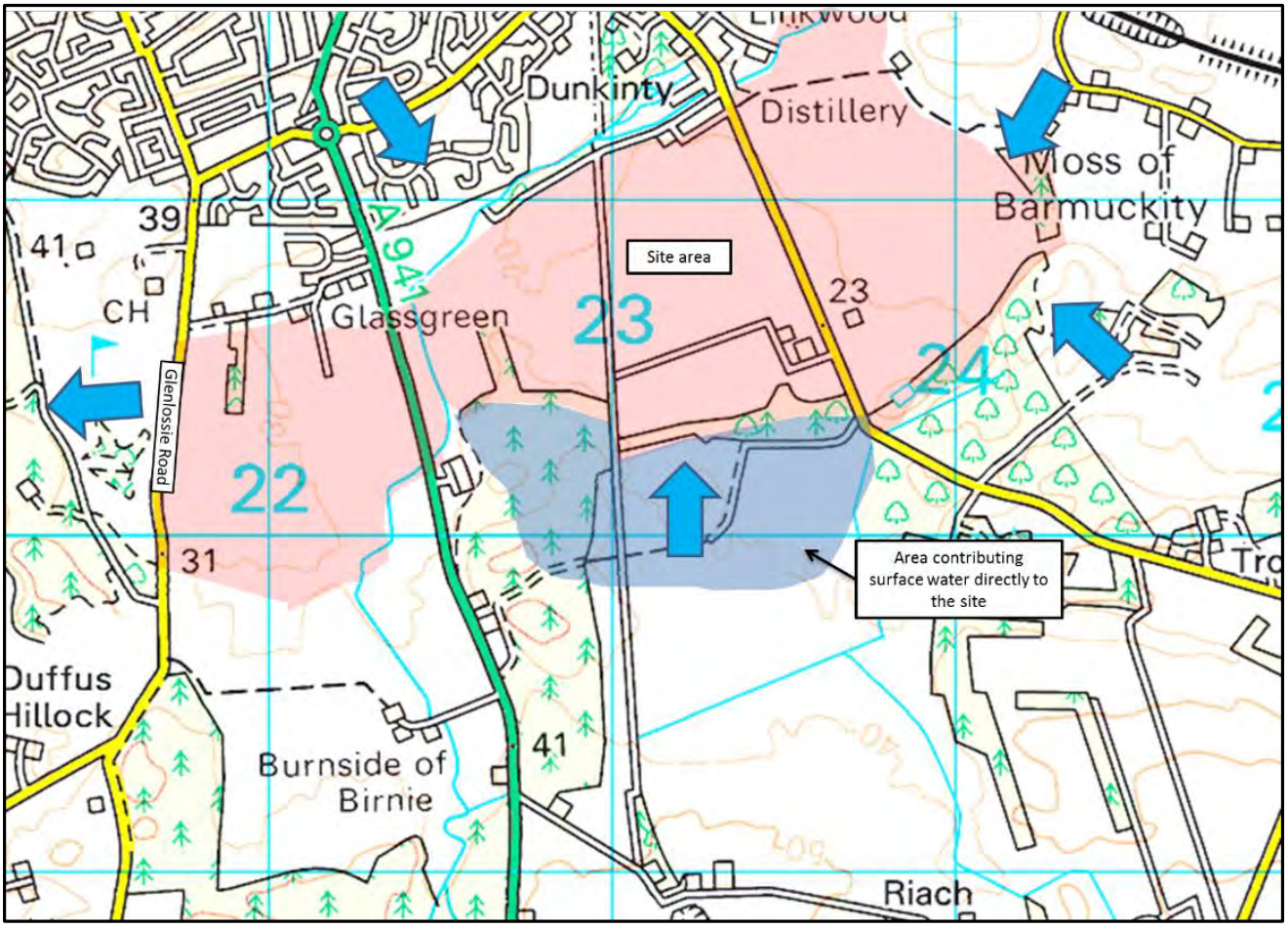
Surface water from the east of the site flows in a westerly direction and into the north east drain which flows along the eastern boundary of the site.

The A941 bounds the site to the west, the road represents a local high point and surface water to the west of this road would flow in a westerly direction and away from the site. Surface water to the south west of the site enters the channel network and runs along the western sections of the southern boundary and into the site.

The majority of the land to the south of the site drains into the channel network for the drain which eventually flows along the eastern boundary of the site. There is an area to the south of the centre of the site that would contribute surface water to the site itself. This area was calculated to be approximately 31ha and is shown in Figure 16. Upon entering the site, the surface water flow pathways would take the water in a northerly direction before discharging into the Burn of Linkwood.

Runoff from this area will need to be considered in the site layout, with runoff either taken into the site drainage system, or routed around the edge of the site and taken to the Burn of Linkwood. However, given the relatively small area of land and the fact it is distributed along the edge of the site, the site is not considered to be at significant risk from surface water runoff, with appropriate mitigation measures in place. These mitigation measures can be designed at the detailed planning stage.

Figure 16: Indicative surface water pathways draining towards the site. Area outside of the site with the potential to contribute surface water runoff ingress is shown in blue.



7.5 Groundwater

There is no information on groundwater levels in the area at present. However, as the majority of the site sits at a higher level than surrounding land and local watercourses, the site is not considered to be at significant risk of groundwater flooding. Close to the Burn of Linkwood it is assumed that groundwater levels will be controlled by the water level in the river.

Historical mapping of the area indicates small pockets within the western area of the site to comprise of vegetation related to poor drainage. In addition, Bog of Linkwood is located close to the south of the site and Moss of Barmuckity is located to the east, such names suggest that there may be areas of poorly drained soils within or adjacent to the site.

If elevated groundwater levels are observed during site investigations and construction, then appropriate measures would need to be taken with regards to the design of appropriate types of foundations and SuDS measures will need to take account of ground water conditions.

7.6 Site Drainage

Design of the site drainage system (including SuDS) was not part of this commission.

As the site is greenfield, development will increase the surface runoff rates from the site. As a result, surface water runoff will need to be attenuated to greenfield rates before being discharged to watercourses. Requirements and designs for any SuDS at the site will need to be agreed with the local council, SEPA and Scottish Water (if required). Generally, most councils would look for a greenfield runoff rate of 5 l/s/ha.

7.7 Flood Management Measures

Development is proposed within a 2.05 km^2 site located to the south of Elgin between Elgin Golf Course to the west and Moss of Barmuckity to the east. The site is comprised of agricultural land with small pockets of woodland.

There are a number of watercourses which run through and in close proximity to the site. The Burn of Linkwood is the largest watercourse in the area and runs through and along part of the northern boundary of the site. There are three small drains, which are tributaries of the Burn of Linkwood, and run through and in close proximity of the site before discharging into the main channel along the site boundaries.

A 1D-2D mathematical model was constructed and used to assess the risk of flooding to the site from the Burn of Linkwood, model results are presented in Section 5 with a 1 in 200 year flood map provided in Figure 10.

In accordance with the Risk Framework of SPP, areas within the 200 year floodplain are not normally suitable for development. Those areas out with functional floodplains may be suitable for most type of development, with more stringent conditions applying for sensitive developments such as hospitals, doctor's surgeries, care homes, children's nurseries, etc. The study indicates that most parts of the proposed development site lie outside the predicted functional floodplain of the watercourses and may be suitable for development. Model runs were also undertaken for the 1 in 1000 year event and critical infrastructure (such as schools) should not be at risk from this event.

There are three significant watercourse crossings within the site; the A941, a disused railway embankment and the Linkwood Road crossing. A sensitivity analysis was undertaken which included the effect of climate change and also to assess the effect of a 50% blockage to all structures. The results of the sensitivity assessment indicated that the increase of climate change increased water levels throughout the model but the effect of blockages resulted in local increases in water levels of up to 0.3 m at the road crossings and up to 2 m at the disused railway embankment. Based on this it is recommended that Finished Floor Levels are raised 0.6 m above the 200 year plus climate change or the 200 year plus 50% blockage level, whichever is the highest. A table showing the resultant highest water level of both scenarios are provided in Table 12 below. A column showing the 0.6 m free board is also provided.

Table 12: Combined maximum stage (maximum of 200 year + climate change event and 200 year + 50% blockage event) including suggested FFL based on 0.6 m free board

Cross section	Combined maximum stage (m AOD)	200 year plus 0.6m free board (m AOD)
KC6	27.90	28.50
KC5	27.50	28.10
KC4	27.20	27.80
KC3	27.00	27.60
KC2	26.60	27.20
KC1	26.30	26.90
BL1	25.90	26.50
BL2	25.91	26.51
BL3	25.00	25.60
BL4	24.00	24.60
BL5	23.30	23.90
BL6	23.00	23.60
BL7	22.60	23.20
BL8	22.20	22.80
BL9	21.80	22.40
BL11	21.60	22.20
BL12	21.40	22.00
BL13	21.10	21.70
BL14	20.90	21.50
BL15	20.70	21.30
BL16	20.40	21.00
BL17	20.42	21.02
BL18	20.18	20.78
BL19	20.04	20.64
BL20	20.06	20.66
BL21	16.82	17.42
BL22	16.40	17.00
BL23	16.12	16.72
BL24	15.91	16.51
BL25	15.90	16.50
BL26	15.56	16.16
BL27	15.47	16.07
BL28	14.61	15.21
BL29	14.30	14.90
BL30	14.00	14.60
BL31	13.70	14.30
BL32	13.31	13.91
BL33	13.00	13.60

BL34	12.80	13.40
BL35	12.40	13.00
BL36	12.21	12.81

A 50% blockage to the north west small drain was also undertaken; however, results indicated that water levels in the drain are controlled by the downstream boundary and would not significantly affect water levels in the channel.

Any land raising to achieve finished floor levels should be out with the 1 in 200 year floodplain and not increase the risk of flooding to others or cause ponding of flood waters that could affect other properties.

It is also recommended that no development takes place within 6 m of the banks of a watercourse for access reasons.

Ordnance Survey maps of the area show suggests areas of poorly drained land adjacent to the site. It is recommended that further information on ground water levels is collected and if elevated groundwater levels are observed during site investigations and construction, then appropriate measures would need to be taken with regards to the design of appropriate types of foundations and SuDS measures will need to take account of ground water conditions.

Ground levels outwith the site generally fall towards the site; however, due to the watercourses running along the site boundaries any surface water will be intercepted before reaching the site. Flood risk from surface water runoff is therefore low except from an area of high ground to the south of the site which could results in overland flow ingress to the site. It is recommended that any overland flow able to reach the site from this area is either intercepted or diverted to watercourses.

The design of site drainage system including Sustainable Urban Drainage Systems (SuDS) was not part of this commission. Appropriate SuDS measures agreed with planners and regulators will need to be incorporated at detailed design stage.

It is good practice to design finished floor levels an appropriate height above surrounding ground levels and arrange finished ground levels sloping away from buildings. General ground levels should be finished in a way not to allow ponding of surface water within the site where it could increase the risk of flooding of properties.

It should be noted that the risk of flooding can be reduced but not totally eliminated given the potential for events exceeding design conditions and given the inherent uncertainty associated with estimating hydrological parameters for any given site.

8 Summary and Conclusions

Development is proposed within a 2.05 km^2 site located to the south of Elgin between Elgin Golf course to the west and Moss of Barmuckity to the east. The site is largely in agricultural land with small pockets of woodland.

There are a number of watercourses which run through, and in close proximity to, the site. The Burn of Linkwood is the largest watercourse in the area and runs through, and along part of, the northern boundary of the site. There are three small drains which are tributaries of the Burn of Linkwood and both run through, and in close proximity of, the site before discharging into the main channel along the site boundaries.

A hydrological analysis was undertaken of all four watercourses within the area using FEH methodologies. The study is based on a linked 1D/2D mathematical model of the Burn of Linkwood, the drain to the north east and their associated floodplains. The model is based on the Flood Modeller Pro software package. Flood risk from the north west and south west drain were assessed separately using a short 1D model and simple Manning's equation respectively.

The 1D-2D model predicted that low lying areas upstream of the A941 road bridge are predicted to flood. Flood waters are also predicted to overtop both banks immediately downstream of the road. The dismantled railway abutments cause an impediment to flow, backing up of flows and significant flooding of the area upstream of the embankment. Adjacent to the distillery, the channel capacity reduces and overtopping of the channel is predicted. Flood waters inundate parts of the distillery before following a low lying area of land and propagating towards the north east corner of the site.

Flood waters are also predicted to overtop the channel of the small drain within the north east corner of the site. The channel is poorly defined in this area resulting in overtopping of the left bank of the channel. Flooding from this area contributes to the floodplain adjacent to the confluence of both watercourses. A 1 in 200 year flood map is provided in Figure 10.

In accordance with the Risk Framework of SPP, areas within the functional floodplains are not normally suitable for development. Those areas out with functional floodplains may be suitable for most type of development, with more stringent conditions applying for sensitive developments such as hospitals, doctor's surgeries, care homes, children's nurseries, etc.

The study indicates that the proposed development site lies outside the predicted functional floodplain of the watercourses and is suitable for development based on SPP. A 1000 year run has also been undertaken which indicates that areas of civil infrastructure are located out with the 1000 year floodplain.

The design of site drainage system including Sustainable Urban Drainage Systems (SUDS) was not part of this commission. Appropriate SuDS measures agreed with planners and regulators will need to be designed for the site.

Finished floor levels of properties should be set an appropriate height (usually 600 mm) above the predicted 200 year peak water level including climate change. In areas close to channel crossings Finished Floor Levels should be above the 200 year plus 50% blockage level, a table summarising the recommended levels is provided in Table 11.

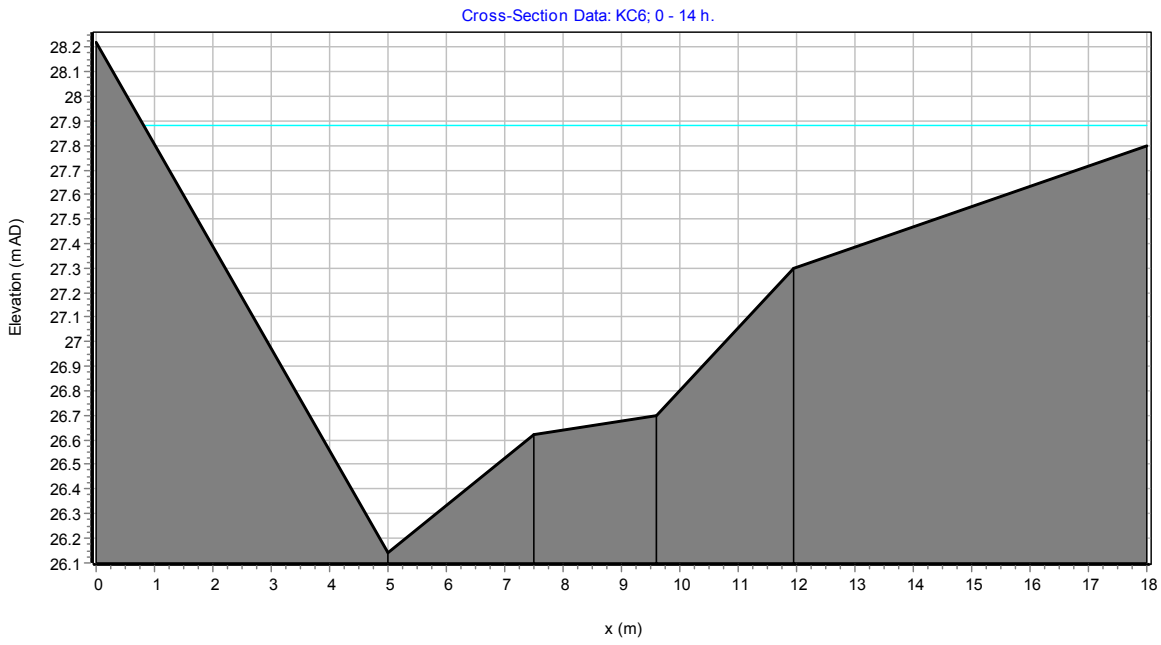
A summary of flood management measures are provided in Section 7.7.

It is good practice to design finished floor levels an appropriate height above surrounding ground levels and arrange finished ground levels sloping away from buildings. General ground levels should be finished in a way not to allow ponding of surface water within the site where it could increase the risk of flooding of properties.

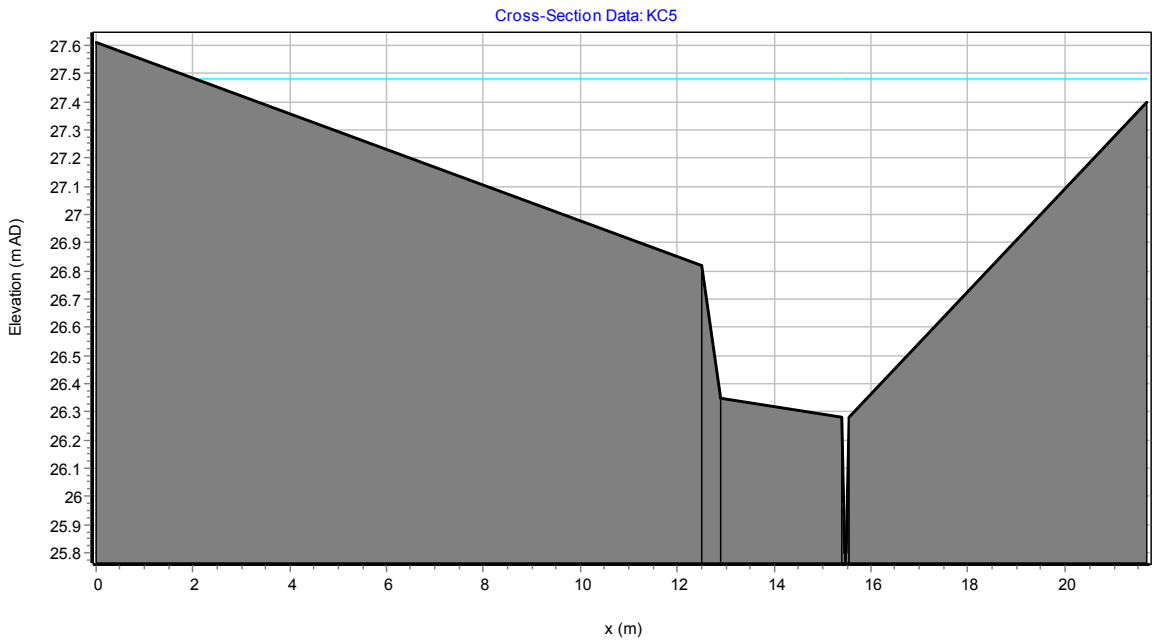
It should be noted that the risk of flooding can be reduced but not totally eliminated given the potential for events exceeding design conditions and given the inherent uncertainty associated with estimating hydrological parameters for any given site.

9 Appendices

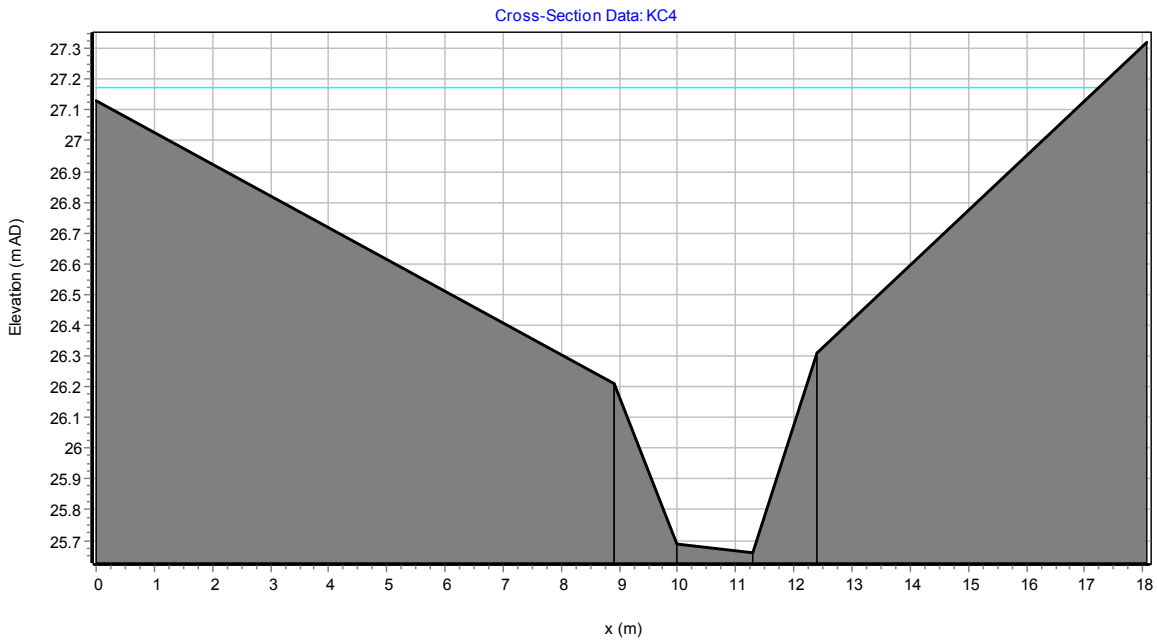
Appendix A: Cross section KC6 to BL36. Both the right and left bank are linked to the 2D domain for all the sections below.



KC6



KC5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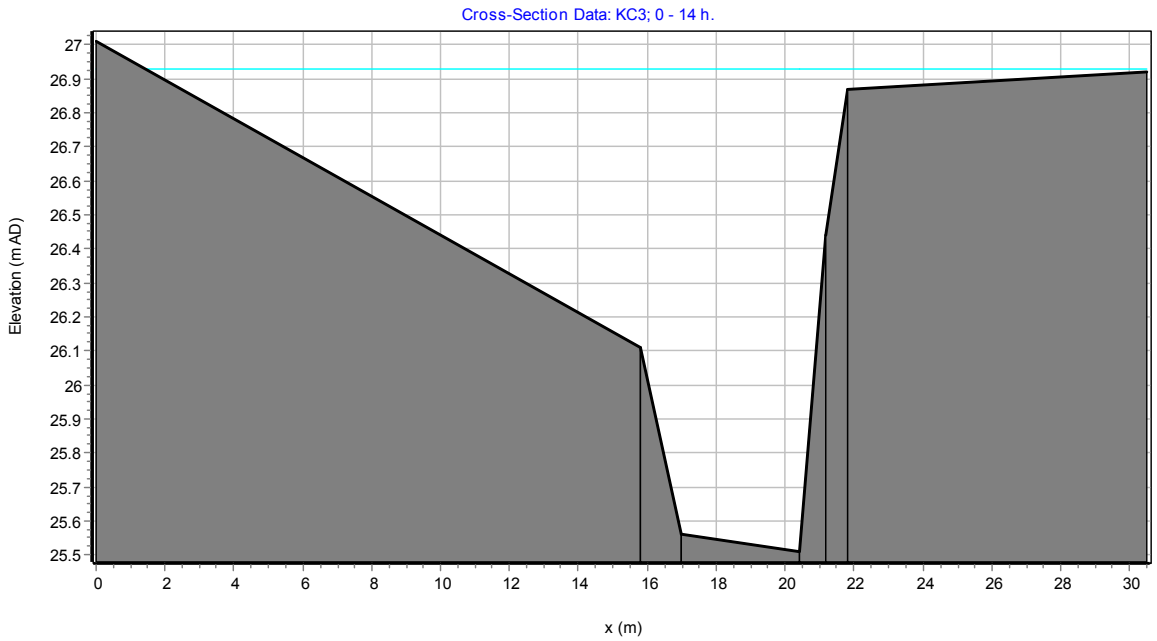
27.1
27
26.9
26.8
26.7
26.6
26.5
26.4
26.3
26.2
26.1
26
25.9
25.8
25.7
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
x (m)

KC4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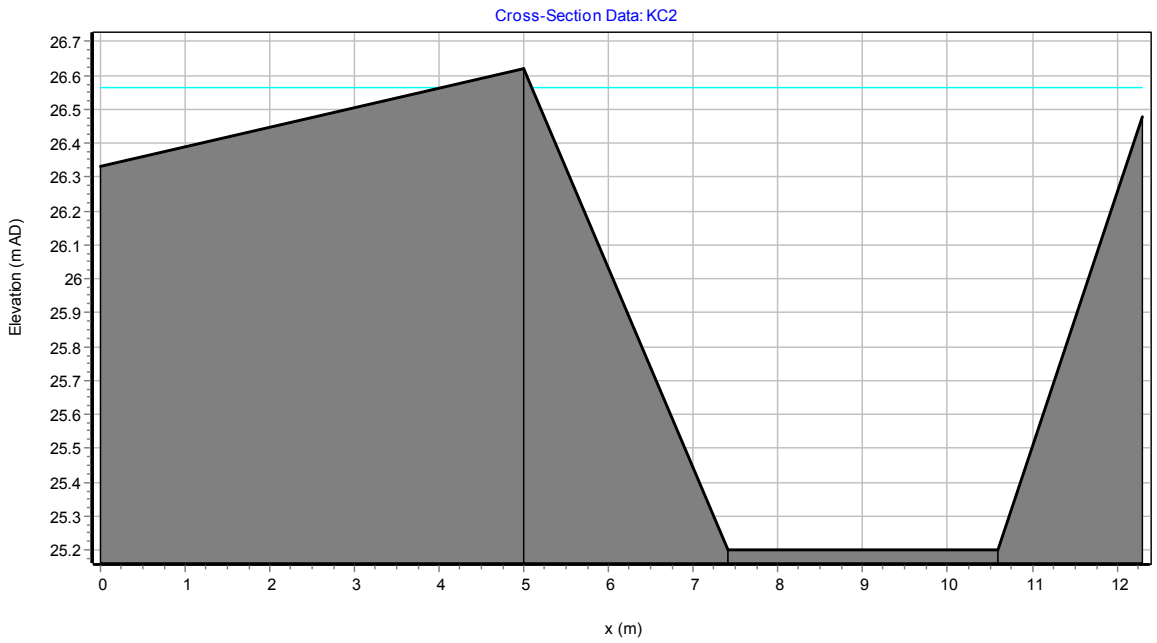
26.7
26.6
26.5
26.4
26.3
26.2
26.1
26
25.9
25.8
25.7
25.6
25.5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
x (m)

KC3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25.5
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6
7
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9
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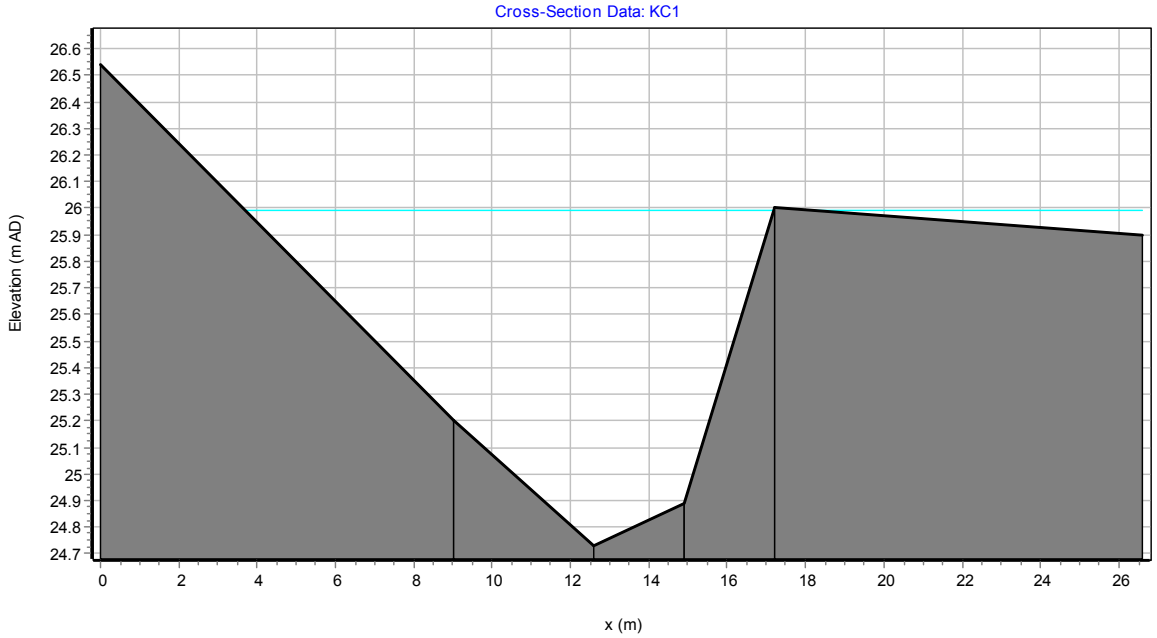
11
12
x (m)

KC2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24.9
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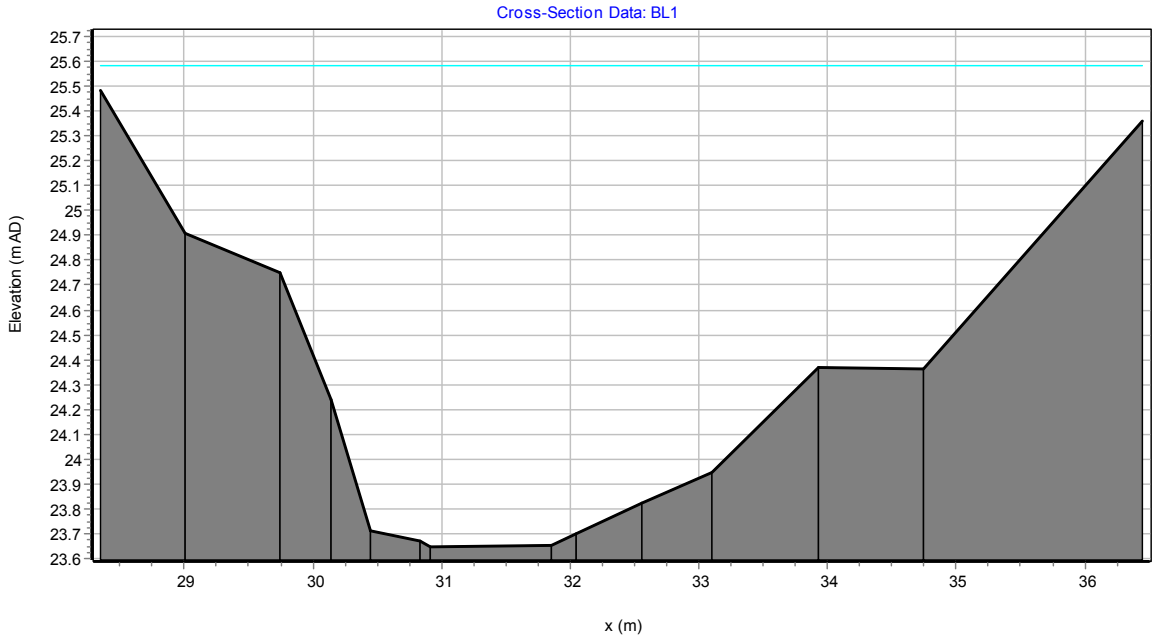
26
x (m)

KC1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24.3
24.2
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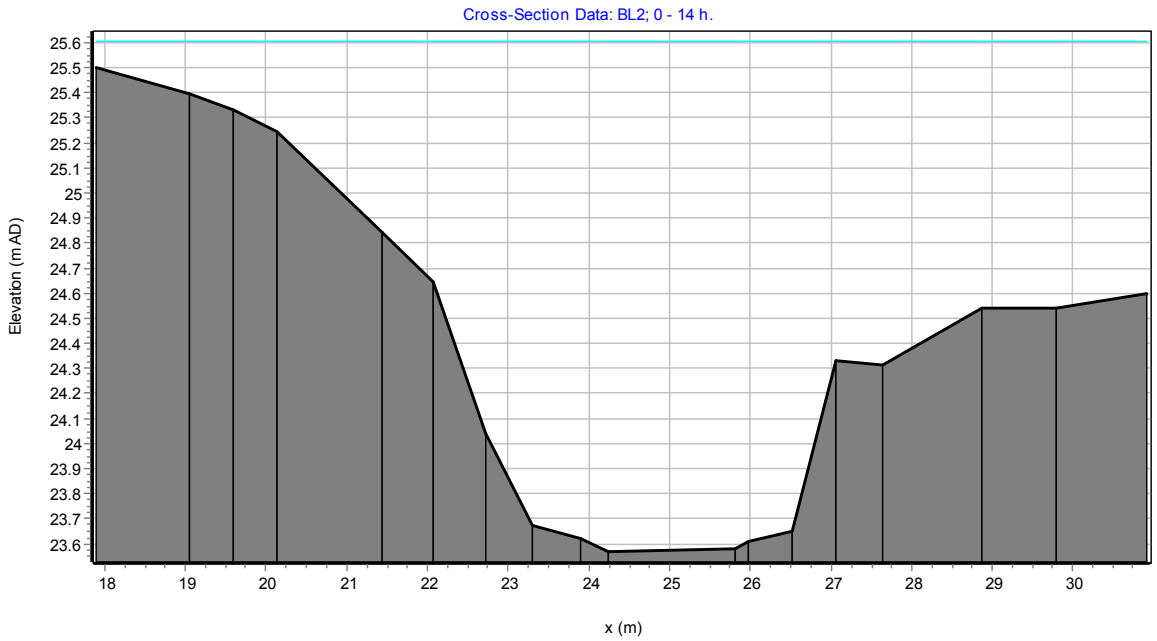
31
32
33
34
35
36
x (m)

BL1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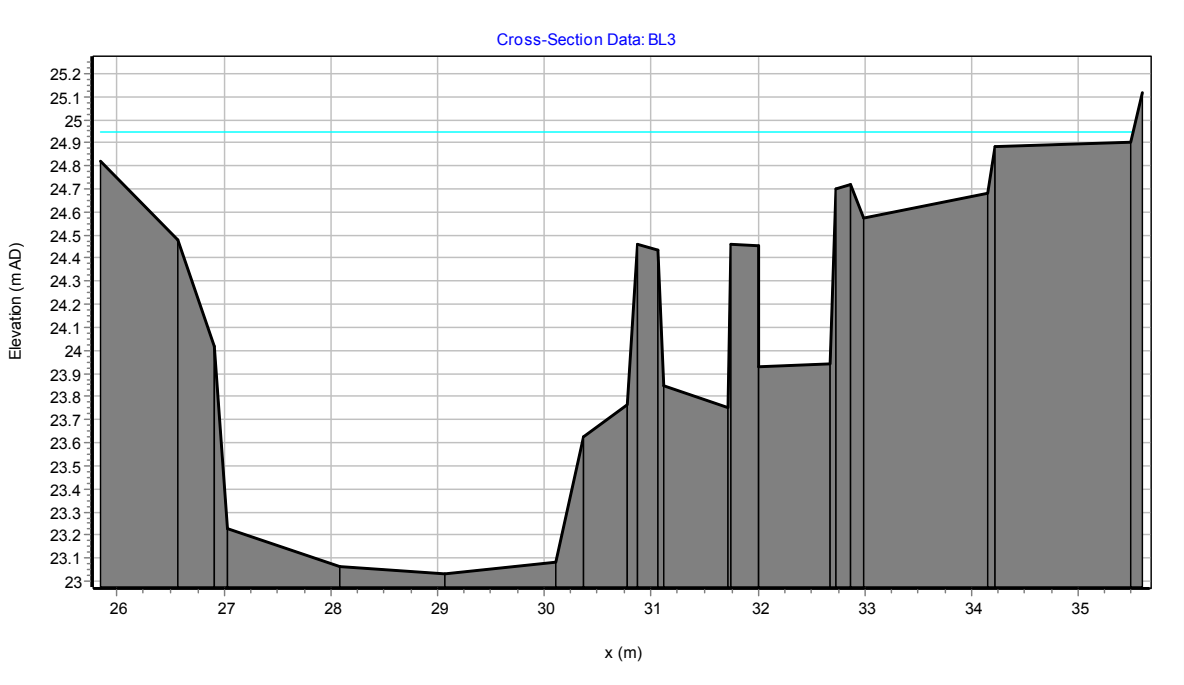
24.7
24.6
24.5
24.4
24.3
24.2
24.1
24
23.9
23.8
23.7
23.6
18
19
20
21
22
23
24
25
26
27
28
29
30
x (m)

BL2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24.2
24.1
24
23.9
23.8
23.7
23.6
23.5
23.4
23.3
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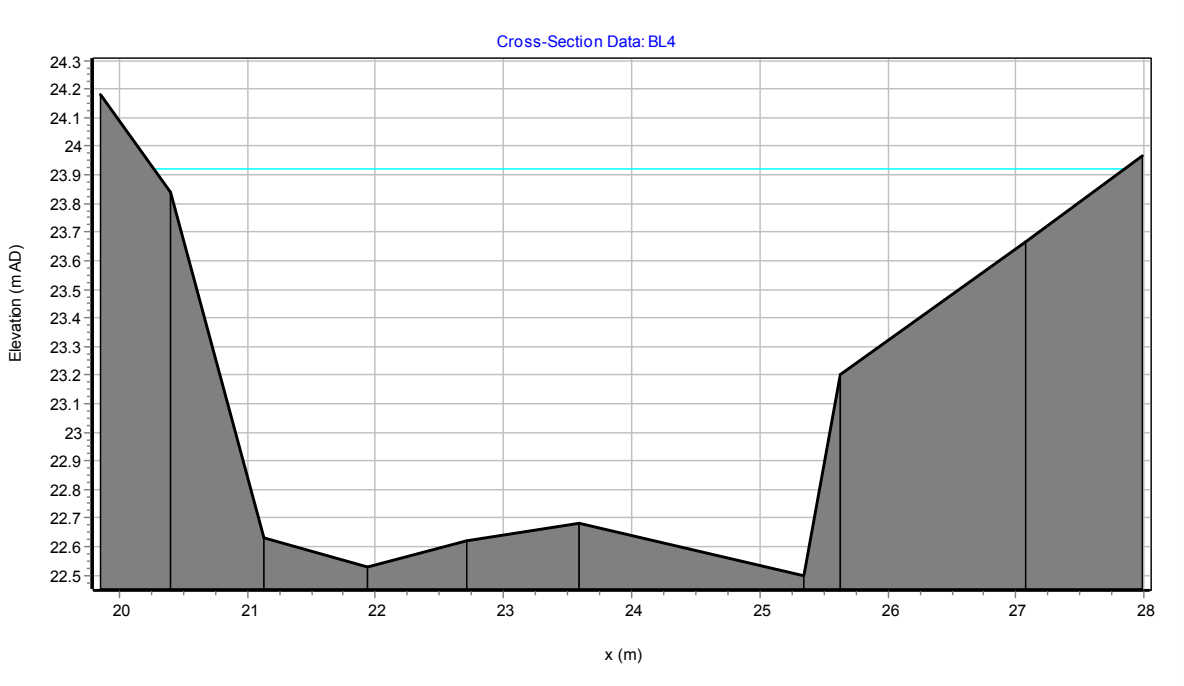
23.1
23
26
27
28
29
30
31
32
33
34
35
x (m)

BL3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23
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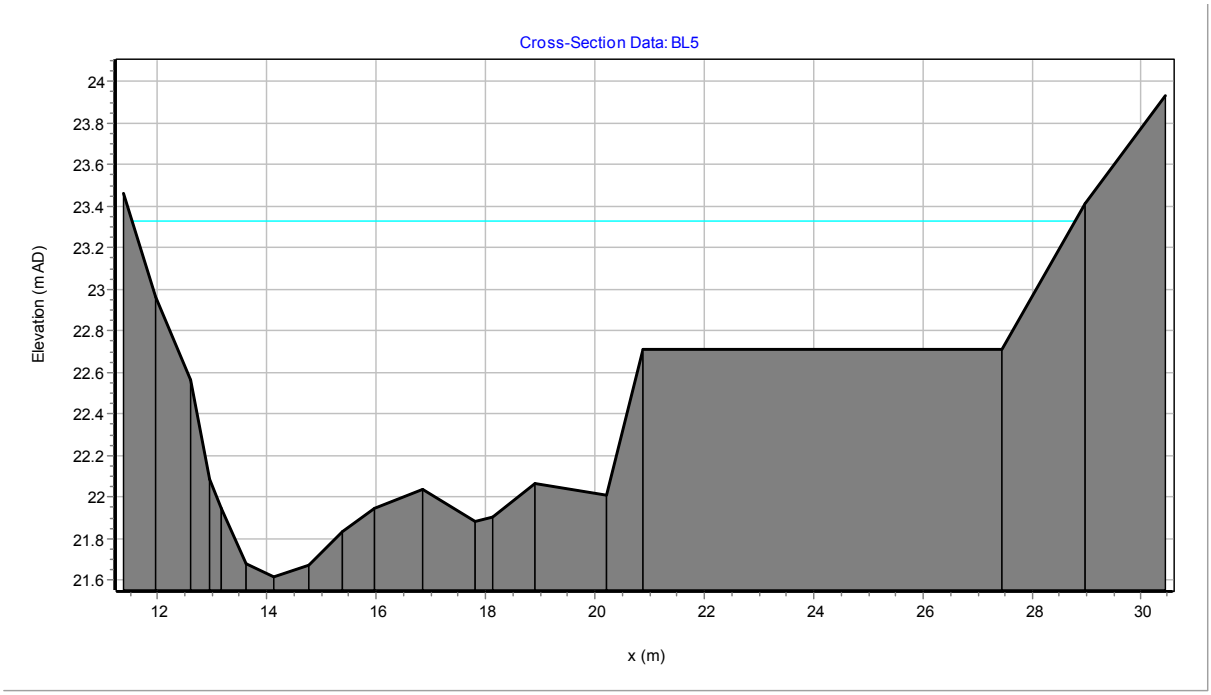
25
26
27
28
x (m)

BL4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21.6
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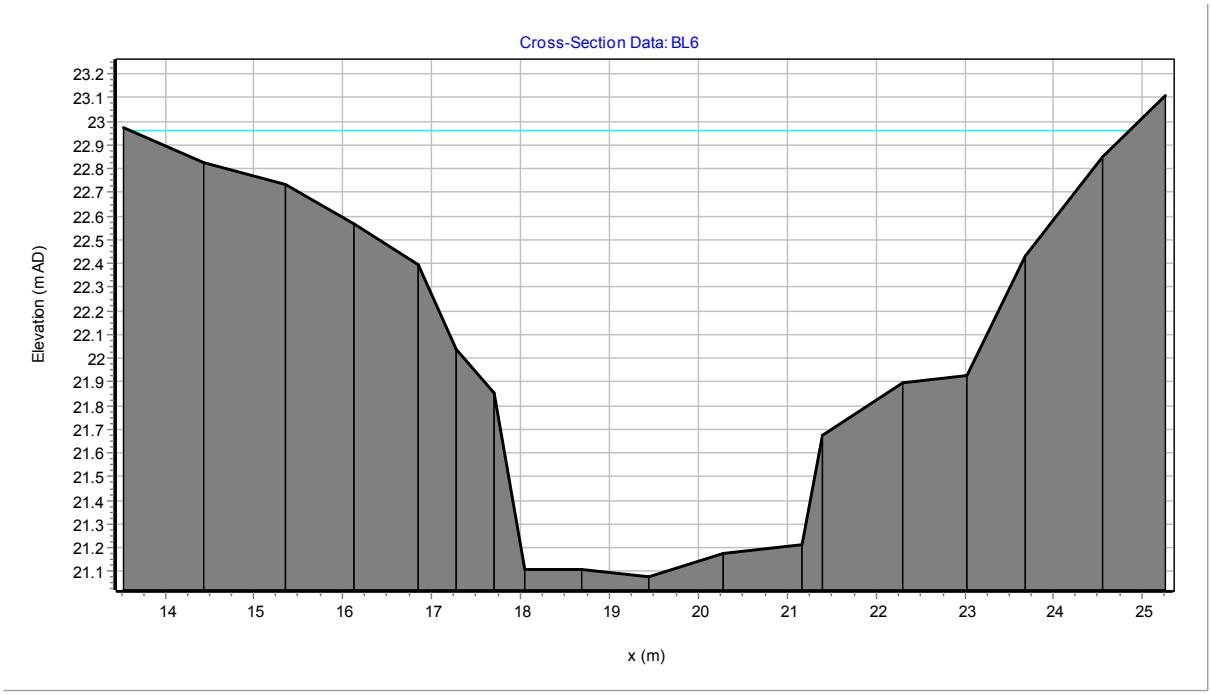
14
16
18
20
22
24
26
28
30
x (m)

BL5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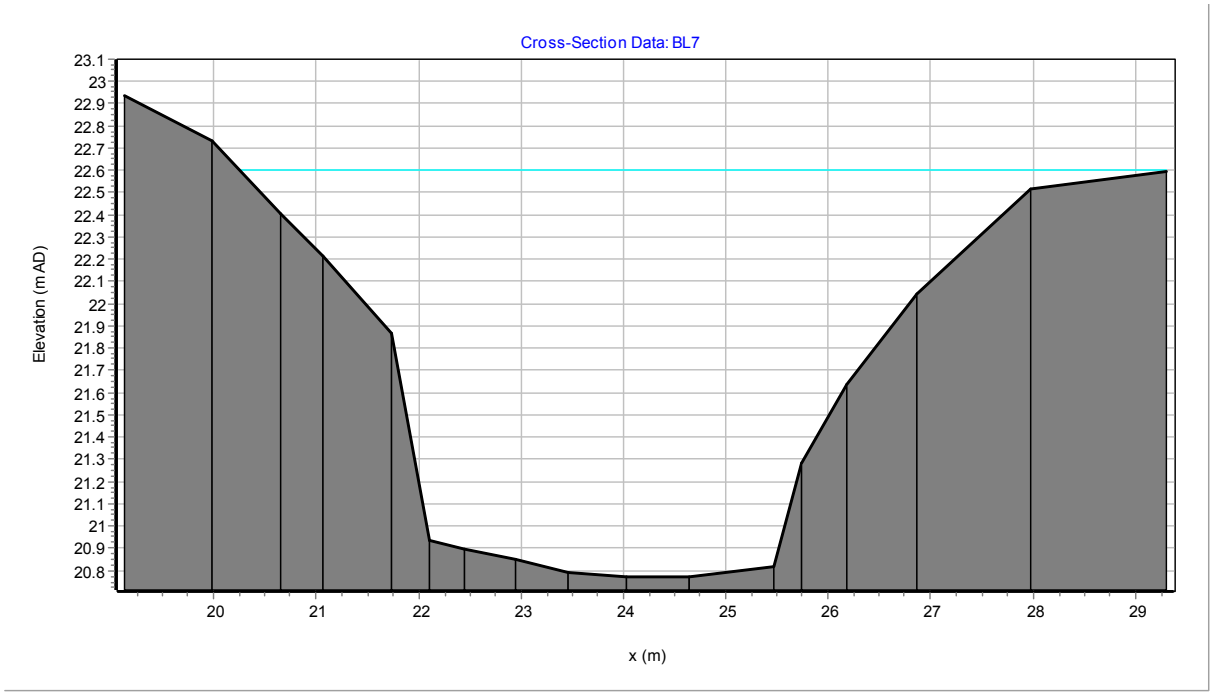
20
21
22
23
24
25
x (m)

BL6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26
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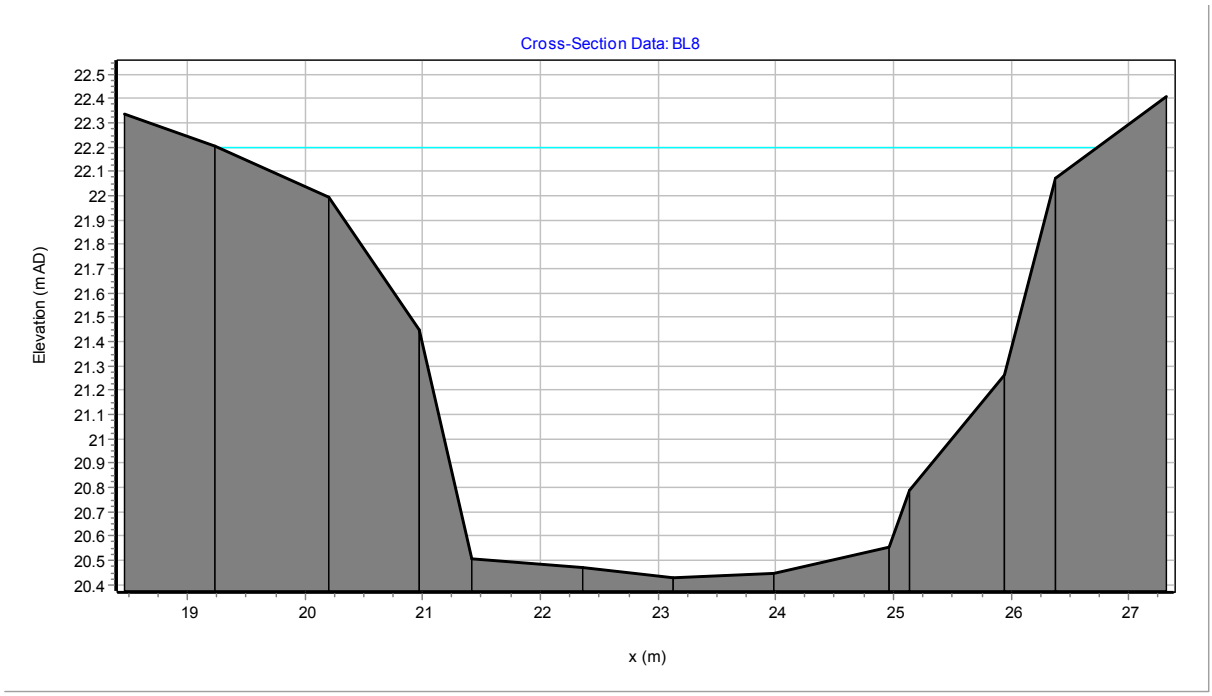
28
29
x (m)

BL7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21
20.9
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20
21
22
23
24
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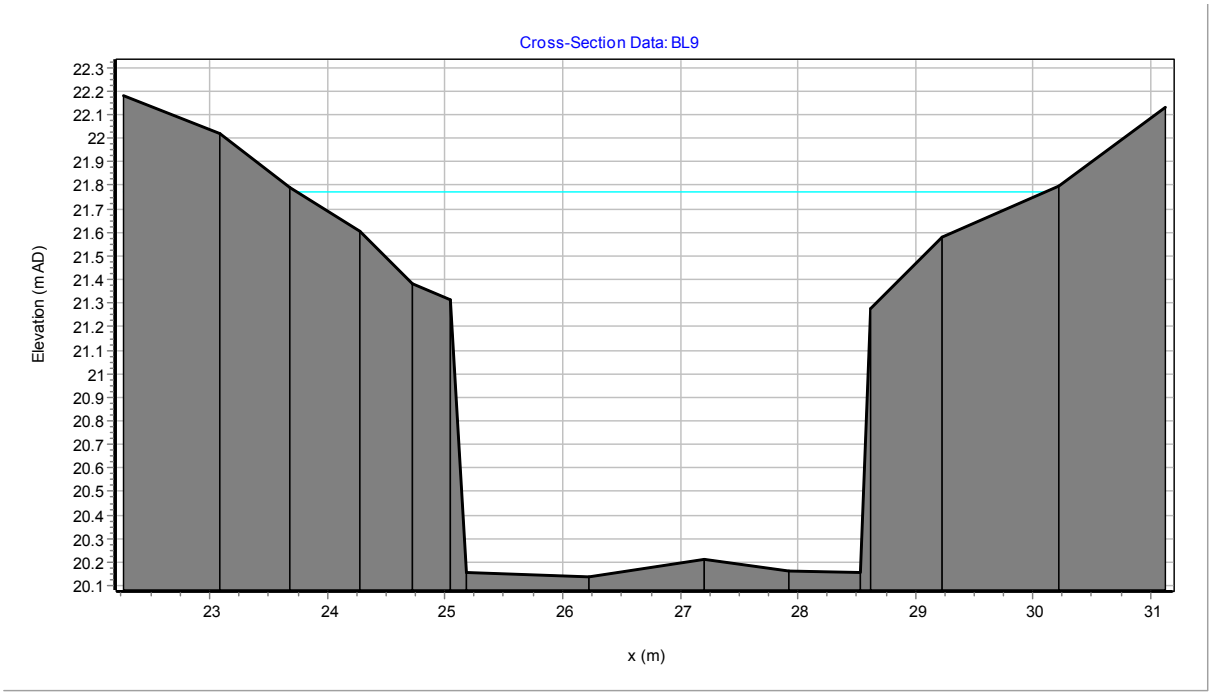
26
27
x (m)

BL8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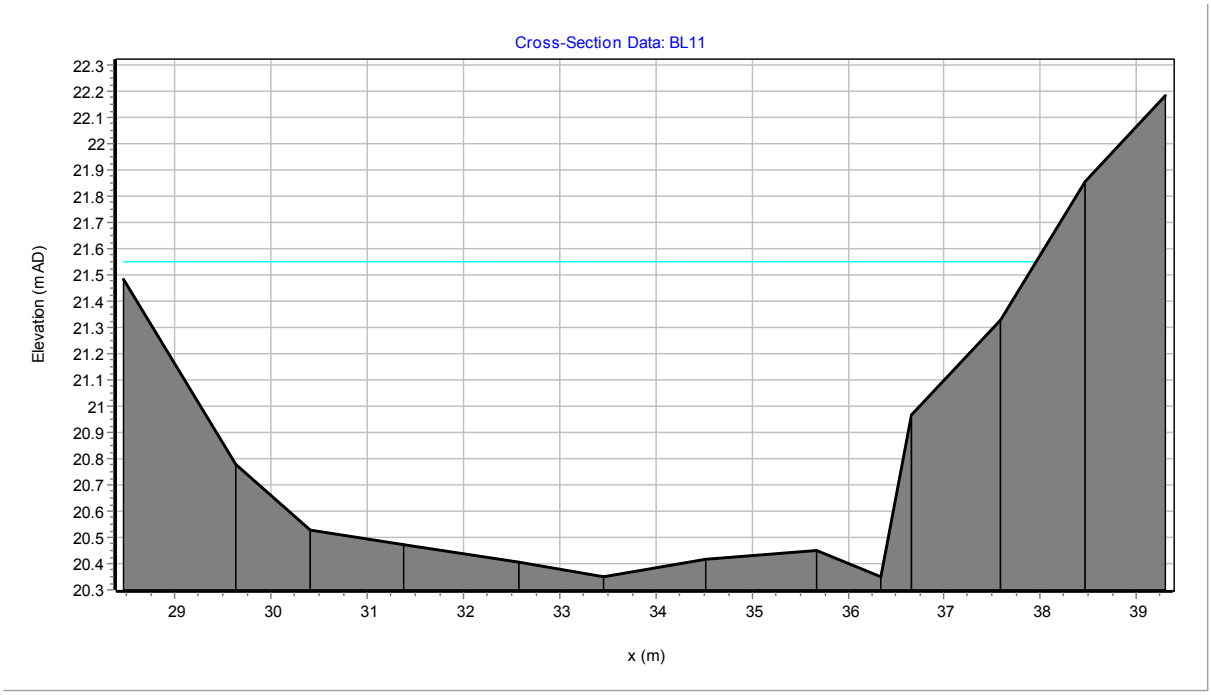
21.3
21.2
21.1
21
20.9
20.8
20.7
20.6
20.5
20.4
20.3
20.2
20.1
23
24
25
26
27
28
29
30
31
x (m)

BL9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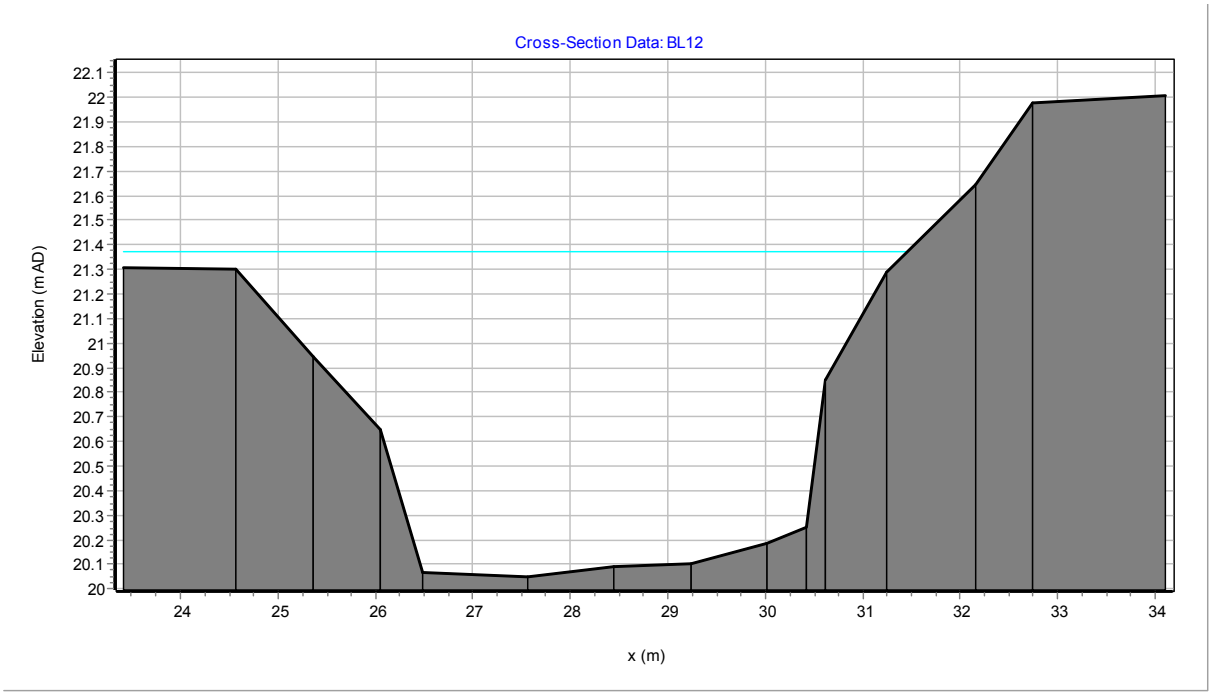
Elevation (m AD)
22.3
22.2
22.1
22
21.9
21.8
21.7
21.6
21.5
21.4
21.3
21.2
21.1
21
20.9
20.8
20.7
20.6
20.5
20.4
20.3
29
30
31
32
33
34
35
36
37
38
39
x (m)

BL11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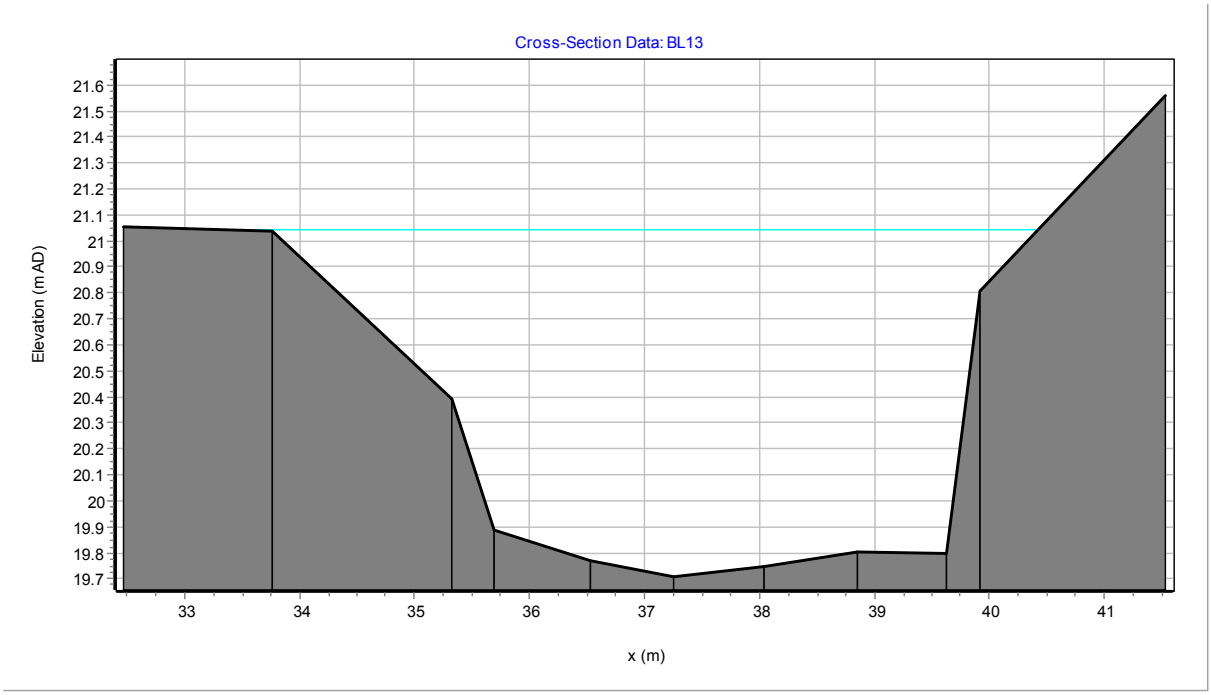
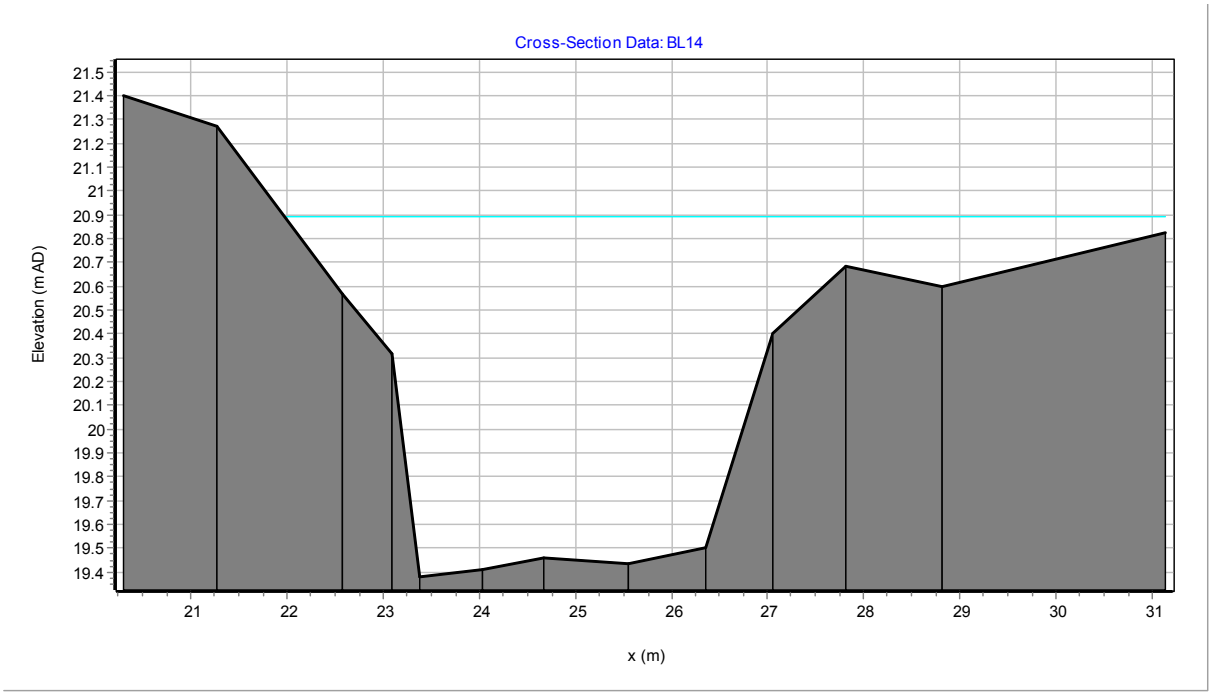
Elevation (m AD)
22.1
22
21.9
21.8
21.7
21.6
21.5
21.4
21.3
21.2
21.1
21
20.9
20.8
20.7
20.6
20.5
20.4
20.3
20.2
20.1
20
24
25
26
27
28
29
30
31
32
33
34
x (m)

BL12


Cross-Section Data: BL13
Elevation (m AD)
21.6
21.5
21.4
21.3
21.2
21.1
21
20.9
20.8
20.7
20.6
20.5
20.4
20.3
20.2
20.1
20
19.9
19.8
19.7
33
34
35
36
37
38
39
40
41
x (m)

BL13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Elevation (m AD)
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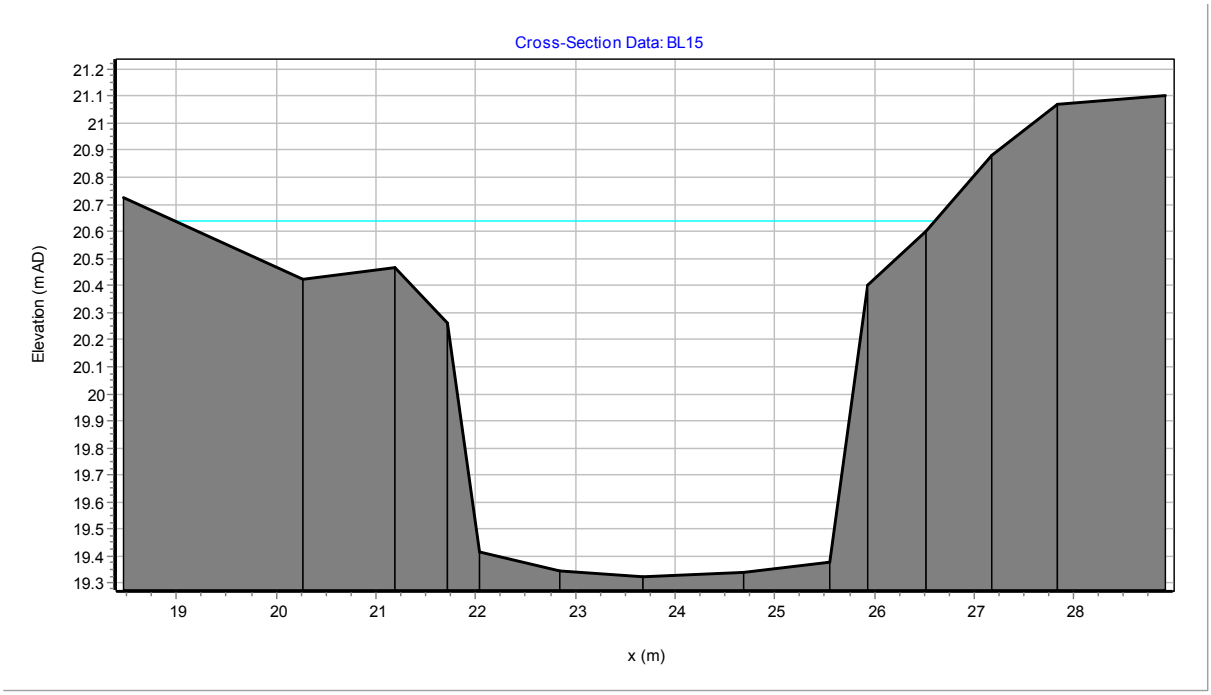
21.4
21.3
21.2
21.1
21
20.9
20.8
20.7
20.6
20.5
20.4
20.3
20.2
20.1
20
19.9
19.8
19.7
19.6
19.5
19.4
21
22
23
24
25
26
27
28
29
30
31
x (m)

BL14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Elevation (m AD)
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21
20.9
20.8
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20.6
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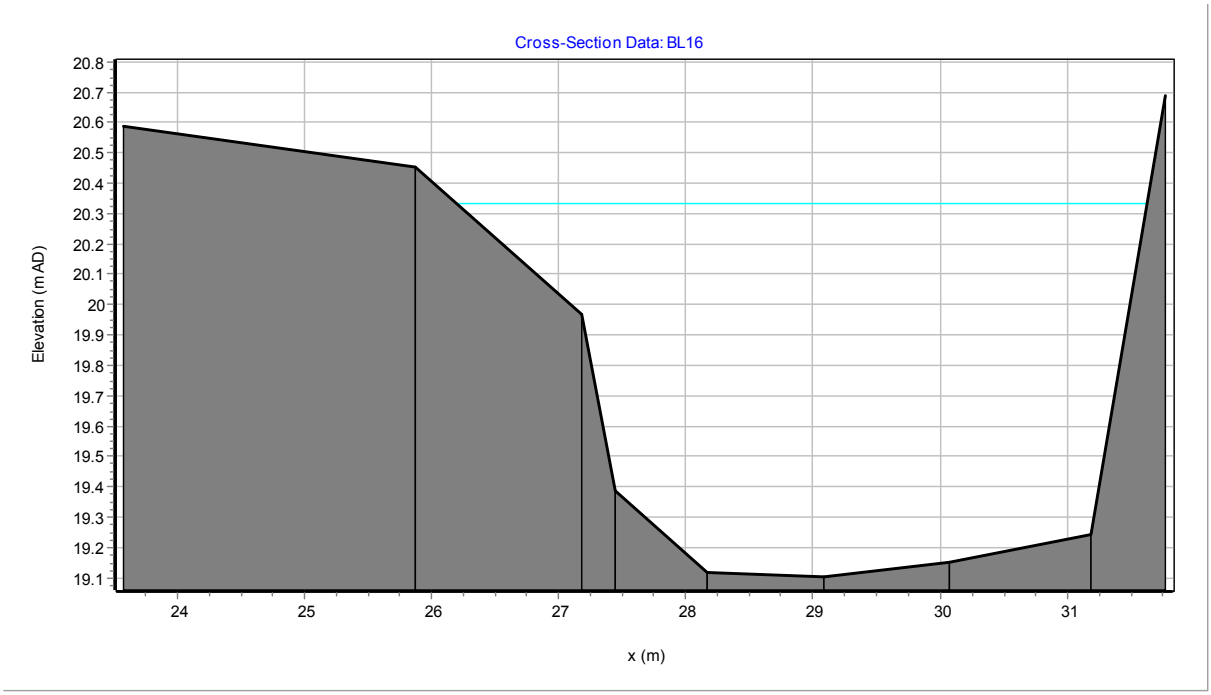
20.4
20.3
20.2
20.1
20
19.9
19.8
19.7
19.6
19.5
19.4
19.3
19
20
21
22
23
24
25
26
27
28
x (m)

BL15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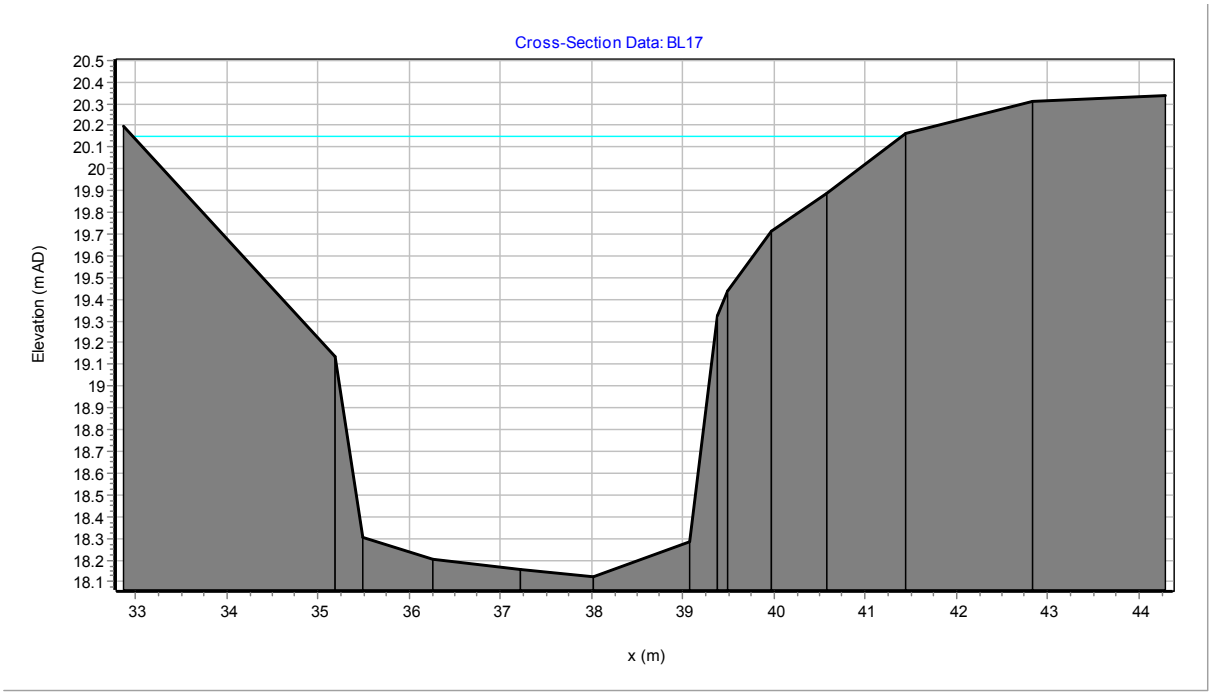
20.7
20.6
20.5
20.4
20.3
20.2
20.1
20
19.9
19.8
19.7
19.6
19.5
19.4
19.3
19.2
19.1
24
25
26
27
28
29
30
31
x (m)

BL16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Elevation (m AD)
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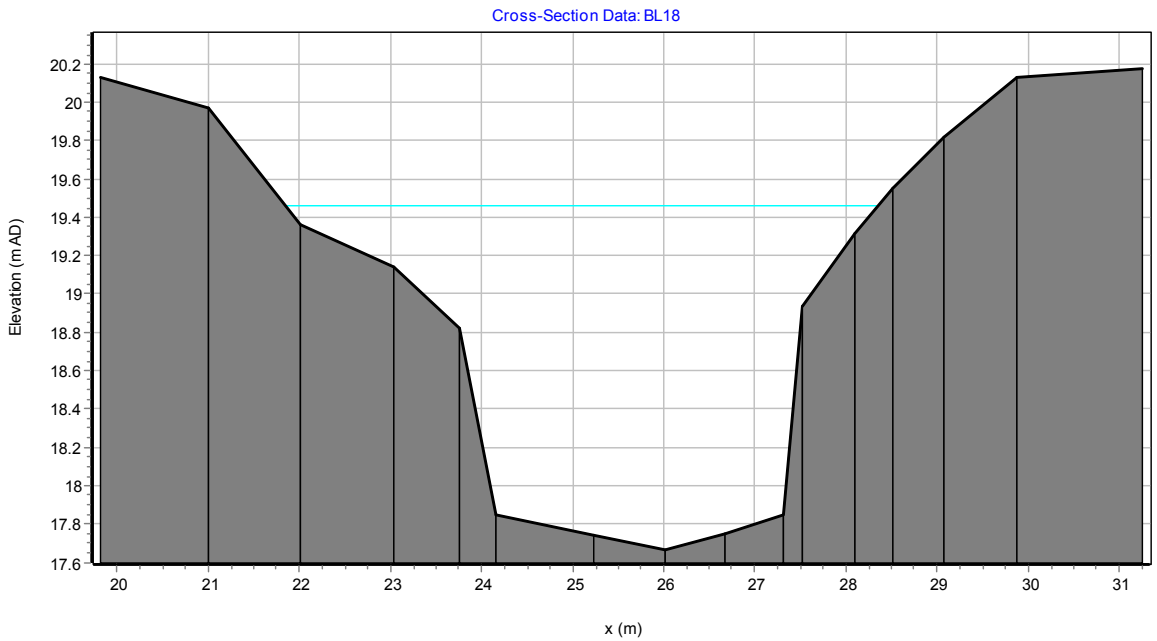
20.3
20.2
20.1
20
19.9
19.8
19.7
19.6
19.5
19.4
19.3
19.2
19.1
19
18.9
18.8
18.7
18.6
18.5
18.4
18.3
18.2
18.1
33
34
35
36
37
38
39
40
41
42
43
44
x (m)

BL17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Elevation (m AD)
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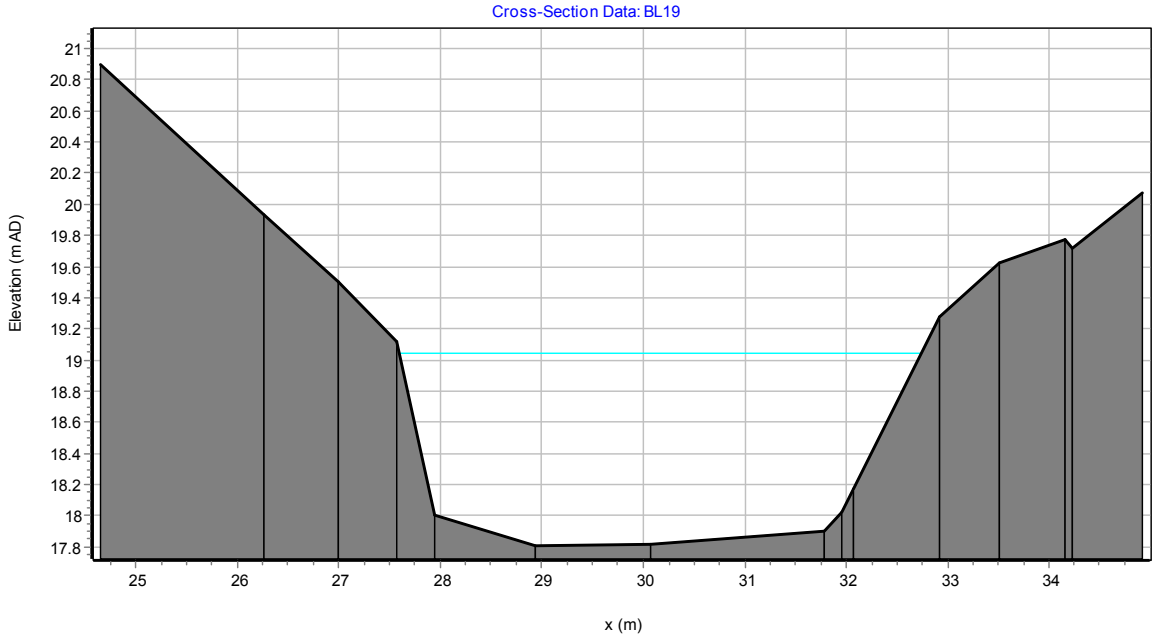
20
19.8
19.6
19.4
19.2
19
18.8
18.6
18.4
18.2
18
17.8
17.6
20
21
22
23
24
25
26
27
28
29
30
31
x (m)

BL18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Elevation (m AD)
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20.6
20.4
20.2
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19.8
19.6
19.4
19.2
19
18.8
18.6
18.4
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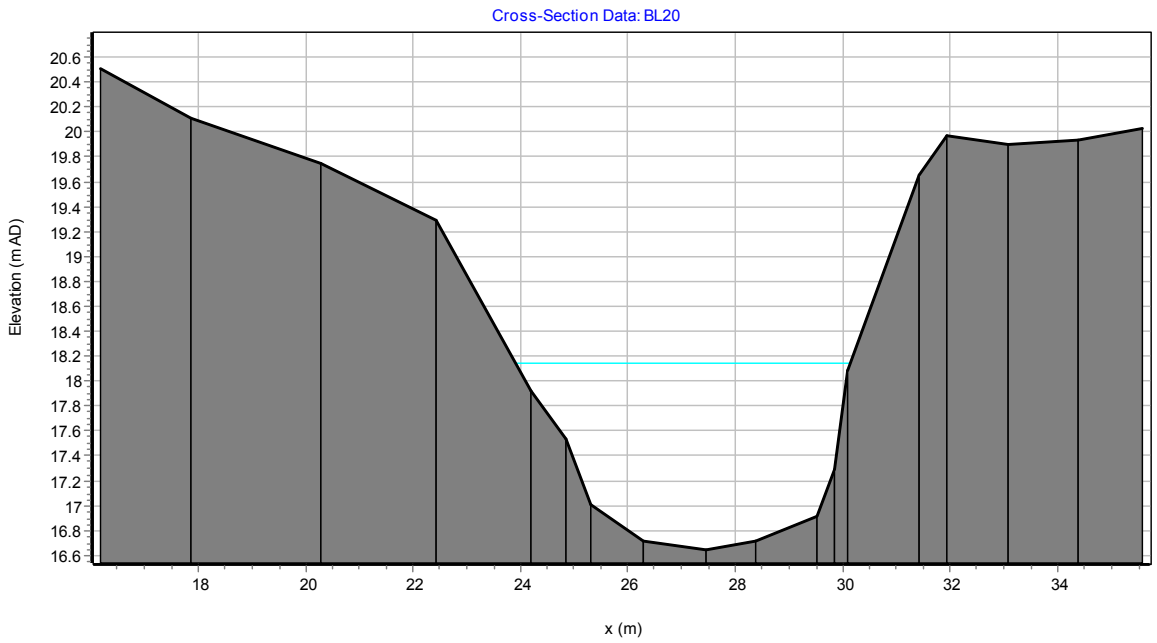
18
17.8
25
26
27
28
29
30
31
32
33
34
x (m)

BL19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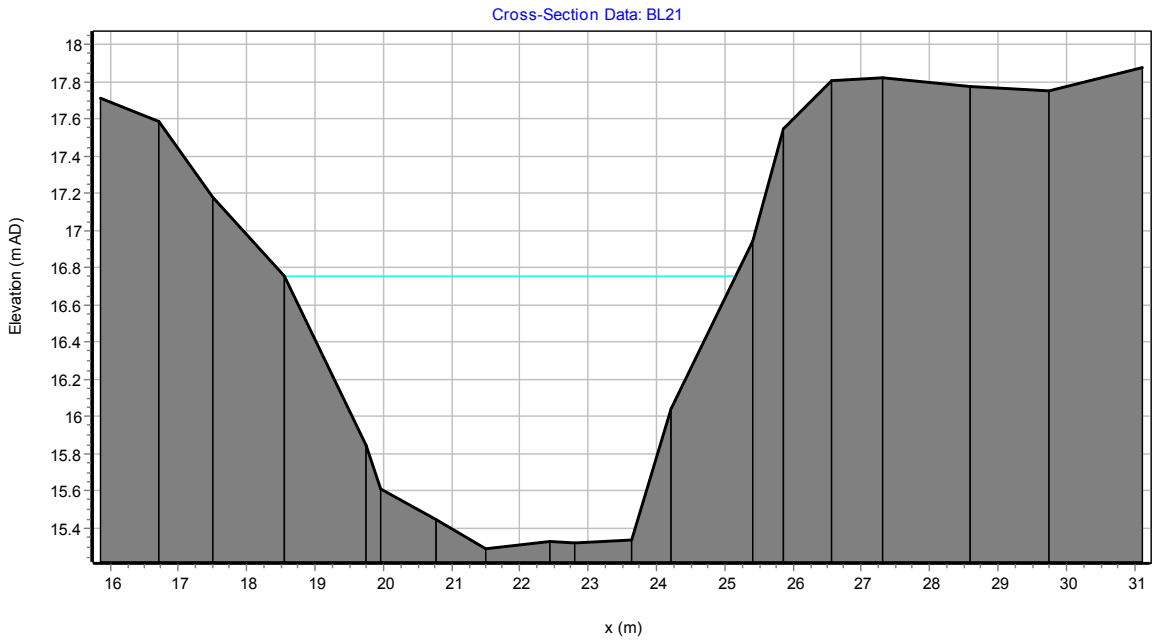
19.8
19.6
19.4
19.2
19
18.8
18.6
18.4
18.2
18
17.8
17.6
17.4
17.2
17
16.8
16.6
18
20
22
24
26
28
30
32
34
x (m)

BL20


Cross-Section Data: BL21
Elevation (m AD)
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17.8
17.6
17.4
17.2
17
16.8
16.6
16.4
16.2
16
15.8
15.6
15.4
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20
21
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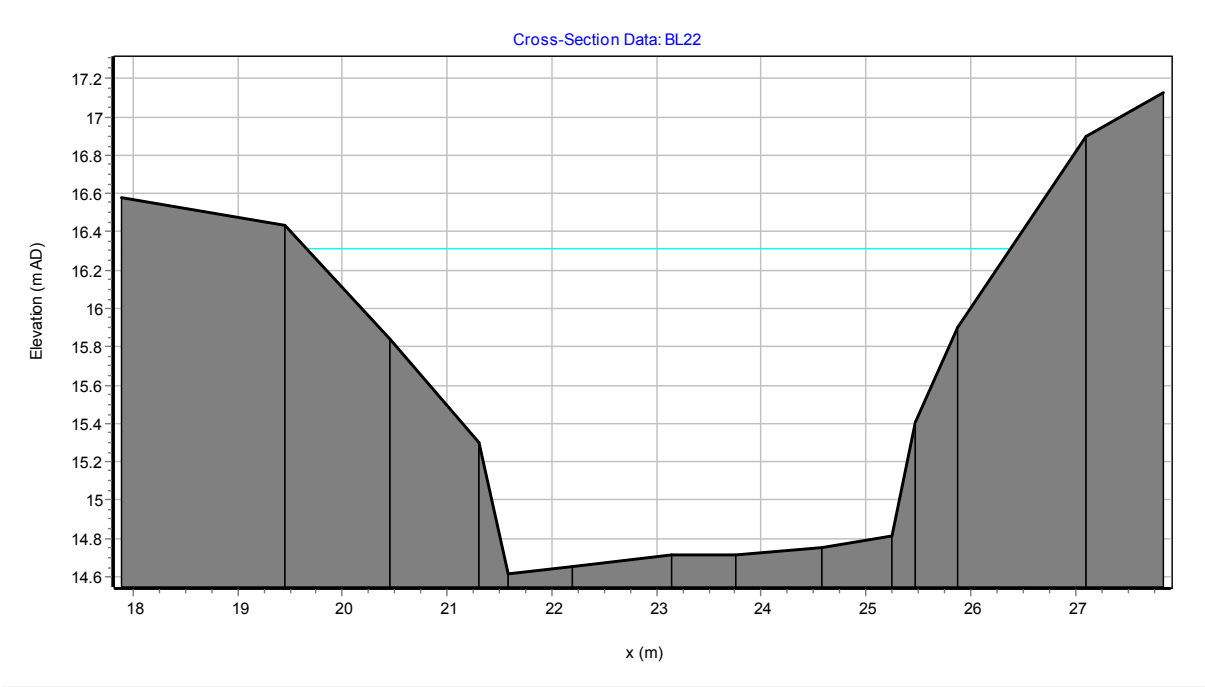
24
25
26
27
28
29
30
31
x (m)

BL21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Elevation (m AD)
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17
16.8
16.6
16.4
16.2
16
15.8
15.6
15.4
15.2
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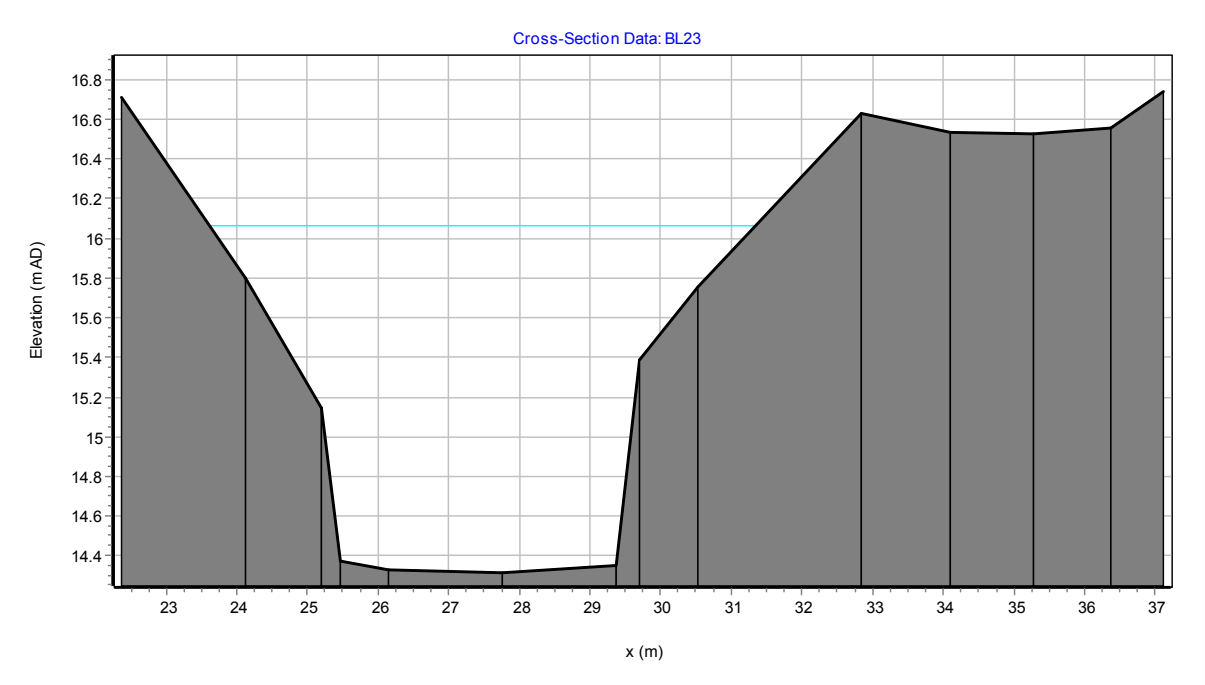
14.8
14.6
18
19
20
21
22
23
24
25
26
27
x (m)

BL22


Cross-Section Data: BL23
Elevation (m AD)
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16.6
16.4
16.2
16
15.8
15.6
15.4
15.2
15
14.8
14.6
14.4
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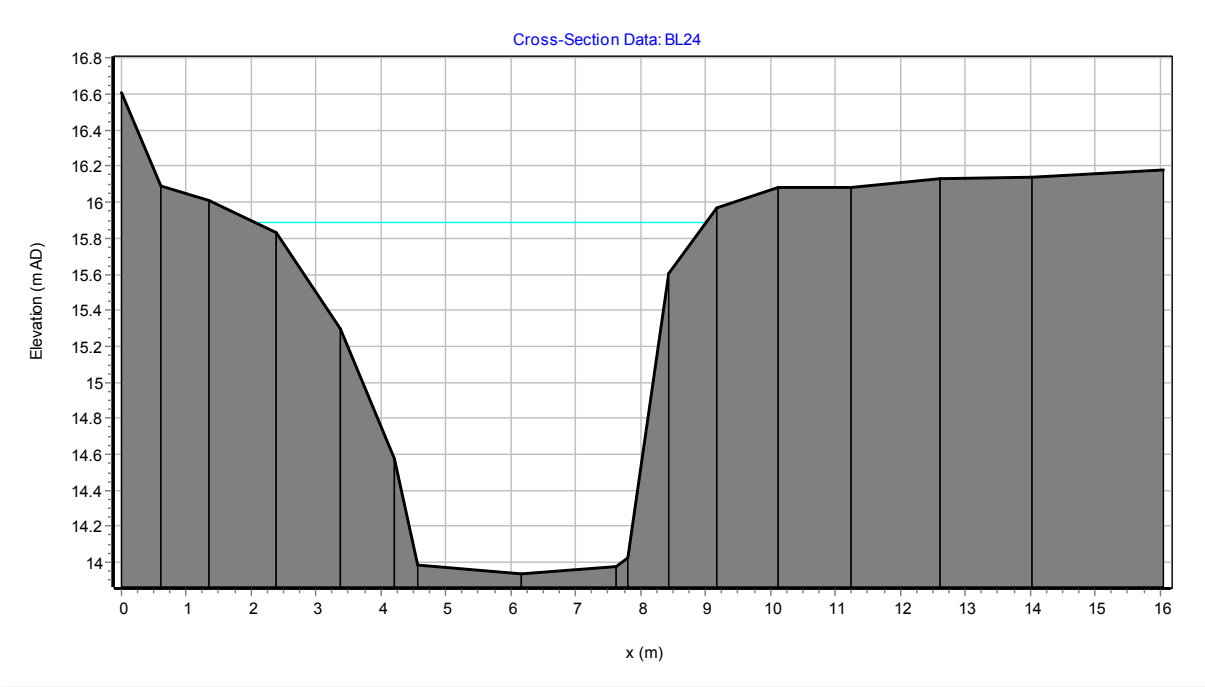
32
33
34
35
36
37
x (m)

BL23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Elevation (m AD)
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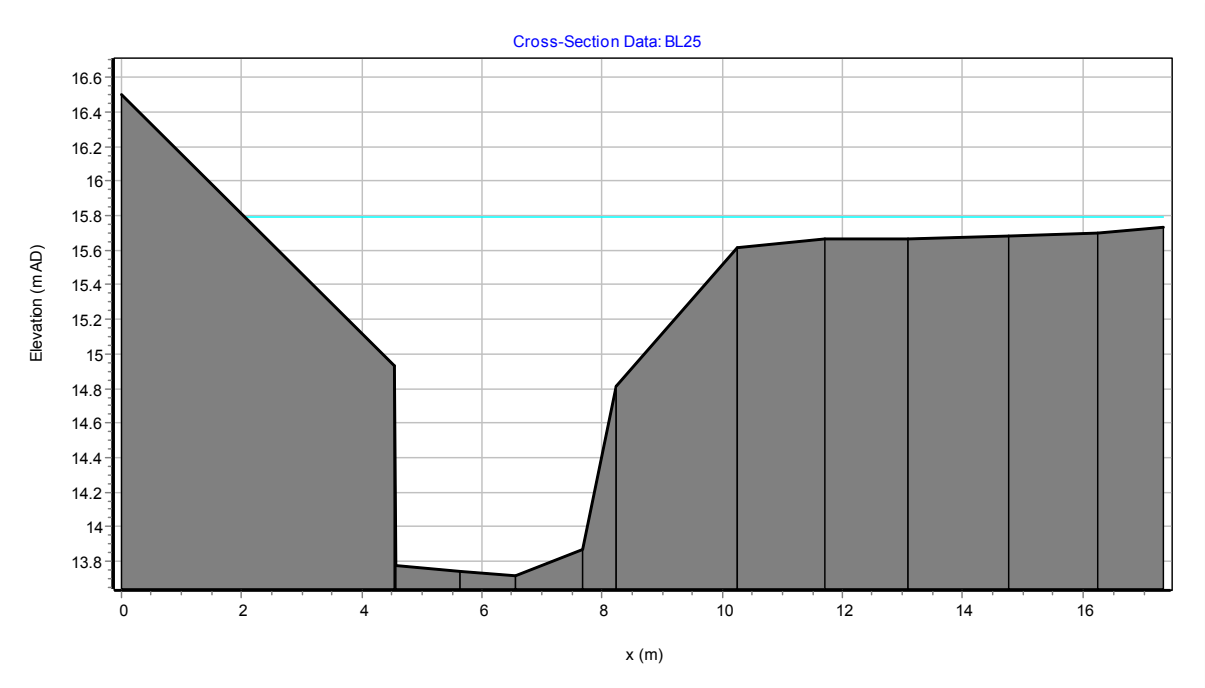
16
15.8
15.6
15.4
15.2
15
14.8
14.6
14.4
14.2
14
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
x (m)

BL24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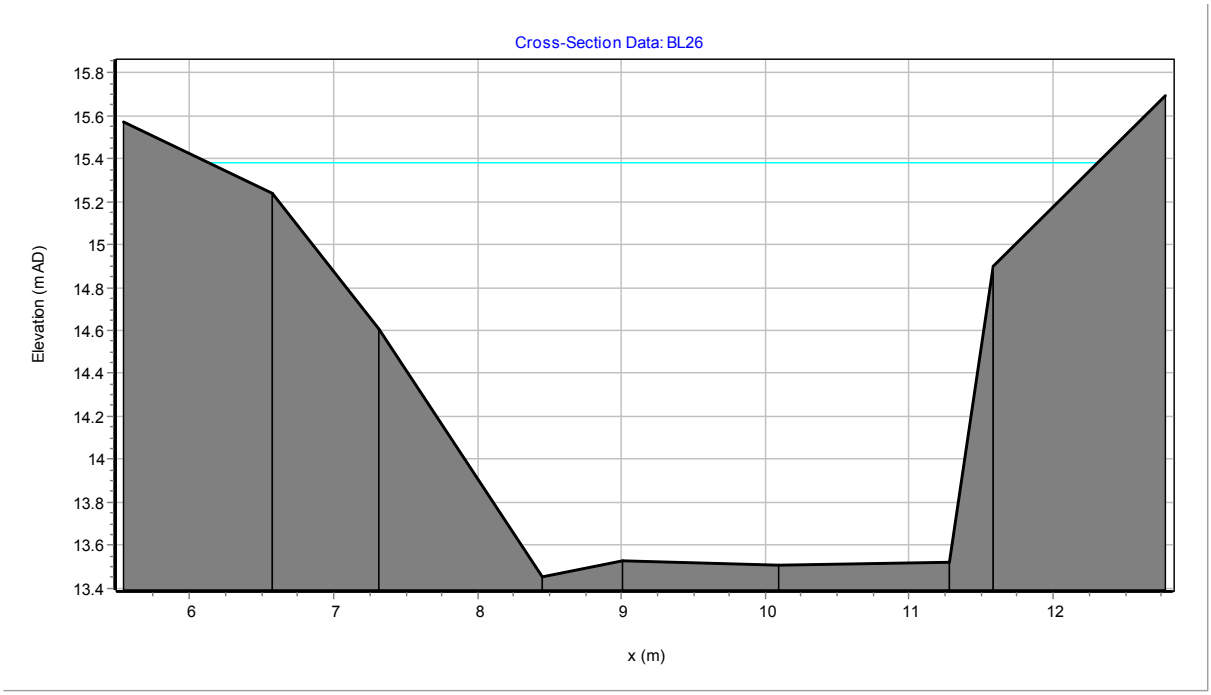
16.2
16
15.8
15.6
15.4
15.2
15
14.8
14.6
14.4
14.2
14
13.8
0 2 4 6 8 10 12 14 16
x (m)

BL25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15.2
15
14.8
14.6
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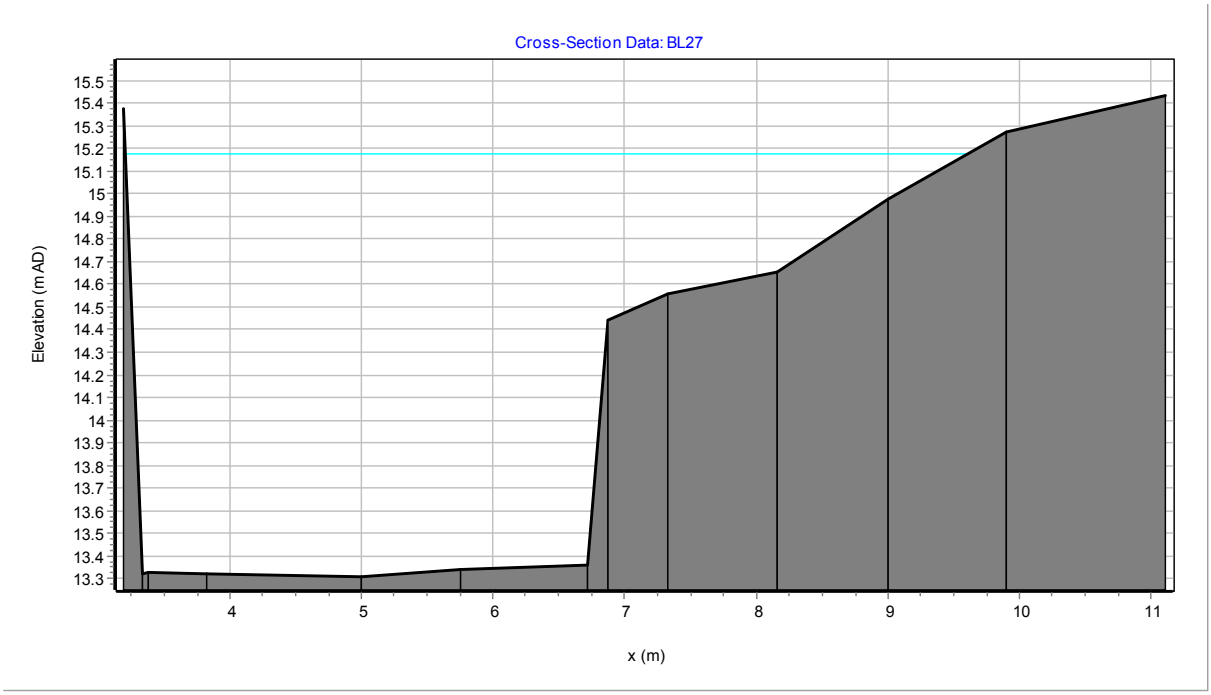
14
13.8
13.6
13.4
6
7
8
9
10
11
12
x (m)

BL26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Elevation (m AD)
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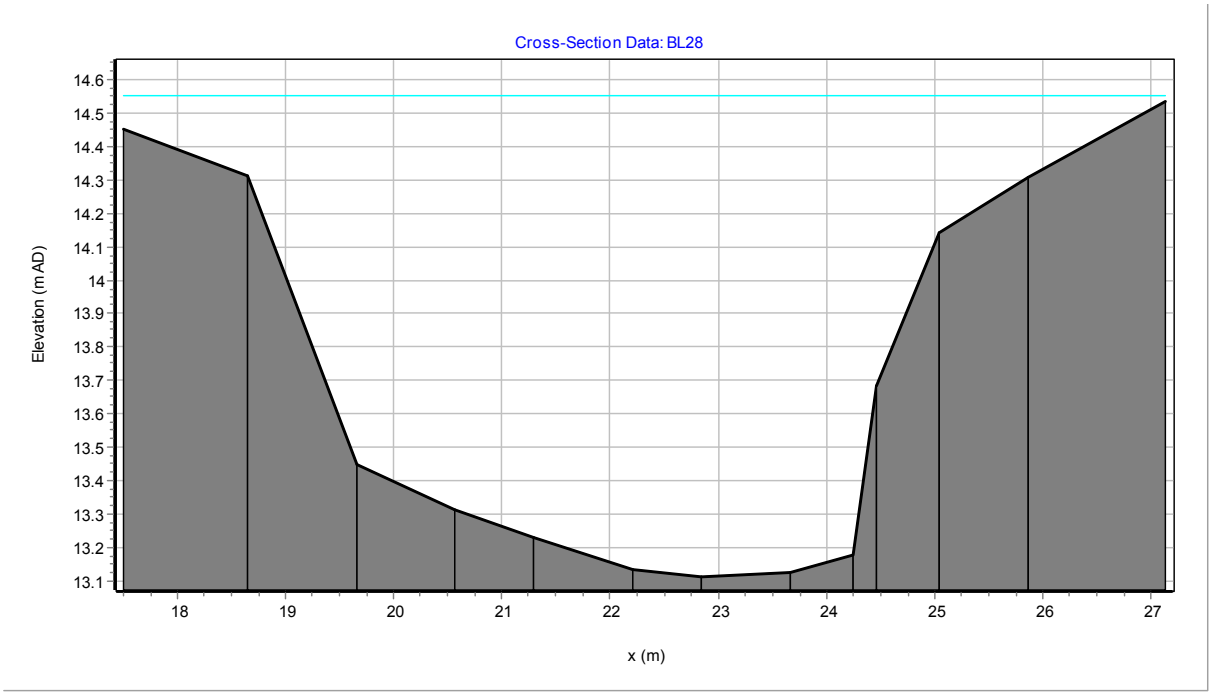
15.2
15.1
15
14.9
14.8
14.7
14.6
14.5
14.4
14.3
14.2
14.1
14
13.9
13.8
13.7
13.6
13.5
13.4
13.3
4
5
6
7
8
9
10
11
x (m)

BL27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14.2
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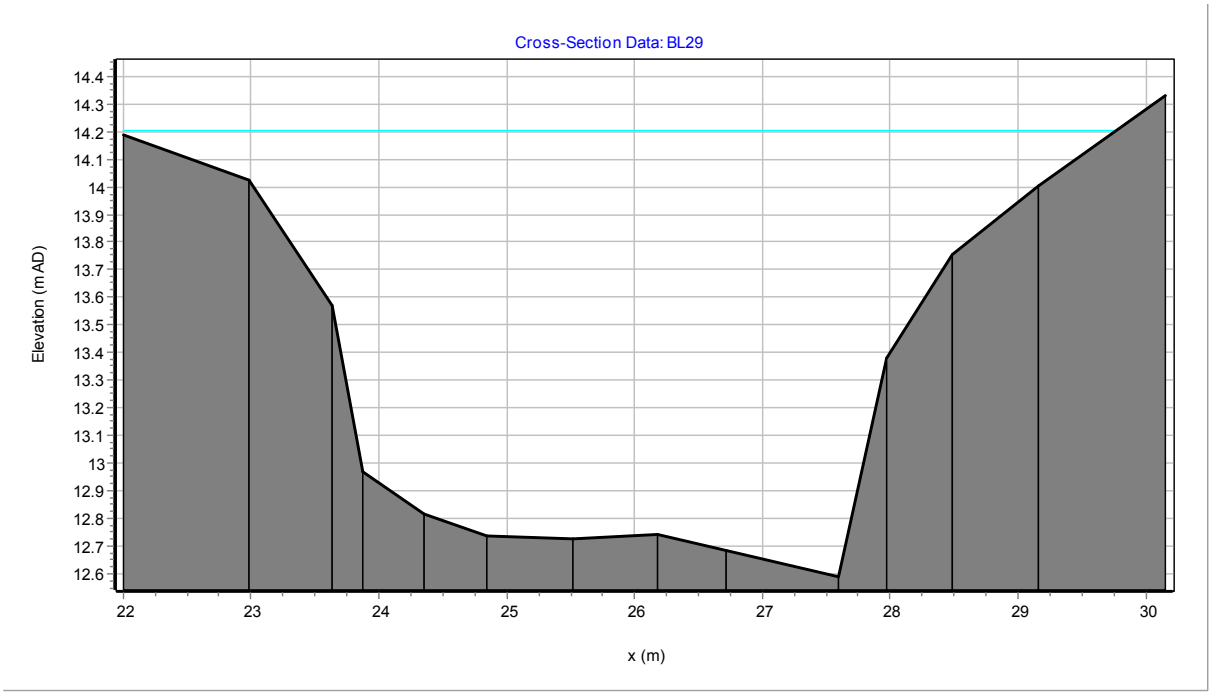
14
13.9
13.8
13.7
13.6
13.5
13.4
13.3
13.2
13.1
18
19
20
21
22
23
24
25
26
27
x (m)

BL28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13.8
13.7
13.6
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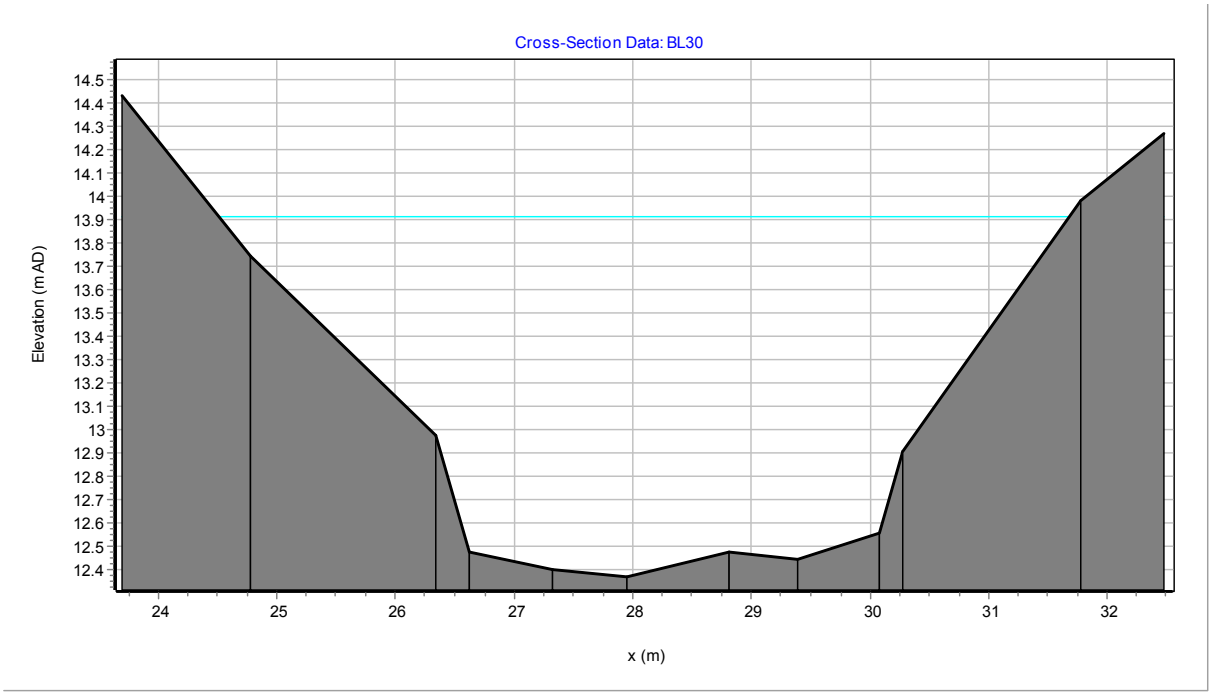
13.4
13.3
13.2
13.1
13
12.9
12.8
12.7
12.6
22
23
24
25
26
27
28
29
30
x (m)

BL29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13.7
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13.3
13.2
13.1
13
12.9
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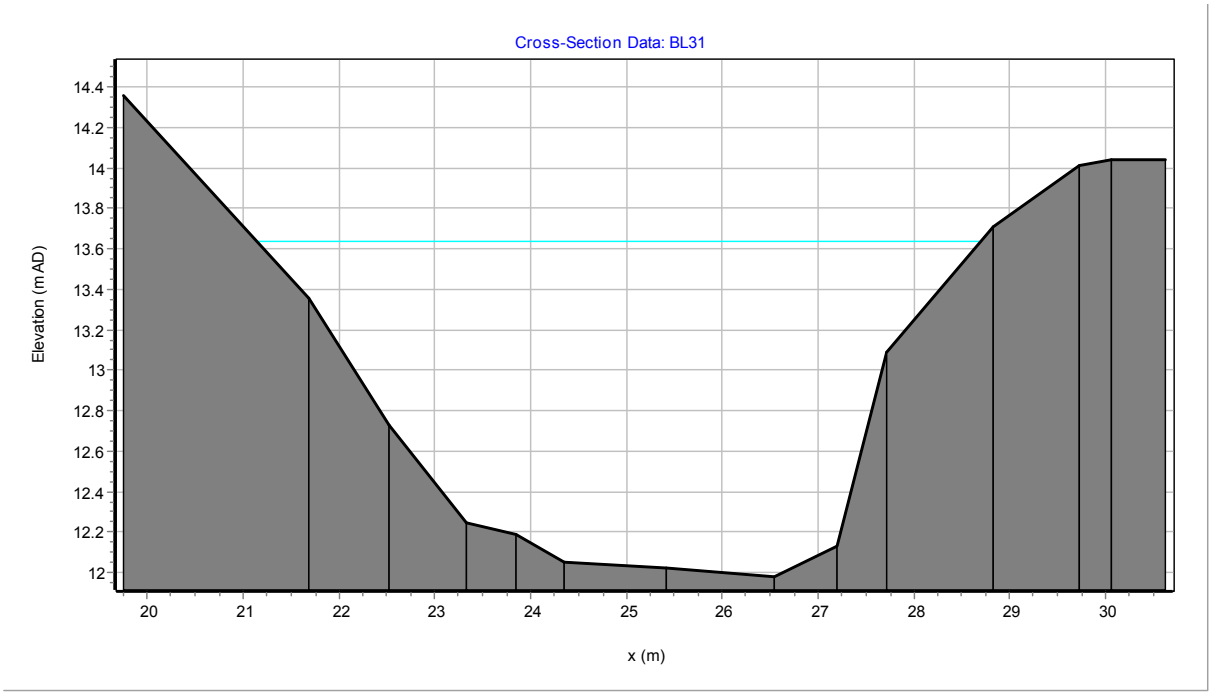
27
28
29
30
31
32
x (m)

BL30


Cross-Section Data: BL31
Elevation (m AD)
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13.8
13.6
13.4
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13
12.8
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12.4
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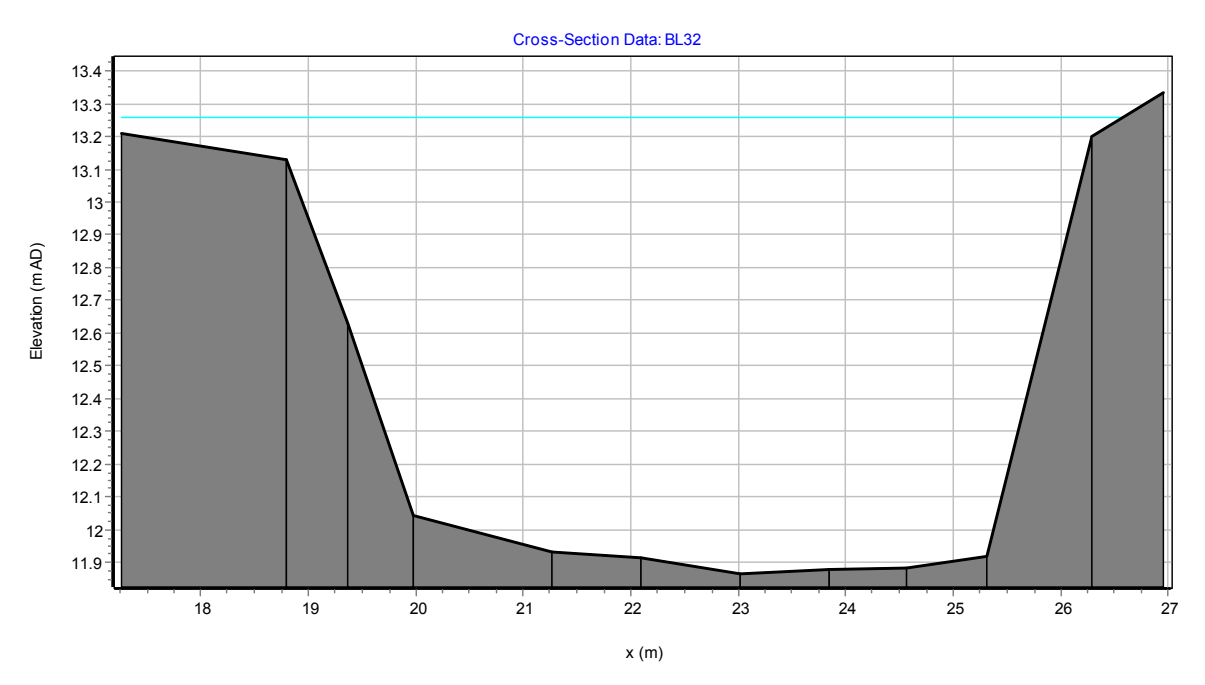
12
20
21
22
23
24
25
26
27
28
29
30
x (m)

BL31


Cross-Section Data: BL32
Elevation (m AD)
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12.9
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12.7
12.6
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12.4
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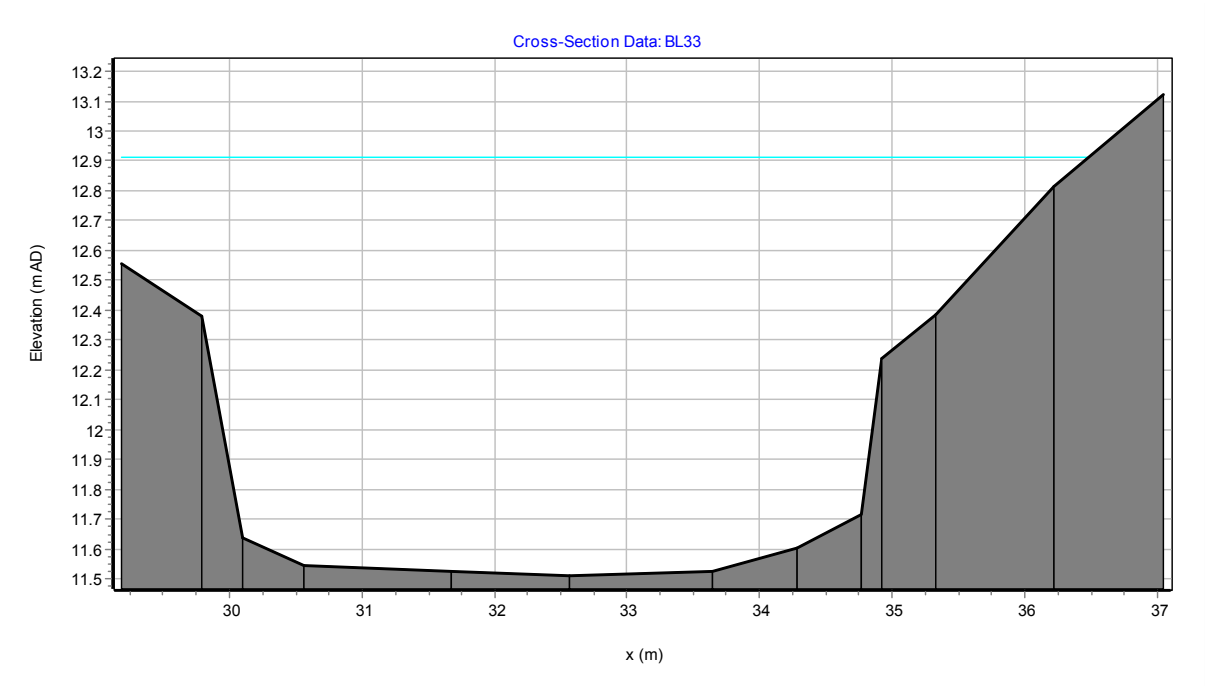
22
23
24
25
26
27
x (m)

BL32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Elevation (m AD)
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12.5
12.4
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12.1
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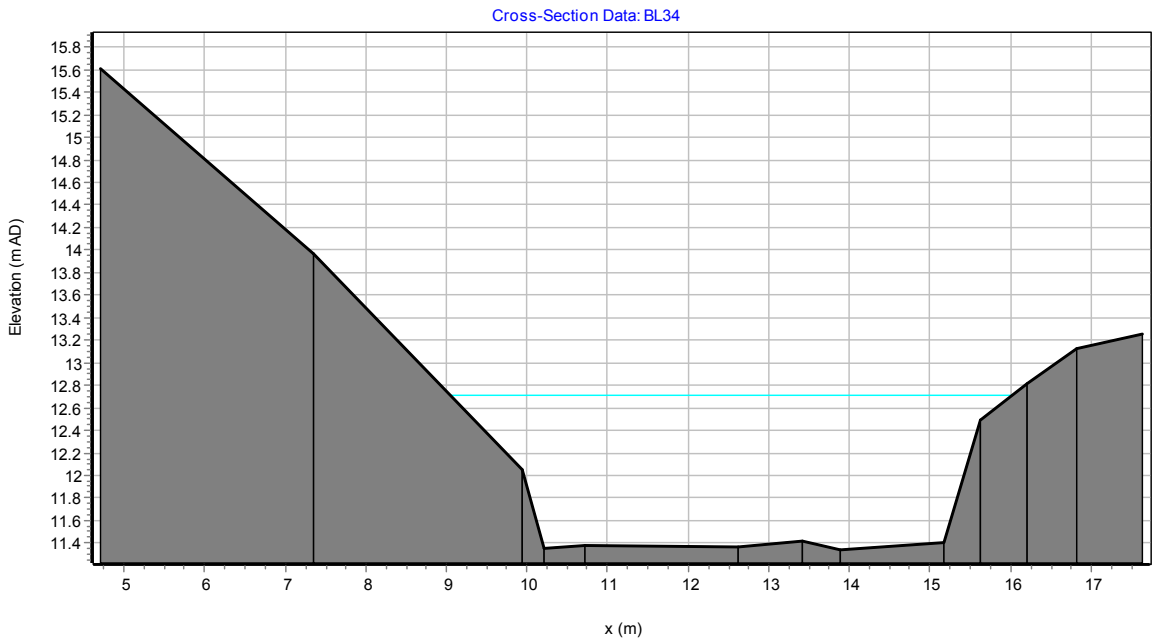
32
33
34
35
36
37
x (m)

BL33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Elevation (m AD)
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14.2
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13.8
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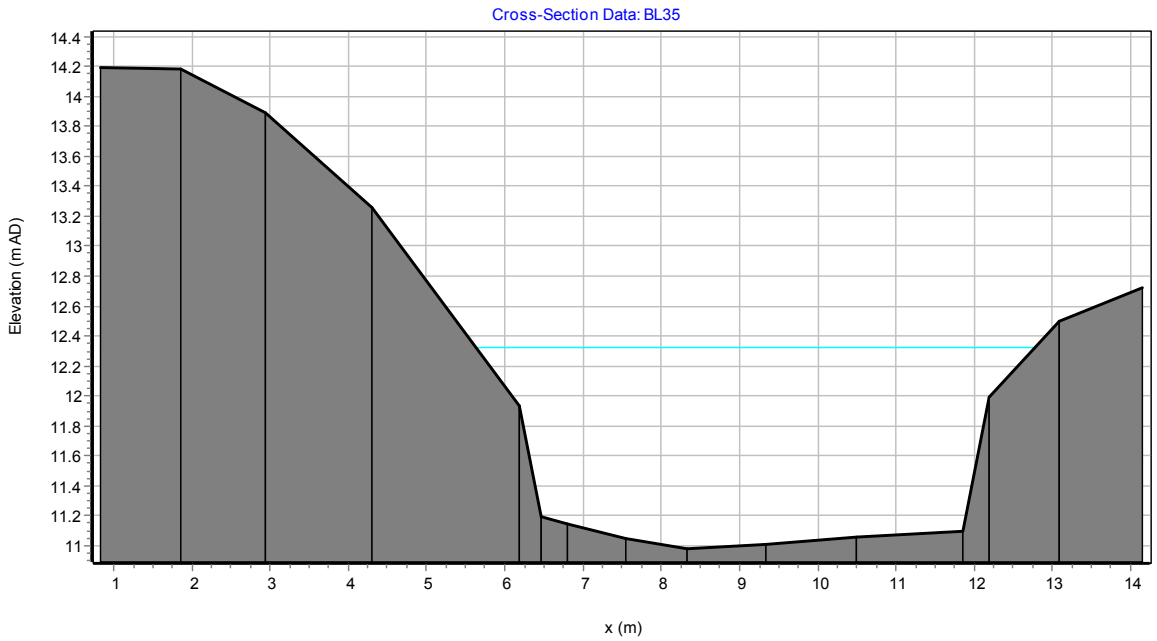
13.4
13.2
13
12.8
12.6
12.4
12.2
12
11.8
11.6
11.4
5
6
7
8
9
10
11
12
13
14
15
16
17
x (m)

BL34


Cross-Section Data: BL35
Elevation (m AD)
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12.8
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12.4
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12
11.8
11.6
11.4
11.2
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2
3
4
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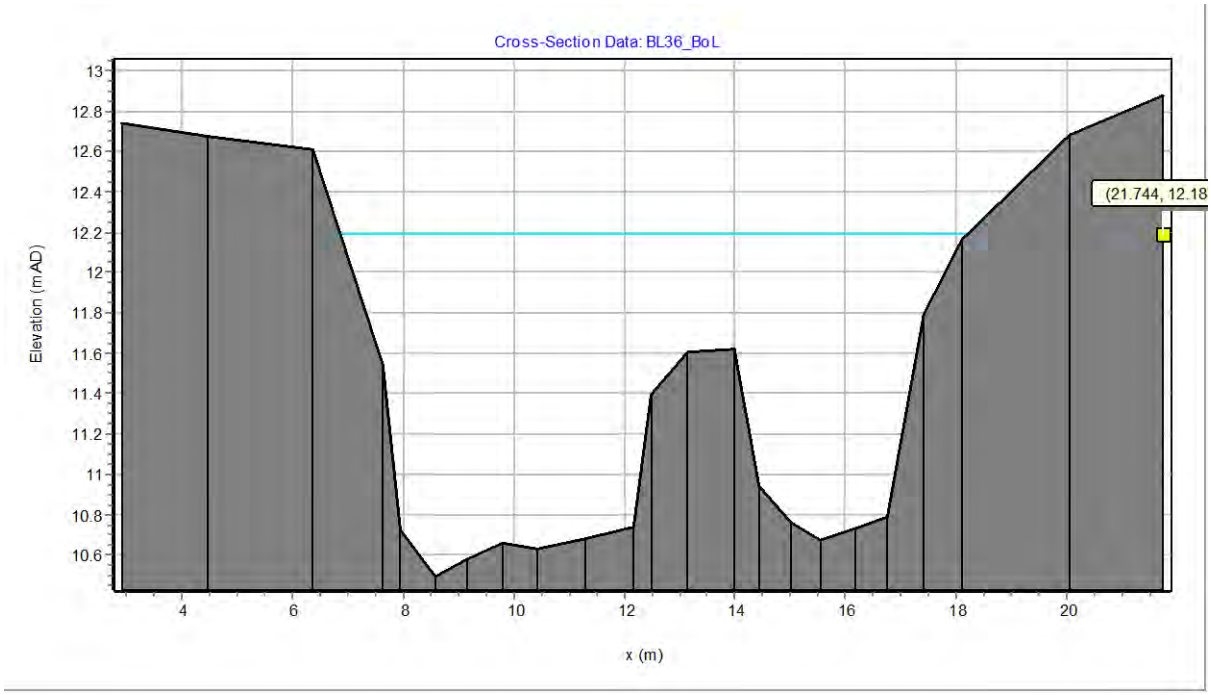
6
7
8
9
10
11
12
13
14
x (m)

BL35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12.8
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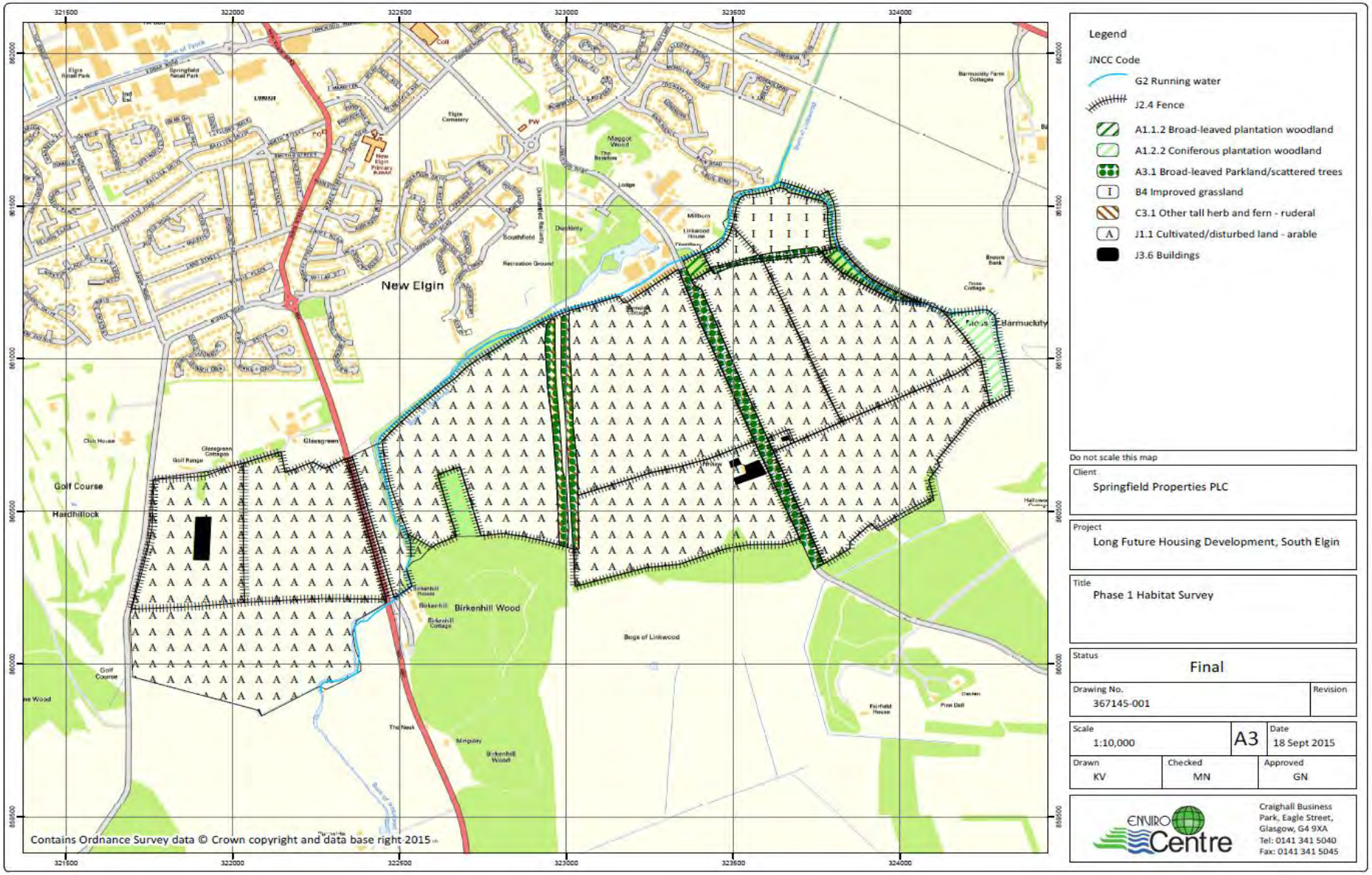
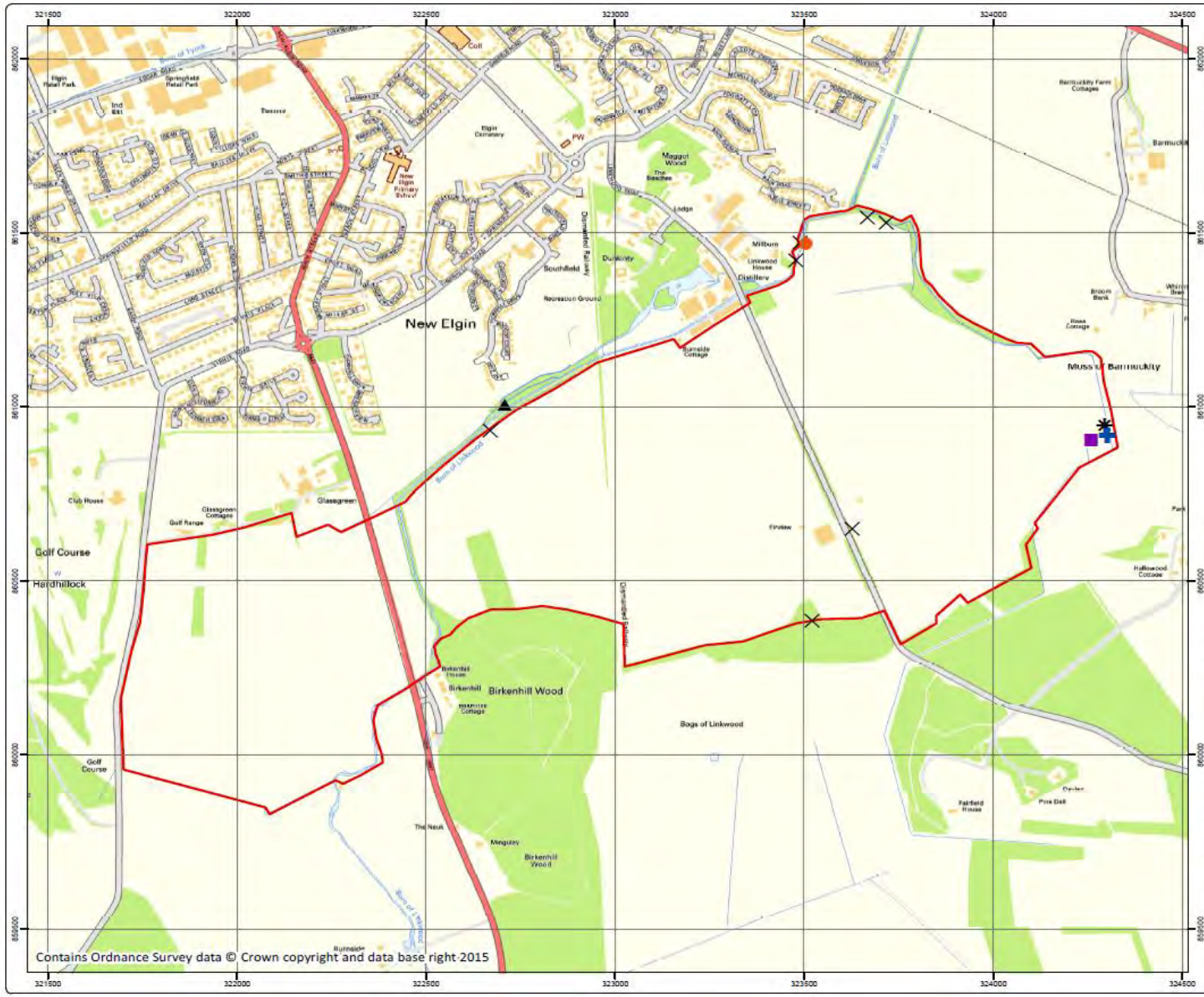
11.8
11.6
11.4
11.2
11
10.8
10.6
4
6
8
10
12
14
16
18
20
x (m)
(21.744, 12.18

BL36

Appendix 10.3

HABITAT ASSESSMENT EXTRACT


New Elgin
Golf Course
Hardhillock
Birkenhill Wood
Bogs of Linkwood
Contains Ordnance Survey data © Crown copyright and data base right 2015
Legend
JNCC Code
G2 Running water
J2.4 Fence
A1.1.2 Broad-leaved plantation woodland
A1.2.2 Coniferous plantation woodland
A3.1 Broad-leaved Parkland/scattered trees
B4 Improved grassland
C3.1 Other tall herb and fern - ruderal
J1.1 Cultivated/disturbed land - arable
J3.6 Buildings
Do not scale this map
Client
Springfield Properties PLC
Project
Long Future Housing Development, South Elgin
Title
Phase 1 Habitat Survey
Status
Final
Drawing No.
367145-001
Revision
Scale
1:10,000
A3
Date
18 Sept 2015
Drawn
KV
Checked
MN
Approved
GN
ENVIRO Centre
Craighall Business Park, Eagle Street, Glasgow, G4 9XA
Tel: 0141 341 5040
Fax: 0141 341 5045



Legend

- Site Boundary

Protected Species Evidence

- BRP Tree
- Badger latrine
- Otter Foot print
- Otter Spraint
- Squirrel Drey
- Squirrel Foraging

Do not scale this map

Client
Springfield Properties PLC

Project
Long Future Housing Development, South Elgin

Title
Phase 1 Protected Species Evidence

Status
Final

Drawing No.
367145-002

Revision

Scale
1:10,000

A3

Date
18 Sept 2015

Drawn
KV

Checked
MN

Approved
GN

ENVIRO Centre
Craighall Business Park, Eagle Street, Glasgow, G4 9XA
Tel: 0141 341 5040
Fax: 0141 341 5045

D PHOTOGRAPHIC RECORD

Photo 1: Plantation silver birch woodland

Photo2: Plantation Scots pine woodland

Photo 3: Mature trees along Linkwood Road

Photo 4 : Dismantled railway

Photo 5: Burn of Linkwood along the north of the site

Photo 6: Tributary flowing along east boundary

Photo 7: Arable barley field

Photo 8: Grassland margins along fence lines

Photo 9: Cavity in beech tree offering BRP

Photo 10: Otter spraint on boulder in Burn of Linkwood.

Photo 11: Squirrel foraging evidence in Sitka woodland

Photo 12: Badger dung in badger latrine in the east of the site

Appendix 10.4

ARCHAEOLOGY WSI

Elgin South, Elgin, Morayshire
Archaeological Mitigation Works: Written Scheme of Investigation

AOC23184

8th September 2015

AOC Archaeology Group

ARCHAEOLOGY | HERITAGE | CONSERVATION

1 INTRODUCTION

1.1 A programme of archaeological evaluation works is required by Springfield Properties in order to address the potential archaeological impact of a phased mixed-use urban development at Elgin South, Morayshire. The multi phase development is planned for the next 10-20 years with the total development area comprising c.200 ha (Figure 1).

1.2 The area lies within the administrative jurisdiction of Morayshire Council, who are advised on archaeological matters by Mr. Bruce Mann, of Aberdeenshire Council Archaeology Service (ACAS). ACAS has requested that an archaeological evaluation is undertaken prior to development. These works are required in accordance with *Scottish Planning Policy* (2014) and *PAN 2/2011 Planning and Archaeology* (2011), in order to expose, excavate and record any archaeological remains that would be subject to an adverse impact by the development proposals.

1.3 This Written Scheme of Investigation details how the requirements of the project will be met. The first part is site specific while the Appendices detail AOC Archaeology Group's operating procedures and standards. Should the evaluation trenching unearth significant archaeological features, which would suffer an adverse impact from development work, further phases of archaeological works such as further excavation, post-excavation analyses and publication may be necessary.

2 BACKGROUND

2.1 Location

2.1.1 The proposed development area comprises existing agricultural land bounded by Elgin Golf Course and Birnie Road to the west and extending east as far as Moss of Barmuckity (See Figure 1 & 2). The southern boundary is formed by existing field boundaries and extends to the northern edge of Birkenhill Wood and Hallowood. To the north the edge of the development follows the Linkwood Burn and extends as far as Glassgreen Farm and the Linkwood Distillery.

2.2 Development background

2.2.1 The proposed development of South Elgin is the creation of a new mixed-use urban extension of Elgin, catering for the town's anticipated growth over the next 10-20 years.

2.3 Archaeological background

2.3.1 Examination of the Royal Commission on Ancient and Historical Monuments of Scotland, RCAHMS and the local Sites and Monuments Records, SMR shows that the development area contains a few known sites and lies within a larger landscape of known archaeological sites and monument from various periods and of varying significance.

2.3.2 Firstly, the RCAHMS list three sites lying within the development boundaries. In the west there is, Burn of Linkwood (NMRS No. NJ26SW 566) which is described as two blocks of rig and furrow identified from oblique aerial photography. More centrally lies, Moss of Barmuckity (NMRS No. NJ26SW 567) another site of rig and furrow identified from aerial photography. Lastly to the east is another aerial photography site at Hallowood, (NMRS No. NJ26SW 85)

2.3.3 The Sites and Monuments Records show two sites lying within the development area and both relate to cropmarks from aerial photographs. Firstly, to the east there is Linkwood, (SMR NJ26SW0170), an area of crop marks are visible on a vertical aerial photograph taken in 1976. There are a few possible ring-ditches and a small solid rectangular shape that lie within linear marks which may represent older field boundaries. There are also traces of rig and furrow showing as crop marks also. In a more central area lies, Birkenwood, (SMR NJ26SW0050), rectilinear cropmarks and linear crop marks, some of which probably represent old field boundaries. There are also at least three or four ring-ditches visible and two different areas of rig and furrow, along with other indeterminate crop marks. In both of these cases there is a suggestion of prehistoric settlement overlain by later agricultural improvement in the form of rig and furrow.

2.3.4 Examination of the 1st Edition Ordnance Survey map shows very little change in the last 150 years or so in terms of land-use and field boundaries. There has been some land improvement with rough heathland to the west and south of the development area improved into 'regular' arable land. On the western side of the A941, the major southern route from Elgin which bisects the development area, there is a single structure present on the 1st Edition map which is no longer extant. It would appear to be a single building with small associated plot.

2.3.5 Beyond the site boundary there are a few sites that lie within close proximity. Firstly, to the northwest AOC Archaeology has previously conducted three separate evaluations of cropmark sites ahead of residential developments. Firstly in 2002, an evaluation confirmed the presence of a large quarry but no other features (SMR NJ26SW0155). In 2007 a second evaluation on the eastern side of Thornhill Road (NMRS NJ26SW 570, SMR NJ26SW0198) uncovered a couple of pits and two undated linear ditches. The last phase of works conducted in 2010 focused upon various cropmark sites and uncovered only four discrete pit features (NMRS NJ26SW 599, SMR NJ26SW0267).

2.3.6 To the east of the AOC evaluations in 2007 Alba Archaeology conducted a large evaluation and uncovered a series of prehistoric features and artefacts as well as late 18th century and 19th century farming activities (NMRS NJ26SW584, SMR NJ26SW0159). The farming activities were associated with the remains of the 1st Edition Ordnance Survey farm at Muirton (SMR NJ26SW0197). The archaeological evaluation uncovered the remains of the farmhouse, including part of an irregular stone built wall, and a number of midden pits on the north and south side of the building. Most of the finds were Victorian in date but also found were two coins, one of c.1797 and 1826. The Prehistoric remains unearthed included

pits and possible ringditch roundhouses and included pottery and worked lithics. The dates of the pottery assemblage ranged from Middle Neolithic to Bronze Age with sherds from eleven vessels recovered. The radiocarbon dates returned would suggest a similar date range for prehistoric activity on the site.

2.3.7 On the Western side of Linkwood Road, immediately to the north of Linkwood Burn lies Linkwood Distillery (NMRS NJ26SW 98, SMR NJ26SW0043) whilst on the estern side of Linkwood Road there is situated Linkwood House (NMRS NJ26SW 512) and Linkwood Farm (NMRS NJ26SW 588). Linkwood Distillery, was founded 1821 and has been subject to modernization over the 20th century. Linkwood House to the east of the distillery is of late 18th - early 19th century date with reworking in 1880. Originally a modest farmhouse it was transformed into a grand residence for the owner of the distillery. It was built in a fine setting overlooking the Moray countryside. To the rear is a model farm from which it is shielded by an enclosing wall. The house is Listed C. Building recording of a complex of buildings on the east side of the site was carried out in 2012 ahead of redevelopment.

2.3.8 To the northeast of Linkwood Farm AOC Archaeology completed an evaluation in 2004 on the site of a proposed residential development (NMRS NJ26SW 563, SMR NJ26SW0183). Twenty-three trenches were machine-excavated but revealed no archaeological remains. A cropmark (NMRS NJ26SW 82) that was thought to be a trackway runs across the development site. Trenches across this feature revealed it to be the original course of the Burn of Linkwood that was straightened by the early 1800s.

2.3.9 Dunkinty House (NMRS NJ26SW 189, SMR NJ26SW0256) lies to the north of Linkwood Burn within a few hundred metres of the development boundary. Built in 1843 this country house with landscaped gardens is depicted on the 2nd edition OS map of 1888 in the same form as it appears today namely a square building with open central courtyard, sited within mixed woodland.

2.3.10 Lastly just beyond the eastern development boundary there are the sites of two 1st Edition Ordnance Survey depicted buildings, both of which are now demolished, (SMR NJ26SW0161 and SMR NJ26SW0162. Further east from these two buildings there is another cropmark site, (SMR NJ26SW0163) which again shows evidence for rig and furrow agriculture.

2.3.11 The vast majority of evaluation area is improved farmland it is possible that hitherto unknown archaeological features and deposits may survive within this area as unseen subsurface features.

3 OBJECTIVES

3.1 The objectives of the archaeological works are:

i) to determine and assess the character, extent, condition, quality, date and significance of any buried archaeological remains within the proposed development area;

ii) to advise and implement an appropriate form of mitigation, such as excavation, post-excavation analyses and publication, given the infeasibility of preserving the archaeological material *in situ*, should significant archaeological remains be encountered.

4 PROGRAMME OF WORKS

4.1 Introduction

4.1.1 ACAS on behalf of Morayshire Council has specified the need for an intrusive evaluation of the entire Elgin South development area followed by consequent Data Structure Report. Overall the Elgin South development covers c. 200 ha of which approximately 180 ha is suitable for evaluation with the remaining c.20 ha under established tree cover which will be maintained throughout the development works.

4.1.2 ACAS requires an initial 7% evaluation of the Elgin South development site with a 3% contingency to be invoked should the initial 7% evaluation uncover archaeological features. A 7% sample of 180 ha would equate to trenching totalling 126,000 m^2 which with a typical bucket size of 2.0 would require 63,000 linear metres of trenching to be opened (See Figure 2)

4.1.3 If the initial 7% evaluation uncovers archaeological features then ACAS will require the implementation of a further 3% contingency to ensure that the extent and significance of any remains if fully understood by the evaluation works. The extra 3% sample would total 54,000 m^2, equivalent to another 2,700 linear metres of trenching.

4.1.4 It is unlikely that the evaluation will be conducted in a single phase of works and it is liable to be split into smaller work packages. AOC will supply a detailed WSI Addendum for each phase of evaluation works. Each addenda will include a detailed map of the extent of the area to be evaluated along with a trenching plan.

4.2 Evaluation trenching

4.2.1 The development site measures c.200 ha of which c.180 ha is to b subject of evaluation trenching with a 7% sample measuring 126,000 m^2 and the 3% contingency a further 54,000 m^2. The need for the use of the 3% contingency will be at the behest of ACAS who will be kept fully informed of the works progress and the evaluation findings.

4.2.2 The trial trenching will aim to establish the extent, condition, character, quality and date of any archaeological features present. Trenches will be excavated by machine down to the

first significant archaeological horizon or to natural subsoil. All machine excavation will be supervised by an experienced field archaeologist. Deep trenches will be laterally stepped or subject to gradual batter where access for archaeological inspection is required. Trenches will be extended, or ancillary trenches excavated, in areas of archaeological discovery in establishing the full lateral extent of any significant archaeological material.

4.2.3 All trial trenching will be undertaken according to AOC Archaeology Group's standard operating procedures (Appendix 7). The palaeoenvironmental sampling strategy is also detailed in Appendix 7. As well as random distribution, the placement of trial trenches will be designed to:

- ensure comprehensive coverage of the development area;
- target possible archaeological features as identified on cropmarks;
- investigate linear features which may cross the landscape (ie trenches will be located on various orientations);
- ensure that the area of every feature of potential archaeological significance is investigated;
- anticipate the advantages derived from topographic advantage;
- examine the preservation potential of some areas, e.g. sediment traps;

4.2.4 Trenches will be of varying lengths and set along differing orientations to maximize the opportunity of locating linear features which may cross the landscape. Where archaeological features are encountered, trenches will be extended to define the full lateral extent of these features. Ancillary trenching will be undertaken in the local vicinity in anticipating any non-nucleated or more dispersed distribution of associated features.

4.2.5 All significant archaeological features will be cleaned and fully defined. A sufficient number of any features present will be investigated to determine the character, function, condition, nature and date of the full suite(s) of features present.

4.2.6 An adequate proportion of each feature selected for investigation will be excavated, sampled and recorded to determine the character, function, nature, date and significance of the features sampled.

4.2.7 No specialised re-instatement will be undertaken. Trenches will be backfilled with spoil and then compacted by driving over using the mechanical excavator. Trial trenches will not be backfilled under archaeological supervision, other than in areas of significant archaeological findings.

4.2.8 Following the evaluation, ACAS, on behalf of Morayshire Council, will judge whether the significance of any material encountered is sufficient to require further works. If significant archaeology is encountered, further excavation would be subject to submission of a *project design* to be submitted as an addendum to this *Written Scheme of Investigation* and agreed by ACAS, on behalf of Morayshire Council.

4.3 Reporting

4.3.1 Within four weeks of the completion of the evaluation the results will be presented to the client in the form of a written report for distribution to the relevant bodies. The report will synthesise the results of the evaluation and advise on the significance and extent of any archaeological features identified.

4.3.2 The report will take the form of a Data Structure Report (4 hard copies and pdf digital), prepared in accordance with current standard Historic Scotland procedural requirements and AOC Archaeology standard procedures (Appendix 8). Specifically the Data Structure Report will contain the following:

i) a full descriptive text detailing the features identified and an interpretation of their date and purpose;
ii) a location map plan of the site within its landscape at a scale of at least 1:10,000;
iii) plans and elevations at an appropriate scale showing evaluation areas and features located;
iv) appropriate lists and diagrams summarising the contexts and artefacts recovered and the records made of them;
v) analysis of the results of the works, including appropriate post-excavation appraisals;
vi) a strategy to mitigate the impact of the development on any archaeological deposits revealed by the evaluation.

4.3.3 The results of the evaluation will also be reported using the OASIS digital reporting facility. In addition a Summary Report on the works and its findings will be submitted to *Discovery and Excavation in Scotland*.

4.4 Archive Deposition

4.4.1 The archive from these works will be prepared for deposition in the National Monuments. Record of Scotland within 6 months of the completion of all archaeological works.

4.4.2 The disposal of small finds will be conducted according to the standard procedure, Appendix 7.26-7.29.

5 OPERATIONAL FACTORS

5.1 Monitoring

5.1.1 AOC Archaeology will liaise with ACAS at all times to ensure they are aware of fieldwork dates and can schedule monitoring visits. A mobile phone will be present on site at all times.

5.2 Health & Safety

5.2.1 AOC Archaeology has always maintained high standards on-site and a copy of our Health & Safety policy can be supplied on request. AOC Archaeology must be notified of the nature and extent of any contamination on site and be given guidance to the appropriate health and safety precautions required. Where these precautions comprise more than the use of thin over-suits and nitrate gloves AOC Archaeology will provide the necessary equipment for an additional cost.

5.3 Timetable

5.3.1 Following approval of this Written Scheme of Investigation by ACAS, at least seven days notice will be given to ACAS prior to the initiation of the fieldwork. ACAS will be provided with provisional dates and lists of staff names and contact details.

5.4 Project Team and facilities

5.4.1 Mr. Lindsay Dunbar MIfA, Project Manager, will manage the project and has been provisionally identified to direct both the evaluation in the field.

5.4.2 Any resultant post-excavation analyses or conservation would be conducted by AOC Archaeology's in-house specialists and supervised by Dr Ciara Clarke who specialises in palaeoenvironmental issues (Appendix 24).

5.4.3 AOC Archaeology has all the facilities necessary to undertake all resultant works, including fully equipped conservation and palaeo-environmental laboratories, secure storage and walk-in refrigeration units.

6 CONDITIONS AND CLARIFICATIONS

6.1 The normal standards, conditions, and exclusions apply (Appendix 22).

6.2 The location of services will be provided by the client prior to machine excavation being undertaken.

6.3 AOC Archaeology would prefer to only undertake ground breaking works on land where services have been cut or neutralised. AOC Archaeology recognises that for many reasons this is frequently impractical. Where live services are present, every care will be taken in avoiding striking these services. AOC Archaeology will be entitled to rely on the service information provided by the utility authority or client, subject to seeking to ascertain the exact location of any services marked on that information prior to excavation. However, AOC Archaeology's seeking to ascertain the exact location of marked services or, where in its risk assessment AOC has stated that it will scan for unmarked services, unmarked services shall not relieve the client of responsibility under this paragraph, to the extent that it is impracticable for AOC Archaeology to ascertain the presence of services by electronic

means prior to excavation by reason of overgrowth, the presence of structures or any other condition which make such investigation impracticable. It should also be noted that not all services are detectable by electronic means, for example gas or water services.

6.4 Where previous works have identified the presence of contaminated ground, AOC Archaeology must be notified of the nature and extent of the contamination and be given guidance to the appropriate health and safety precautions required. Where these precautions comprise more than the use of thin over-suits and nitrate gloves AOC Archaeology will provide the necessary equipment for an additional cost.

6.5 Where AOC is not the main contractor on a site the main contractor's Risk Assessment will have primacy over the AOC document given that:

1 The main contractors' risk assessment is aware of, and takes account of, AOC's working practices – i.e. it does not compromise normal and safe archaeological procedure as set out in our Written Scheme of Investigation and Risk Assessment;

2 AOC was notified of the full suite of hazards present prior to arriving on site;

3 There is a proper induction and monitoring process in place and AOC staff have been through this process;

4 There is no significant conflict between AOC H & S procedures and those proposed by the main contractor;

5 AOC are made aware of new threats or hazards as they arise during the course of our on-site involvement.

6.6 AOC Archaeology will not accept liability for damage to any road surface, paved or metalled area, or crop while undertaking the archaeological works or in gaining access to land.

6.7 No cost provision has been made for splitting turf, topsoil and subsoil during excavation works. If this is a requirement costs can be provided.

6.8 No specialised reinstatement of excavation area will be undertaken.

6.9 AOC Archaeology reserves the right to discuss the archaeological works directly with ACAS where appropriate, but will inform the client of this in advance.

6.10 The client is solely responsible for all aspects of site security.

6.11 AOC Archaeology believes that it will be most efficient and cost effective to make deep trenches safe by means of stepping and/or battering rather than shoring. However, in some

instances it is possible that Health & Safety requirements and site configuration necessitate the installation of shoring. Provision for this has not been made by AOC and it is assumed that such shoring, if it became essential, would be funded by the client and installed by a specialist contractor.

6.12 There may on occasions be other unusual circumstances which have not been included in the programme and costing. These can include;

i) unavoidable delays due to extreme weather, vandalism, etc;
ii) ground contamination, unknown services, poor ground conditions;
iii) extensions to specified trenches or feature excavation sample sizes requested by the local authority's archaeological advisor;
iv) complex structures or objects, including those in waterlogged conditions, requiring specialist removal.

6.13 If the archaeological evaluation identifies significant archaeological remains there may be a requirement to undertake further works such as excavation, post-excavation and publication.

7 REFERENCES

Scottish Government *2014 Scottish Planning Policy*, April 2014.

Scottish Government 2011 PAN 42 Planning And Archaeology 2/2011.

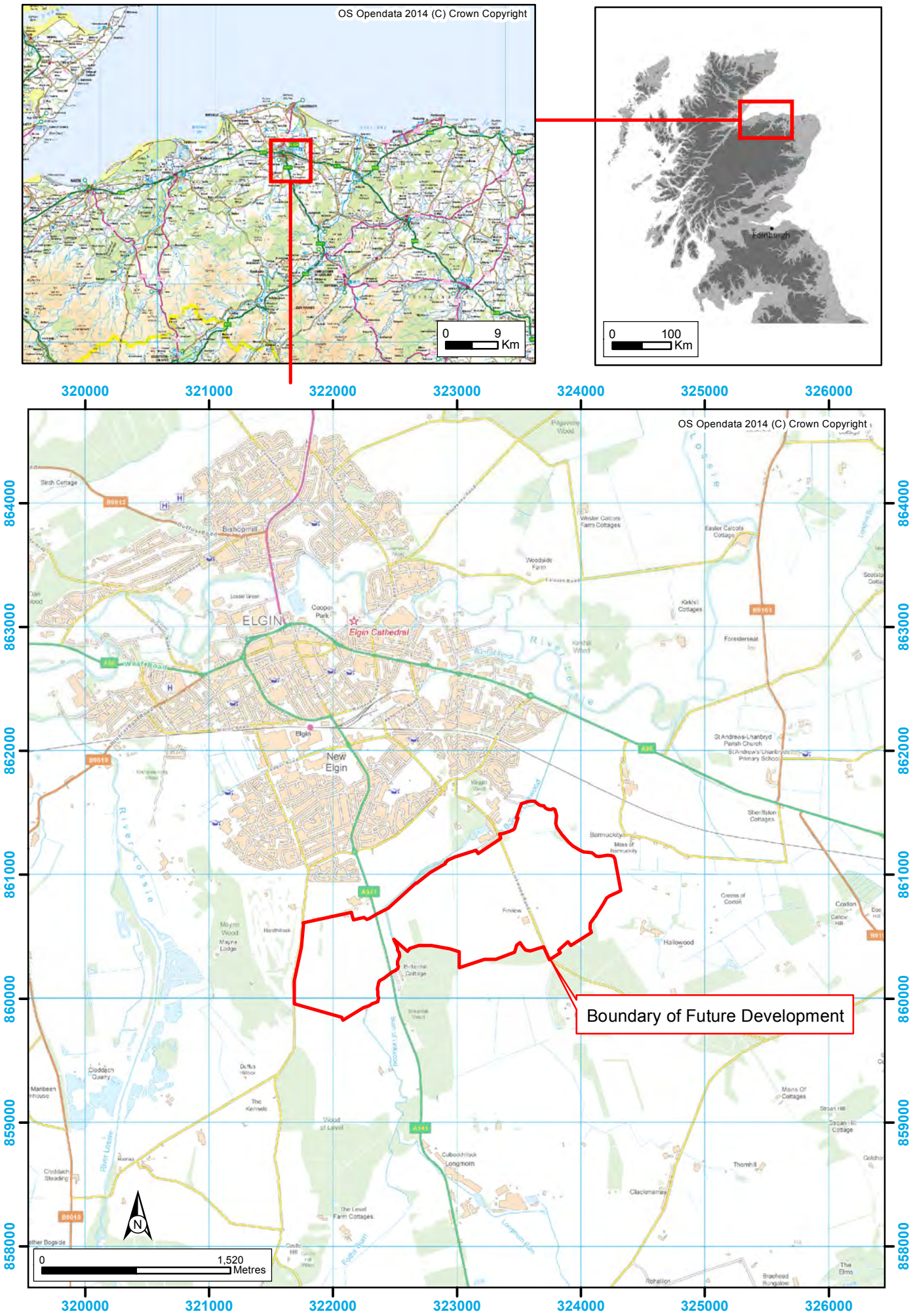


Figure 1: Site Location Plan

AOC Archaeology Group

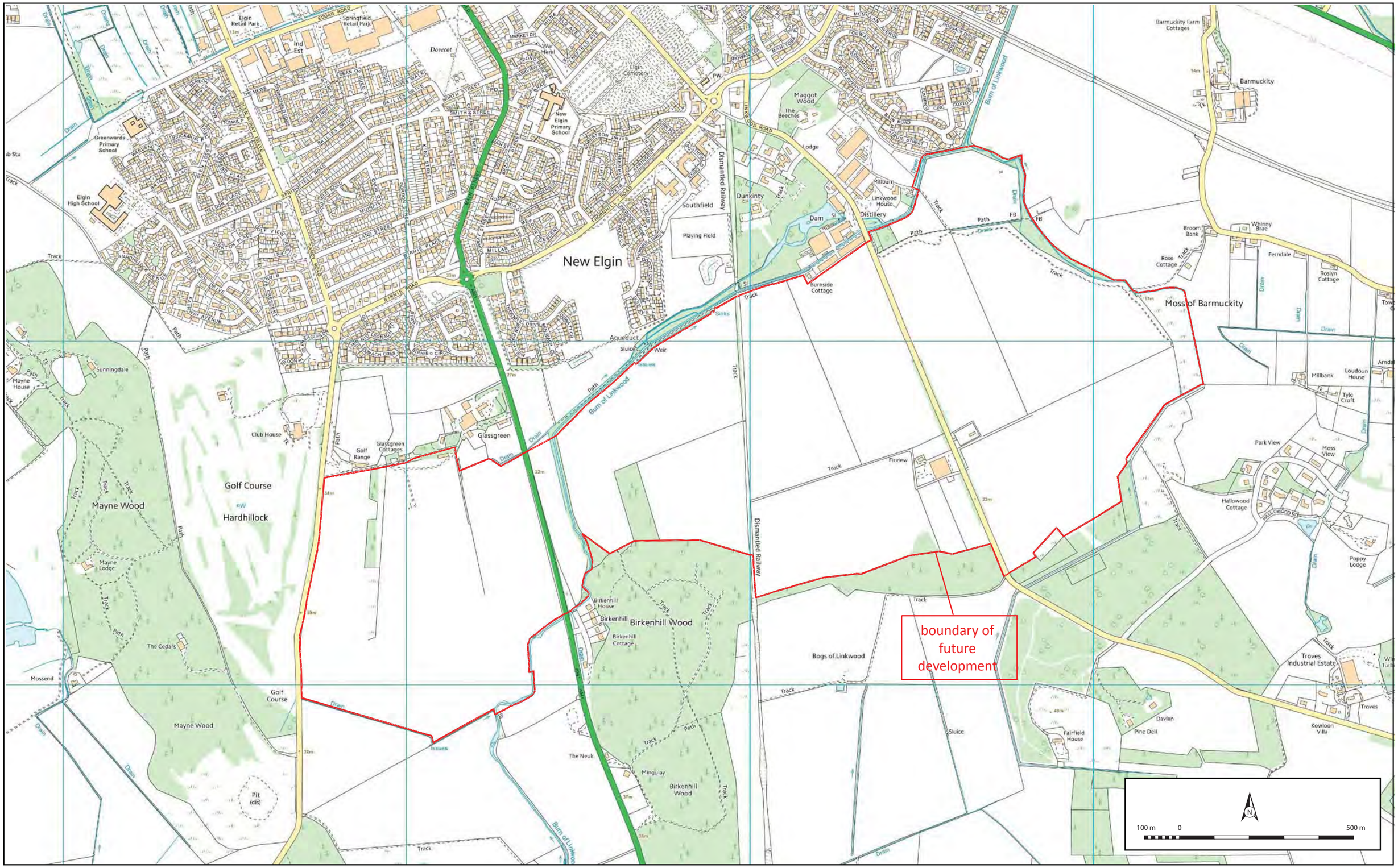


Figure 2: Site location plan showing boundary of future development in detail

APPENDIX 1

Desk-top assessment

The sources consulted as part of the desk-top study will depend on the type and level of data required and the material that is available to provide that information. Sources used may include, where available, all or some of the following listed below:

i) Walkover survey (Appendix 5).
ii) The relevant Local Sites and Monuments Record(s) and the National Monuments Record.
iii) British Geological Survey maps.
iv) Ordnance Survey maps of the site and its locality.
v) Tithe, Apportionment and Parish maps.
vi) Historic (pre-Ordnance Survey) and Estate maps of the area.
vii) Appropriate archaeological and historical journals and books.
viii) Historical documents held in local museums, libraries, record offices and other archives. This may be a selective survey given the scope of potential historic documentation for some sites.
ix) Unpublished material held by local professional and amateur archaeological organisations and museums.
x) Aerial photographs held by local authorities, Sites and Monuments Record, the National Library of Aerial Photographs, Cambridge University Collection of Aerial Photographs and other local parties.
xi) Scheduled Ancient Monuments Lists; listed building lists; registers of parks and gardens and battlefields; any local authority constraint designations (eg conservation Areas).
xii) All available borehole, trial pit and geotechnical data from the site and its immediate environs.
xiii) Plans of services locations held by statutory undertakers.
xiv) Fire insurance maps.
xv) Old and New Statistical Accounts (in Scotland).
xvi) Building Control Records.
xvii) Standing Building Assessment (Appendix 10).

APPENDIX 2

Geophysical survey

2.1 All geophysical survey work will be sub-contracted to an appropriate professional organisation but directly managed by AOC Archaeology.

2.2 Selection of techniques will be made in consultation with the survey organisation taking into account land use, geology, complicating factors (eg metal pipes and fences), known and/or suspected archaeology.

2.3 The report will contain background information on the site (as above) and a description of any anomalies located. An interpretation of the anomalies will also be given.

2.4 At least one plot of the data will be included, normally of dot density or grey scale type. Any enhancement of the image will be explicitly stated and the likely affect of the processing described.

2.5 Clear interpretative plans will be provided in a form that a non-technical reader can understand.

2.6 Plots and interpretative diagrams will be reproduced at a scale from which exact measurements can be taken. These will normally be 1:1000 for detailed survey and 1:2500 for other plans.

2.7 The basic computerised data will form part of the site archive.

APPENDIX 3
Surface collection survey (fieldwalking)

3.1 This type of survey will only be carried out in suitable ground visibility conditions. This effectively restricts the technique to arable land which has been ploughed, harrowed and left to weather for several weeks in autumn to early spring.

3.2 The collection grid will align with the Ordnance Survey grid unless surveying for a linear scheme when the transects will be parallel to the centre of the scheme. The grid will be established using measured survey techniques.

3.3 The spacing of transects and length of collection units will be as specified in the main part of the Written Scheme of Investigation. Each transect will be 2m wide. Collection units will be logged using a numeric 12 figure National Grid Reference which will identify the southern end of the unit.

3.4 Transects will be measured cumulatively on the ground using fixed-length strings to avoid variation in individual pace. Sighting poles will be placed at opposite ends of the land parcel to mark transects.

3.5 All material considered to be man-made or not local to the area will be collected and recorded by the individual collection unit. The exception to this is where dense concentrations of building material are present when a representative sample is retained per collection unit.

3.6 Stone scatters, areas of soil discolouration and outcrops of natural substrata will be recorded and plotted by stint.

3.7 Pro-forma sheets will be used to record details of walker, soil/crop conditions, slope/topography, and lighting/weather conditions for each transect and presence/absence of finds for each collection unit.

3.8 Finds will be washed and sorted into groups in order to facilitate identification. Finds will be bagged according to artefact class within each collection unit.

3.9 Finds will be identified, quantified and recorded directly on to computer. The results will be plotted using a CAD graphics programme.

3.10 All significant artefact distributions will be plotted by field, group of fields or appropriate length for a linear scheme, at 1:2500, with separate plans for each period or relevant subdivision, indicating the numbers of artefacts per stint.

3.11 The pottery and other relevant artefacts will be scanned to assess the date range of the assemblage.

3.12 All finds and samples will be treated in a proper manner and to standards agreed in advance with the recipient museum or other body. These will be cleaned, conserved, bagged and boxed in accordance with the guidelines set out in UKIC's "*Conservation Guidelines No 2*".

APPENDIX 4
Earthwork surveys

4.1 Base points will be established using a Total Station.

4.2 Hachured plans will normally be prepared at 1:1250 or 1:2500 for most classes of earthwork. In certain cases more detailed survey by contouring will be carried out.

4.3 Appropriately experienced personnel will undertake the survey work.

4.4 All prepared plans will be presented with an accompanying descriptive text.

APPENDIX 5
Walkover Survey

5.1 The proposed study area will be walked over in a systematic manner. Approximately 30m wide transects will be used, although this can be reduced where conditions demand.

5.2 All features identified (including modern features) will be given a unique number. The location of each feature will be marked on a 1:10,000 map. A photographic and written record will be compiled.

APPENDIX 6
Test pits

6.1 Spacing and size of test pits will vary according to local topography, geology, and known or potential archaeology. Spacing and size will be as specified in the Written Scheme of Investigation.

6.2 Test pits will be laid out in relation to the Ordnance Survey national grid.

6.3 The most appropriate tools will be used taking into account the prevailing conditions at the time of the work.

6.4 A specified volume of topsoil from each test pit will be sieved through a 10mm mesh.

6.5 Conditions, contexts and artefact totals will be recorded on pro-forma sheets.

6.6 Subdivisions within the excavated material will be based on soil stratigraphy and spits of 100mm within each stratigraphical unit.

6.7 All artefact totals will be recorded by class.

6.8 Finds will be washed and sorted into groups in order to facilitate identification. Finds will be bagged according to artefact class within each collection unit.

6.9 Finds will be identified, quantified and recorded directly onto computer where appropriate. The results will be plotted using a CAD graphics programme when appropriate.

6.10 All significant artefact distributions will be plotted by field, group of fields or appropriate length for a linear scheme at 1:2500, with separate plans for each period or relevant subdivision, indicating the numbers of artefacts per test pit.

6.11 The pottery and other relevant artefacts will be scanned to assess the date range of the assemblage.

6.12 All finds and samples will be treated in a proper manner and to standards agreed in advance with the recipient museum or other body. These will be cleaned, conserved, bagged and boxed in accordance with the guidelines set out in UKIC's "*Conservation Guidelines No 2*".

APPENDIX 7
Machine excavated trenches

Excavation

7.1 The entire site will be visually inspected before the commencement of any machine excavation. This will include the examination of any available exposures (eg recently cut ditches and geo-technical test pits).

7.2 Normally trench positions will be accurately surveyed prior to excavation and related to the National Grid. It may be necessary to survey the positions after excavation in some instances.

7.3 All machining will be carried out by plant of an appropriate size. Normally, this will be a JCB 3CX (or similar) or 360° tracked excavator with a 1.4 or 1.8m wide toothless bucket. Where access or working space is restricted a mini excavator such as a Kubota KH 90 will be used.

7.4 All machining will be carried out under direct control of an experienced archaeologist.

7.5 Undifferentiated topsoil or overburden of recent origin will be removed in successive level spits (approximately <0.5m) down to the first significant archaeological horizon.

7.6 Excavated material will be examined in order to retrieve artefacts to assist in the analysis of the spatial distribution of artefacts.

7.7 On completion of machine excavation, all faces of the trench that require examination or recording will be cleaned using appropriate hand tools.

7.8 All investigation of archaeological horizons will be by hand, with cleaning, inspection, and recording both in plan and section.

7.9 Within each significant archaeological horizon a minimum number of features required to meet the aims of the project will be hand excavated. Pits and postholes normally will be sampled by half-sectioning although some features may require complete excavation. Linear features will be sectioned as appropriate. Features not suited to excavation within the confines of narrow trenches will not be sampled. No deposits will be entirely removed unless this is unavoidable. As the objective is to define remains it will not necessarily be the intention to fully excavated all trenches to natural stratigraphy. However, the full depth of archaeological deposits across the entire site will be assessed. Even in the case where no remains have been located the stratigraphy of all evaluation trenches will be recorded.

7.10 Any excavation, whether by machine or by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits which appear to be demonstrably worthy of preservation *in situ*.

7.11 For palaeoenvironmental research different sampling strategies will be employed according to established research targets and the perceived importance of the strata under investigation. AOC Archaeology conventionally recovers three main categories of sample;

i) Routine Soil Samples; a representative 500g sample from every excavated soil context on site. This sample is used in the characterisation of the sediment, potentially through pollen analysis, particle size analysis, pH analysis, phosphate analysis and loss-on-ignition;

ii) Standard Bulk Samples; a representative 10 litre sample from every excavated soil context on site. This sample is used, through floatation sieving, to recover a sub-sample of charred macroplant material, faunal remains and artefacts;

iii) Purposive or Special Samples; a sample from a sediment which is determined, in field, to either have the potential for dating (wood charcoal for radiocarbon dating or *in situ* hearths for magnetic susceptibility dating) or for the recovery of enhanced palaeoenvironmental information (waterlogged sediments, peat columns, etc).

7.12 Any finds of human remains will be left *in situ*, covered and protected. In Scotland the local police will be informed. If removal is essential this will only take place with police approval, and in compliance with Historic Scotland's Operational Policy Paper '*The Treatment of Human*

Remains in Archaeology'. In England and Wales the coroner's office will be informed. If removal is essential it will only take place under the relevant Home Office licence and local authority environmental health regulations.

7.13 All finds of gold and silver will be moved to a safe place. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage. In Scotland the recovery of such material, along with all other finds, will be reported to the Queen's and Lord Treasurer's Remembrancer. In England and Wales the recovery of such material will be reported to the coroner's office according to the procedures relating to Treasure Trove.

7.14 After recording, the trenches will be backfilled with excavated material.

Recording

7.15 For each trench, a block of numbers in a continuous sequence will be allocated.

7.16 Written descriptions, comprising both factual data and interpretative elements, will be recorded on standardised sheets.

7.17 Where stratified deposits are encountered a 'Harris'-type matrix will be compiled during the course of the excavation.

7.18 The site grid will be accurately tied into the National Grid and located on the 1:2500 or 1:1250 map of the area.

7.19 Plans will normally be drawn at a scale of 1:100, but on urban or deeply stratified sites a scale of 1:50 or 1:20 will be used. Burials will be drawn at 1:10. Other detailed plans will be drawn at an appropriate scale.

7.20 Long sections of trenches showing layers and any cut features will be drawn at 1:50. Sections of features or short lengths of trenches will be drawn at 1:20.

7.21 Generally all sections will be accurately related to Ordnance Datum. There may, occasionally, be instances where this is unnecessary when it will be agreed with the local authority's archaeological representative in advance.

7.22 Registers of sections and plans will be kept.

7.23 A full colour print and colour transparency photographic record will be maintained. This will illustrate the principal features and finds both in detail and in a general context. The photographic record will also include working shots to represent more generally the nature of the fieldwork.

7.24 A register of all photographs taken will be kept on standardised forms.

7.25 All recording will be in accordance with the standards and requirements of the *Archaeological Field Manual* (Museum of London Archaeology Service 3rd edition 1994).

Finds

7.26 All identified finds and artefacts will be collected and retained. Certain classes of material, ie post-medieval pottery and building material, may on occasion be discarded after recording if a representative sample is kept. No finds will be discarded without the prior approval of the archaeological representative of the local authority and the receiving museum.

7.27 Finds will be scanned to assess the date range of the assemblage with particular reference to pottery. In addition the artefacts will be used to characterise the site, and to establish the potential for all categories of finds should further archaeological work be necessary.

7.28 All finds and samples will be treated in a proper manner and to standards agreed in advance with the recipient museum. Finds will be exposed, lifted, cleaned, conserved, marked, bagged

and boxed in accordance with the guidelines set out in United Kingdom Institute for Conservation's *Conservation Guidelines No. 2*.

7.29 In England and Wales, at the beginning of the project (prior to commencement of fieldwork) the landowner and the relevant museum will be contacted regarding the preparation, ownership and deposition of the archive and finds. In Scotland all archaeological material recovered belongs to the Crown and its disposal is administered by the Queen's and Lord Treasurer's Remembrancer.

APPENDIX 8
Evaluation reports

8.1 The style and format of the evaluation report will be determined by AOC Archaeology, but will be compliant with Historic Scotland's issued guidance on Data Structure Reports. The report will include as a minimum the following;

i) A location plan of the site.
ii) A location plan of the trenches and/or other type of fieldwork strategy employed.
iii) Plans and sections of features and/or extent of archaeology located. These will be at an appropriate scale.
iv) A summary statement of the results.
v) A table summarising per trench the deposits, features, classes and numbers of artefacts encountered and spot dating of significant finds.
vi) Consideration to the methodology will be given along with a confidence rating for the results.

8.2 When an evaluation is followed by an excavation the procedures defined in English Heritage's *Management of Archaeological Projects* 2nd edition 1991 will be followed for immediate post-field archive preparation and initial assessment. It will then be agreed with the local authority's archaeological advisor which aspects will need to be taken forward to the report stage.

APPENDIX 9
Area excavation

9.1 Prior to the stripping of any area excavation, all appropriate surveys (eg geophysical, earthwork, contour) or sampling strategies (eg for topsoil artefact densities, metal detecting, phosphate analysis) will be undertaken.

9.2 In most cases sites will be mechanically stripped of topsoil and other overburden. An appropriate machine will always be used. This will normally be a 360° tracked excavator with a between 1.4 and 2.4m wide toothless bucket. In other cases a JCB 3CX (or similar), or for work with restricted access or working room a mini-excavator such as a Kubota KH 90 will be used. Suitably sized dumpers or lorries will be employed to remove spoil. No plant will be allowed to cross stripped areas.

9.3 All machining will be undertaken under the direct control of experienced archaeologists.

9.4 All undifferentiated topsoil or overburden will be removed down to the first significant archaeological horizon in level spits. The archaeological horizon to which the material will be cleared will have first been established by an evaluation or by the digging of test pits.

9.5 Depending on the aims of the project, the excavated spoil may be monitored in order to recover artefacts. Where their findspots are plotted this will usually be on a 2m grid.

9.6 The surface exposed by the stripping will be cleaned using appropriate hand tools.

9.7 Should the site grid not have already been established it will be done at the cleaning stage. The grid will normally be based on a 10m spacing and related to the National Grid. A temporary bench mark related to Ordnance Datum will be founded

9.8 After the cleaning and planning of the excavation area the sampling strategy will be finalised. This will take into account the project aims (which may need modifying at this stage) and the type, quality and quantity of remains revealed. The sampling strategy will normally seek to maintain at least the following levels;

i) all structures and all zones of specialised activity (eg funerary, ceremonial, industrial, agricultural processing) will be fully excavated and all relationships recorded;

ii) ditches and gullies will have all relationships defined, investigated and recorded. All terminals will be excavated. Sufficient lengths of the feature will be excavated to determine the character of the feature over its entire course; the possibility of re-cuts of parts of the feature, and not the whole, will be considered. This will be achieved by a minimum 10% sample of each feature (usually a 1m section every 10m).

iii) Sufficient artefact assemblages will be recovered (where possible) to assist in dating the stratigraphic sequence and for obtaining ample ceramic groups for comparison with other sites;

iv) all pits, as a minimum, will be half-sectioned. Usually at least 50% (by number) of the pits will be fully excavated. Decisions as to which pits will be fully excavated will be taken in the light of information gained in the half-sectioning taking into consideration, amongst other things; pit function, artefact content and location;

v) for post and stake holes where they are clearly not forming part of a structure (see above) 100% (by number) will be half-sectioned ensuring that all relationships are investigated. Where deemed necessary, by artefact content, a number may demand full excavation;

vi) for other types of feature such as working hollows, quarry pits, etc the basic requirement will be that all relationships are ascertained. Further investigation will be a matter of on-site judgement, but will seek to establish as a minimum their extent, date and function;

vii) for layers, an on-site decision will be made as to the limits of their excavation. The factors governing the judgement will include the possibility that they mask earlier remains, the need to understand function and depositional processes, and the necessity to recover sufficient artefacts to date the deposit and to meet the project aims.

9.9.1 For palaeoenvironmental research different sampling strategies will be employed according to established research targets and the perceived importance of the strata under investigation. AOC Archaeology conventionally recovers three main categories of sample;

i) Routine Soil Samples; a representative 500g sample from every excavated soil context on site. This sample is used in the characterisation of the sediment, potentially through pollen analysis, particle size analysis, pH analysis, phosphate analysis and loss-on-ignition;

ii) Standard Bulk Samples; a representative 10 litre sample from every excavated soil context on site. This sample is used, through floatation sieving, to recover a sub-sample of charred macroplant material, faunal remains and artefacts;

iii) Purposive or Special Samples; a sample from a sediment which is determined, in field, to either have the potential for dating (wood charcoal for radiocarbon dating or *in situ* hearths for magnetic susceptibility dating) or for the recovery of enhanced palaeoenvironmental information (waterlogged sediments, peat columns, etc).

9.10 Any finds of human remains will be left *in situ*, covered and protected. In Scotland the local police will be informed. If removal is essential this will only take place with police approval, and in compliance with Historic Scotland's Operational Policy Paper '*The Treatment of Human Remains in Archaeology*'. In England and Wales the coroner's office will be informed. If removal is essential it will only take place under the relevant Home Office licence and local authority environmental health regulations.

9.11 All finds of gold and silver will be moved to a safe place. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the artefacts from theft or damage. In Scotland the recovery of such material, along with all other finds, will be reported to the Queen's and Lord Treasurer's Remembrancer. In England and Wales the recovery of such material will be reported to the coroner's office according to the procedures relating to Treasure Trove.

Recording

9.12 All on-site recording will be undertaken in accordance with the standards and requirements of the *Archaeological Site Manual* (Museum of London 1994).

9.13 A continuous unique numbering system will be employed.

9.14 Written descriptions, comprising both factual data and interpretative elements, will be recorded on standardised sheets.

9.15 Where stratified deposits are encountered a 'Harris'-type matrix will be compiled during the course of the excavation.

9.16 The site grid will be accurately tied into the National Grid and located on the 1:2500 or 1:1250 map of the area.

9.17 Plans will normally be drawn at a scale of 1:100, but on urban or deeply stratified sites a scale of 1:50 or 1:20 will be used. Burials will be drawn at 1:10. Other detailed plans will be drawn at an appropriate scale.

9.18 Long sections of trench edges or internal baulks showing layers and any cut features will be drawn at 1:50 or 1:20 depending on amount of detail contained. Sections of features will be drawn at 1:20.

9.19 All sections will be accurately related to Ordnance Datum.

9.20 Registers of sections and plans will be kept.

9.21 A full colour print and colour transparency photographic record will be maintained. This will illustrate the principal features and finds both in detail and in a general context. The photographic record will also include working shots to represent more generally the nature of the fieldwork.

9.22 A register of all photographs taken will be kept on standardised forms.

Finds

9.23 All identified finds and artefacts will be collected and retained. Certain classes of material, ie post-medieval pottery and building material may on occasion be discarded after recording if a representative sample is kept. No finds will be discarded without the prior approval of the archaeological representative of the local authority and the receiving museum.

9.24 All finds and samples will be treated in a proper manner and to standards agreed in advance with the recipient museum. Finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in United Kingdom Institute for Conservation's *Conservation Guidelines No. 2*.

9.25 In England and Wales, at the beginning of the project (prior to commencement of fieldwork) the landowner and the relevant museum will be contacted regarding the preparation, ownership and deposition of the archive and finds. In Scotland all archaeological material recovered belongs to the Crown and its disposal is administered by the Queen's and Lord Treasurer's Remembrancer.

Archiving, post-excavation and publication

9.26 Following completion of each stage or the full extent of the fieldwork (as appropriate) the site archive will be prepared in the format agreed with the receiving institution.

9.27 On completion of the archive a summary report will be prepared. This will include;

i) an illustrated summary of the results to-date indicating to what extent the project aims were fulfilled;

ii) a summary of the quantities and potential for analysis of the information recovered for each category of site, artefact, dating and palaeoenvironmental data;

iv) proposals for analysis and publication.

9.28 The proposals for analysis and publication will include;

i) a list of the revised project aims arising from the fieldwork and post-excavation assessment;

ii) a method statement which will make clear how the methods advocated are those best suited to ensuring that the data-collection will fulfil the stated aims of the project;

iii) a list of all tasks involved in meeting the stated methods to achieve the aims and produce a report and research archive in the stated format;

iv) details of the research team and their projected work programmes in relation to the tasks. Allowance will be made for general project-related tasks such as project meetings, management, editorial and revision time;

v) a publication synopsis indicating publisher, report format and content shown by chapters, section and subheadings with the anticipated length of text sections and proposed number of illustrations.

9.29 The summary report embracing the analysis and publication proposals will be submitted to the client and the local authority's archaeological representative for approval.

9.30 Any significant variation in the project design, including timetables, proposed after the agreement of the proposals must be acceptable to the local authority's archaeological representative.

9.31 The results of the project will be published in an appropriate archaeological journal or monograph. The suitable level of publication will be dependent on the significance of the project results, but as a minimum the basic requirements of Appendix 7.1 of *Management of Archaeological Projects* (English Heritage 1991) will be met.

APPENDIX 10

Standing Building Assessment

10.1 A standing building assessment will normally take place in concordance with a Conservation Plan, but may also form part of a Desk-Based Assessment if required.

10.2 A visual inspection will be made of both the interior and exterior of the building(s) with a view to establishing the extent of the architecturally important elements that should be included in a later phase of historic building recording work.

10.3 A brief written record will be made in addition to digital photography of areas of interest to support recommendations and outline architectural features within the building(s).

APPENDIX 11
Historic Building Recording: The Written Record (Levels 0-6)

11.1 Pro forma building recording sheets will be used for the basic written record of the building(s) including comments on the condition, construction techniques, materials, fixtures and fittings and interpretation of function. A competent analysis will be made of all building phases and any relationship between buildings. Day Book records will also be kept for any levels of recording above Level 1.

11.2 At Level 4, the written record will encompass a thorough context description of each broad phase of construction and alteration with a view to formulating a stratigraphic matrix of the site.

APPENDIX 12
Historic Building Recording: Photography (Levels 1-5)

12.1 Photography will take place at all levels of building recording, and will be undertaken with a single lens reflex camera with through-the-lens (TTL) light metering. A standard 28-90mm lens will be used at all times except where wider or shorter angle lenses are required for longer elevation photography and detailed photography.

12.2 The camera will be placed at mid-height to the subject with due care and attention to lighting situations. Two shots will be taken of each feature, undertaken by a light-meter reading of a two-step change in aperture. This change up or down will depend on light conditions.

12.3 Interior photography will be undertaken with appropriate lighting conditions and the use of a tripod. Where light access is still quite minimal, an automatic flash will be used.

12.4 All photography will be taken on colour slide and black & white negative film, such as Kodak PLUS-X or Ilford FP4, or approved equivalent. It should be exposed and processed to an archival standard, i.e., fix and wash in accordance with the manufacturers specifications.

12.5 The use of a digital camera may be used as a reference to survey and drawn elevations and ground plans on-site.

APPENDIX 13
Historic Building Recording: Rectified Photography and Photogrammetry (Level 3)

13.1 An external contractor will carry out rectified photography and photogrammetry in compliance with the following guidelines:

i) All photography will be carried out with an approved type of camera. Details of the camera used may be supplied on completion of the project.

ii) The smallest permissible photographic negative scale will normally be defined as follows: for 1:50 scale plotting, negative scale should be no more than 1:200 and for 1:20 scale plotting, negative scale should be no more than 1:200.

iii) All rectified photography will be taken on black & white negative film, such as Kodak PLUS-X or Ilford FP4, or approved equivalent. It should be exposed and processed to an archival standard, i.e., fix and wash in accordance with the manufacturers specifications.

APPENDIX 14

Historic Building Recording: Elevation Recording (Level 2)

14.1 All elevations drawn or surveyed will be a 'preservation by record' of the current state of the building. The following categories will be recorded:

i) All architectural features with associated decorative detail including windows, doors, quoin stones, string courses, roof lines and other structural stonework and jointing.

ii) Fixtures and fittings such as drainpipes and guttering, signs, brackets and vents.

iii) Later modifications and/or damage to the building such as structural cracks, areas of erosion, patches of rendering, blocked doorways, windows and other openings.

14.2 Large or small repetitive features such as windows, capitals, mouldings, etc. sampling will be undertaken as appropriate.

14.3 Where the façade is of stone construction each individual stone may be recorded. However, in most instances, a representative area, usually 1m², will be sufficient, although windows, corner stones and other architectural details will always be fully recorded. The degree of recording for ashlar will be depend upon the scale with which the elevation is to be produced and will be determined in advance of the start of works. When drawings are carried out at 1:50, a single line between the joints of the stone will normally be considered satisfactory. However, if there is a considerable gap between the stones, both sides of the stone will be shown. At a scale of 1:20 or larger, then all joints will normally be shown except where the stone is very fine ashlar.

14.4 Elevation recording by hand will normally take place if it is inappropriate to do so by survey. The size and complexity of an elevation will determine what on-site scale will be required. In general, a scale of 1:50 will be deemed appropriate with a larger scale adopted if portions of this elevation are more complex. For highly detailed architectural detail a scale of 1:1 may be appropriate.

14.5 All hand-drawn measured elevations and detail will be drawn using water-resistant paper with a hard 4H – 6H pencil. A levelled datum line will be taken through the centre of the elevation with offset measurements. All datum points will be accurately positioned within the site either by hand or by survey.

APPENDIX 15

Historic Building Recording: Elevation Recording – By Survey (Levels 2-4)

15.1 Where appropriate, elevations may be recorded by radiation survey using a reflectorless EDM (REDM) Leica TCR 705. This method of survey allows the accurate capture of data of upper floor levels. If more than one elevation is to be recorded, then a traverse will be created around each building or group of buildings. Extra stations may be set up in places where there is limited access. Values in the traverse will be adjusted by Bowditch adjustment to compensate for any

errors in measurement. The adjusted values will then be calculated using LisCAD Plus v5.0 (Surveying and Engineering Module). Co-ordinates will be located by resection from existing traverse points. The survey data will be downloaded to a laptop computer on-site via Leica Office software. All measurements taken by survey will consist of three-dimensional co-ordinates relating to the Ordnance Survey National Grid.

15.2 The recording of an elevation will not be carried out by survey equipment if:

i) There are too many obstructions;

ii) The surface of the building is too dark or mossy;

iii) There is too much curved architectural detail;

iv) The distance required to set up the survey equipment in front of the elevation is too large (i.e., more than 25m) or too short to capture data from the upper levels of the elevation.

15.3 Where appropriate, elevations carried out by survey will be supplemented by detail measured by hand.

APPENDIX 16
Historic Building Recording: Interior Recording (Levels 2-4)

16.1 The recording of the interior(s) of the building(s) will consist of a written record and, where appropriate, measured sketch plans of the ground plan and the roof elevations based on the following guidelines:

i) Critical analysis of the interior condition, construction, materials, fixtures and fittings will be made using *pro forma* recording sheets.

ii) Measured interior ground plans of each room of the interior will be carried out using tapes and a Leica Disto™ Classic electronic distance measurer.

iii) All measured plans will contain: notes on the size of structural members, and finishes; floor levels, change in levels, and ceiling heights; direction of stair rises in plan with each riser numbered; the positions of service entry points, plant and machinery and sanitary fittings; below-ground drainage; soil and vent stacks and rainwater pipes where appropriate.

APPENDIX 17
Historic Building Recording: Standard Report Illustrations (Level 6)

17.1 All final illustrations for archive will be produced digitally on the Computer-Aided Drawing package, AutoCAD 2000i/2000LT and/or Adobe Illustrator v9/v10. A standard methodology will be used with all drawings adhering to the following guidelines:

17.2 Line Weight. The appropriate line weight will depend on anticipated plot scale and may need editing if the output scale is to change. The degree of detail used will affect the line weight utilised in the finished drawing. All fine architectural detail (stonework, moulded stonework, brickwork, etc.) will be produced at a line weight of 0.05mm. More general architectural features (outlines of doors and windows, etc.) will be produced at a line weight of 0.09mm. A much heavier line will indicate the changing of plane in complex elevations.

17.3 Text. Text will be made clear and informative, with orientation, position, size and letter spacing remaining appropriate to the layout of the plotted sheets.

17.4 Scale. No archaeological or historic building survey will be carried out without a particular scale or range of scales in mind.

17.5 Layers. The layering system in Computer Aided Drawing packages allow the separation of data into specified criteria. To achieve this, there is an AOC standard layering system. This system is largely based on the coding system inherent in the use of the reflectorless EDM Leica TCR705.

17.6 Digital Archiving. All drawings are produced at a 1:1 scale for easy scaling in .dxf or .dwg format. At the end of a project, all data is stored on CD-ROM.

APPENDIX 18

Historic Building Recording: Dendrochronological Analysis (Level 3)

18.1 Dendrochronological analysis of timbers from standing building is primarily undertaken to provide accurate dates for its construction. Where appropriate, samples may be taken for analysis to provide information on the source and quality of the timber, thus informing on the social and economic context of the building.

18.2 Samples for analysis will take place under the following conditions:

i) That the timber sample taken is from a species where date chronologies already exist, namely oak and pine.

ii) A minimum of eight timbers per phase or building are required to cross-match results.

iii) The ring patterns inherent in a timber sample must be over a certain length, usually seventy rings.

18.3 The method of the removal of samples of timber will be to use a corer attached to a power-driven drill, removing a core leaving a hole in the timber 10mm in diameter. The core will be taken so that a maximum radius from pith to bark is taken, thus ensuring the maximum numbers of growth rings for analysis. Timbers will be selected which have retained a full ring sequence as possible (i.e., those where the outermost rings have not been trimmed off or destroyed by woodworm).

18.4 Where it is impossible to use this intrusive method of sample, for example, in the case of painted ceilings and carved panels, the ring sequence can be measured *in situ* using a hand lens. Silicone rubber casts can also be taken where the end grain is exposed.

APPENDIX 19

Historic Building Recording: Paint and Wallpaper Analysis (Level 3)

19.1 Paint and/or wallpaper analysis will usually only take place where layers that have been applied over the years have not been removed. Where appropriate, paint analysis can take place by methods of scraped samples or thin section analysis. Cross-sections may also be obtained from samples of paint to reveal a stratigraphy of paint layers.

APPENDIX 20

Historic Building Recording: Reporting (Levels 0-6)

20.1 The style and format of the final report on historic building recording works will be determined by AOC Archaeology, but will be compliant with Historic Scotland's issued guidance on Data Structure Reports. The content of this report will depend greatly in the level of works that have taken place but at minimum will include:

i) A location plan of the site showing the areas under investigation numbered and cross-referenced in the text;

ii) A summary statement of the results;
iii) An introduction, methodology and results of the works;
iv) Photographic plates to illustrate the text.

20.2 Where a programme of historic building recording has taken place at Level 2 or above, the Data Structure Report will contain a number of illustrations, the format of which is outlined in more detail in Appendix 17.

APPENDIX 21
Watching Briefs

21.1 Where the archaeologist (Watching Brief Officer) has no remit over the working methodology of the site (specification of machine or depth of excavation). The Watching Brief Officer will simply observe the works and record their nature and form. Where the Watching Brief Officer specifies the site methodology, ie type of machine and depth of excavation. AOC Archaeology's preferred approach is to consider the Watching Brief Area as a large evaluation trench and follows in general, Appendix 7.

21.1 It is important to stress that the client determines the area affected and unless instructed by a curator the Watching Brief Officer has no power to extend the area unless it is to fully excavate a human body that otherwise would have been truncated by the works.

21.2 In addition to the general principles outlines in Appendix 7 the following approaches will be undertaken:

i) a record will be made of all site attendances;
in general a written and photographic record will be kept of the excavated sediments;

ii) where archaeological features are identified and they can be dealt with in less than two hours this work will be undertaken by the Watching Brief Officer. Recording and excavation protocols will follow Appendices 7.9 –7.11;

iii) where archaeological remains requiring more than two hours of excavation and recording, the Watching Brief Officer will stop the works and both the curator and the client will be contacted to devise a mitigation strategy. All delays will be kept to a minimum. Any resultant excavation and recording work will be in keeping with the methods outlined in Appendix 9;

iv) the extent of the watching brief area will not be recorded unless specifically required by either the client or the curator. Where such recording is required the area will be accurately recorded by total station and linked into the Ordnance Datum;

v) Reporting of Watching Briefs will follow methods specified in Appendix 8.

APPENDIX 22
General

22.1 The requirements of the Brief will be met in full where reasonably practicable .

22.2 Any significant variations to the proposed methodology will be discussed and agreed with the local authority's archaeological representative in advance of implementation.

22.3 The scope of fieldwork detailed in the main part of the Written Scheme of Investigation is aimed at meeting the aims of the project in a cost-effective manner. AOC Archaeology Group attempts to foresee all possible site-specific problems and make allowances for these. However there may

on occasions be unusual circumstances which have not been included in the programme and costing. These can include;

i) unavoidable delays due to extreme weather, vandalism, etc;
ii) trenches requiring shoring or stepping, ground contamination, unknown services, poor ground conditions;
iii) extensions to specified trenches or feature excavation sample sizes requested by the local authority's archaeological advisor;
iv) complex structures or objects, including those in waterlogged conditions, requiring specialist removal.

Health and Safety

22.4 All relevant health and safety legislation, regulations and codes of practice will be respected.

22.5 With the introduction of the Construction, Design and Management Regulations 1994, AOC Archaeology works with Clients, Main Contractors, and Planning Supervisors to create a Health and Safety Plan. Where CDM regulations apply, each project will have its own unique plan.

Insurances

22.6 AOC Archaeology holds Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance. Details can be supplied on request.

22.7 AOC Archaeology will not be liable to indemnify the client against any compensation or damages for or with respect to;
i) damage to crops being on the Area or Areas of Work (save in so far as possession has not been given to the Archaeological Contractor);
ii) the use or occupation of land (which has been provided by the Client) by the Project or for the purposes of completing the Project (including consequent loss of crops) or interference whether temporary or permanent with any right of way light air or other easement or quasi easement which are the unavoidable result of the Project in accordance with the Agreement;
*iii)*any other damage which is the unavoidable result of the Project in accordance with the Agreement;
iv) injuries or damage to persons or property resulting from any act or neglect or breach of statutory duty done or committed by the client or his agents servants or their contractors (not being employed by AOC Archaeology) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof or in relation thereto.

22.8 Where excavation has taken place evaluation trenches will be backfilled with excavated material but will otherwise not be reinstated unless other arrangements have previously been agreed. Open area excavations normally will not be backfilled but left in a secure manner unless otherwise agreed.

Copyright and confidentiality

22.9 AOC Archaeology will retain full copyright of any commissioned reports, tender documents or other project documents under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive licence to the Client in all matters directly relating to the project as described in the Written Scheme of Investigation.

22.10 AOC Archaeology will assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988.

22.11 AOC Archaeology will advise the Client of any such materials supplied in the course of projects which are not AOC Archaeology's copyright.

22.12 AOC Archaeology undertake to respect all requirements for confidentiality about the Client's proposals provided that these are clearly stated. In addition AOC Archaeology further undertakes to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that Clients respect AOC Archaeology's and the Institute of Field Archaeologists' general ethical obligations not to suppress significant archaeological data for an unreasonable period.

Standards

22.13 AOC Archaeology conforms to the standards of professional conduct outlined in the Institute of Field Archaeologists' Code of Conduct, the IFA Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology, the IFA Standards and Guidance for Desk Based Assessments, Field Evaluations etc., and the British Archaeologists and Developers Liaison Group Code of Practice.

22.14 Project Directors normally will be recognised in an appropriate Area of Competence by the Institute of Field Archaeologists.

22.15 Where practicable AOC Archaeology will liaise with local archaeological bodies (both professional and amateur) in order that information about particular sites is disseminated both ways (subject to client confidentiality).

APPENDIX 23
Specialist staff

The following specialist staff may be used on this project depending on the type of artefacts and soil samples recovered during the course of the fieldwork.

AOC Archaeology Staff:

Dr. Anne Crone	Dendrochronology, charcoal and timber analysis
Dr. Ciara Clarke	Pollen analysis
Mr. Rob Engl	Lithics & coarse stone
Ms. Melissa Melikian	Human bone
Ms Jackaline Robertson	Macroplant specialist
Mr Alan Duffy	Charcoal identification
Ms Pieta Greaves	Artefact conservation

Sub-contractors

Ms. Lynne Roy	Soils and sediments analysis
Dr Jennifer Thoms	Mammal Bone
Mr. Bob Clark	Industrial archaeology & coal-mining
Ms Marta McGlynn	Historic designed landscapes
Dr. Ruby Ceron-Carasco	Marine shell and fish bone
Dr. Ann MacSween	Prehistoric pottery
Ms. Naomi Crowley	Building material, medieval and post-medieval pottery
Ms.Amanda Clydesdale	Plaster, paint and wallpaper analysis

APPENDIX 24
Post-excavation

24.1 *Sample Flotation*

Sample flotation is a water recovery technique designed to separate organic remains from the soil matrix. A Siraf style system of flotation and wet-sieving will be operated by the archaeological contractor. This system comprises an enclosed area of water into which the soil samples are deposited and agitated. Due to the difference in densities of organic and inorganic remains the light fractions will float, the heavy fractions will sink and the silt fraction will be washed away. The resulting floating material (flot) is collected in sieves of 0.3 mm and 1 mm, the non-floating residue (retent) is wet-sieved through a 1 mm mesh.

All flots and retents are air dried, bagged and labelled accordingly. Throughout this process all equipment is kept clean to prevent contamination of the samples. For each sample, a Sieving Assessment sheet is completed. This gives basic information about the sample, retent and flot. Prior to flotation and wet-sieving, the volume of each sample is measured by means of a graduated bucket.
If in a sample a high concentration of clay can be observed and therefore separation of the different fractions of the soil is difficult, an aqueous solution of defloculant 'Calgon' is added and the sample is left to soak overnight, before processing by flotation and wet-sieving.
Sample flotation will be carried out on site and/or at the premises of the archaeological contractor.

24.2 *Sample Wet sieving*
Sample wet sieving, also a water recovery technique, is carried out in laboratory conditions and is designed to recover waterlogged material. For the recovery of waterlogged botanical material, small soil samples (0.5 to 1.0 litre) are processed through a 0.3 mm sieve. The sediment is placed in a bucket with water and agitated before being washed through the 0.3 mm sieve. This process is repeated until the sample is totally disaggregated. The resulting material is stored in water or ethanol depending on the length of the storage period. Sample wet sieving can also be used to recover larger waterlogged material such as leather and wood in which case larger volumes of soil are processed.

24.3 *Sample Dry sieving*
Sample dry sieving is carried out to retrieve smaller artefacts that might be missed during normal excavation procedure, eg. small sherds of pottery and bone . Done in laboratory conditions, all samples are air dried in the first instance. Done in the field, the samples are processed with the sample in a field-moist state. In both cases the sample is passed through a 4 mm mesh and any items of interest are recovered and recorded.

24.4 *Residue sorting*
All residue (retent) sorting is carried out in laboratory conditions, and is designed to recover not only material that might be missed during normal excavation procedure (see dry sample sieving), but also material that would be impossible to recover during normal excavation procedure eg. charred and uncharred plant remains, insect remains and small fragments of charcoal.

The volume of the residue is recorded and then passed through a set of sieves (mesh sizes 8 mm, 4 mm, 2 mm and 1 mm). Each fraction is spread out onto a separate tray, is scanned with the naked eye and all items of interest are recovered. Under normal circumstances all identifiable material from all fractions is recovered. The only exception to this is burnt wood (charcoal) which is only retrieved from the > 4 mm fractions. All material recovered is bagged individually by material type and the material types and weights recorded on the Retent Sorting Sheet. Also recorded on this sheet are the project number, context number, area, sample number, the sorters initials, date, sample volume, retent volume and percent of the retent sorted. Under normal circumstances 100 % of all fractions are sorted. In those instances where this is not the case, this will be recorded. Where no material is recovered from a retent, the Retent Sorting Sheet will be filled out as usual, with the word sterile written across it.

24.5 *Flot sorting*

All flot sorting is carried out in laboratory conditions. The volume of each flot is measured. The flots are sorted by means of a low powered binocular microscope. The macro plant remains and other archaeological or ecological material are extracted from the flots and put into gelatine capsules or glass tubes. An estimate of the number of items recovered and the species represented are recorded. The charcoal larger than 4mm is extracted from the flots and weighed. All extracted items are bagged and labelled accordingly.

24.6 *Routine Soils Analysis*

All the samples taken on-site will have a routine partner. Four standard routine soil tests will be carried out by the archaeological contractor. These are pH analysis, Loss on Ignition, Calcium Carbonate content and Easily available phosphate content.

The pH value is the measure of the acidity (H+) or alkalinity (OH+) of the sample. Dissolving a portion of the soil in distilled water, then measuring the sample using pH meter carries this out. This is to allow us to estimate the potential for preservation within the sediment.

Loss on Ignition is the measure organic content of the sample. This is measured by burning a small amount of the sediment in a furnace at 400^0C for four hours. By measuring the weight before and after burning the organic content can be calculated. The organic content allows us to examine whether manuring or treatment of the natural soil has taken place.

Calcium Carbonate content can be measured by dissolving a few grains of the sample using Hydrochloric acid. If calcium carbonate is present then a small amount of Carbon Dioxide is given off, the greater the amount of CO_2 released the greater the amount of $CaCO_2$. The Calcium Carbonate content shows us if there is any natural calcium carbonate within the sediment, or if not, any mortar or shell has been included artificially.

The amount of phosphate within a sample is examined at the same time as $CaCO_2$. After the CO_2 has been released Ascorbic acid is applied, if Phosphate is present a colour change will occur. The phosphate content may show the presence of animals or to a lesser degree indicate where animals were kept.

24.7 *Soil Micromorphological Analysis*

Micromorphology is the study of undisturbed soils and loose sediments and other materials at a microscopic scale. A 25-30 micron thick slice of soil or sediment is mounted on glass and studied using a petrographic microscope. The samples are prepared for thin section analyses at the Department of Environmental Science, University of Stirling using the methods outlined by Murphy (1986). The samples are analysed using the descriptive terminology of Bullock *et al* (1985) and FitzPatrick (1993).

Bullock, P., Fedoroff , N., Jongerius, A., Stoops, G., Tursina, T. & Babel, U.1985 *Handbook for soil thin section description*. Wolverhampton: Waine research Publications.

FitzPatrick, E.A.1993. *Soil microscopy and micromorphology.* Chichester: John Wiley & Sons.

Murphy, C. P. 1986. *Thin section preparation of soils and sediments*. Berkhamsted: AB Academic Press.

24.8 *Charcoal ID*

Only charcoal retrieved from the 4mm sieve (see Sieving and Sorting procedures) is used for species identification, mainly because fragments below that threshold are too small to identify. If there is no charcoal larger than 4mm present then attempts will be made to identify the largest fragments present for the purpose of C14 samples.

Surfaces are prepared for identification by using a surgical blade to prise off flakes of charcoal revealing fresh surfaces on which diagnostic features can be identified. The charcoal fragment is bedded in sand for examination under a reflected-light microscope.

On average, up to 10 fragments of charcoal are identified per bulk sample. If a single species is present then identification can stop at 5 fragments. However, if a great variety of species is present, ie more than four, then identification should continue until the analyst is happy that a representative sample has been examined. Unusual or exotic species should be bagged and labelled separately within the bulk sample.

Other variables, such as whether the fragment is young roundwood, with sub-bark surfaces intact, whether it has come from a large piece of wood and whether it is fast or slow grown, should be noted.

Species identification is undertaken with reference to Schweingruber's (1982)

24.9 *Wood ID*

Waterlogged wood; Surfaces on waterlogged wood are prepared for identification by using a cut-throat razor or a double-sided razor blade to pare off thin-sections which are cell-thick and transparent so that diagnostic features can be identified. It is consequently difficult to identify fragments of waterlogged wood smaller than 10 mm^2. The thin-sections are temporarily mounted in water on slides for examination under a transmitted-light microscope.

Sampling for identification is carried out on the same basis as that for charcoal. Species identification is undertaken with reference to Schweingruber's (1982) *Microscopic Wood Anatomy* and the in-house reference collection of the archaeological contractor.

24.10 *Non-charcoal charred plant macrofossil analysis and Waterlogged plant analysis*

Analysis of the charred plant macrofossils and waterlogged plants involves identification, quantification and interpretation. Identification of the macro plant remains is done using a low power binocular microscope with x10 and x40 magnifications. The modern reference collection of the archaeological contractor and various seed atlases (Beijerinck 1947, Berggren 1969 & 1981 and Anderberg 1994) will be used to ease identification. The botanical nomenclature follows Flora Europaea (Tutin *et al* 1964-1981). A standardised counting method is used for quantification. Habitat information for the plant species will be taken from Hanf (1983).

24.11 *Dendrochronological analysis*

*Sample size and species type;*Three conditions are necessary to ensure the successful dating of a building or archaeological site. The timber must be a species for which there are already dated chronologies which in the UK usually means oak. Cross-matching is a statistical process, and therefore a number of timbers are required, usually at least 8 per building or phase. Finally, and for the same reasons the ring-patterns must be over a certain length, usually 70 rings. With these conditions observed it can be relatively straightforward to obtain a date for a building.

*On-site sampling**;*** *In situ* timbers in a standing building are usually sampled using a corer, which is attached to a power-driven drill and removes a core leaving a hole in the timber 10 mm in diameter. The core must be taken so that the maximum radius from pith to bark is sampled, thus ensuring the maximum number of growth-rings for analysis. It is also important to select those timbers which have retained as full a ring sequence as possible, ie those where the outermost rings have not been trimmed off or destroyed by woodworm.

Coring is an intrusive method of sampling and it is occasionally impossible to use this method, as in the case of painting ceilings and carved panels. If the end-grain is exposed the ring sequence can be measured *in situ* using a hand lens. Silicone rubber casts can also be taken.

If structural timbers have been removed during the renovation of a building then slices, approximately 50 mm thick can be sampled by saw, usually a chainsaw, from a point along the timber where the maximum radius survives.

Timbers only survive below ground in waterlogged conditions. Waterlogged timbers are sampled as above, by the removal of a 50 mm slice by sawing.

Sample preparation;

Cores are mounted in angle moulding and then the surface is prepared by paring with a Stanley knife followed by fine sanding with Wet&Dry sandpaper until the ring-pattern is clear and measurable.

Slices (dry); The surface of the slice is sanded, usually with a power sander, using progressively finer sandpaper until the ring-pattern is clear and measurable. It is often necessary to finish off the surface with W&D sandpaper.

Slices (wet); The slice is usually frozen for 24 hours and then the surface is planed flat using a Surform plane. This often achieves the necessary clarity of ring-pattern but where the wood is particularly hard it will be necessary to use a razor blade to pare the surface to achieve a clear ring-pattern.

Silicone rubber casts; These are fixed to battens of wood using silicone rubber, for ease of measurement.

*Measurement and analysis;*The samples are measured on a custom-made measuring table and the data logged onto the computer using DENDRO (Tyers 2000). Data graphing and statistical analysis are also carried out using the same package.

APPENDIX 25
Conservation

25.1 *Conservation principles*

The principles, ethical codes and techniques of conservation are under constant review by both practitioners and professional bodies. The archaeological contractor's approach to conservation will reflect current theory and practice, as recommended by the United Kingdom Institute for Conservation, the Scottish Museums Council, Resources for Museums and Galleries, the International Council on Museums and the International Institute for Conservation.

25.2 *Security*

The archaeological contractor will take all reasonable precautions to ensure the security of items brought in for conservation. The building will be protected by intruder detector systems; all conservation items will be kept in a secure locked store when not being worked on, and will not be left unattended. Particularly valuable items will be stored in a safe where required. A heat and smoke detection system will also be in operation 24 hours a day.

25.3 *Insurance*

Artefacts for conservation will not covered by the contents insurance of the archaeological contractor. Insurance cover can be arranged for individual items and collections, but this is expensive. Clients are normally advised that the cheapest option is to extend their own insurance for these items for a fixed period. If required, the archaeological contractor could arrange additional insurance, and these costs would be passed on.

The archaeological contractor will have full professional indemnity cover for all its staff.

25.4 *Health and safety*

All relevant Health and Safety legislation, Regulations, Guidelines and Codes of Practice will be respected; Health and Safety plans will be compiled where Construction, Design and Management Regulations 1994 apply.

25.5 *Conservators and allied specialist services*

Professionalism: The conservators of the archaeological contractor will be graduates of approved conservation courses, and will have a thorough knowledge of current conservation practices in their particular specialist fields. The conservators will have been actively encouraged to broaden their skills and experience, and to obtain professional accreditation through the United Kingdom Institute for Conservation or PACR.

25.6 *Specialist post-excavation analyses*

Other services which the archaeological contractor will be able to offer are:

wood identification and woodworking analysis
tree ring dating
pollen analysis
building materials analysis
metal artefacts
metalworking and glass working debris
materials analysis
textile analysis
insects
fish and shells
bird bones
plant remains
bone identification
soils specialist/geologist
artefact specialist
fibre identification

leather identification

25.7 *Documentation*

Conservation complements the work of other professionals by preventing the deterioration of the artefact, and by ensuring that the wider community benefits from the additional information recovered about an artefact in the course of conservation work.

Conservation reports are normally supplied as a hard copy, but can also be supplied on disc in a variety of formats, according to the client's requirements. Reports are normally printed on paper with a guaranteed life expectancy of 150 years; photographic materials are processed to professional industry standards such as Q-Lab.

25.8 *Archival considerations*

The archaeological contractor will endeavour to ensure that the materials used to document artefacts undergoing treatment have a reasonable life span. Paper used will have an estimated lifetime of 150 years (HMSO specification), and all photographic films will be processed to industry standards by a processing company that specialises in high quality work for professional photographers. Radiography films and chemicals will be fresh and well within their expiry dates. All labelling of boxes etc. will be carried out with archival quality inks; labels will generally be duplicated for safety's sake.

Wherever possible, the archaeological contractor will consider the archiving requirements for the site, and may consult the receiving museum or archive about their requirements; the archaeological contractor will follow guidelines proposed by the Association of Museum Archaeologists.

The archaeological contractor will abide by current guidelines on the care and disposal of artefacts and human remains, as set out in:

The Disposal and Allocation of Finds
Publication and Archiving of Archaeological Projects
Treatment of Human Remains in Archaeology
Archaeological Project Design, Implementation and Archiving

25.9 *Museum of London Guidelines*

Museum of London requirements for conservation, recording, documentation, packing and archiving will be applied where these are a pre-condition.

25.10 *Assessment and estimating*

The assessment determines the condition of the artefact and the best means to ensure its survival. Radiography (x-raying) of the object is normally carried out at an early stage, and is compulsory for iron objects, which have poor survival prospects, and for some copper alloy artefacts.

The estimate for the work normally applies for six months; it may be necessary to review it thereafter. Conservation rates are agreed by negotiation.

25.11 *Recording*

Text and image records (paper, digital and/or film as appropriate) will be made of all artefacts before conservation commences. Any information recovered during cleaning and conservation (eg associated material, residues, corrosion products, manufacturing techniques) will be carefully recorded, with samples taken where necessary. Soil removed from an artefact during the process will normally be retained and returned with the object, unless the excavator and/or client decides that it is not required. Where necessary, experts will be consulted on the nature of any material

discovered during cleaning or conservation of artefacts. All samples and slides will become part of the site archive and remain with the artefact.

The conservation report will also include recommendations for the care and curation of the assemblage; special finds with particular packing requirements will have clear handling and lifting instructions on the outside of any packaging.

25.12 *Conservation Record*

The conservation assessment sets out the proposed treatments for each type of artefact or material: these treatments can be discussed with the client, and with the museum, to take into account any priorities and display requirements. (See Section 9, Assessment)

25.13 *Radiography*

The archaeological contractor will x-ray all excavated iron objects, as well as some of the copper alloy, and any other items as requested by the excavator: information from the x-rays are incorporated into the conservation report. All metal artefacts can be x-rayed if required; only film and chemicals within their expiry date are used, washing periods are the optimum to maximise film preservation.

X-rays normally become part of the archive, and are returned to the client, with full details of exposure time and voltages used.

25.14 *Record photography*

All artefacts selected for conservation will be photographed (on colour slide film) at least once; usually before and after conservation, with a label and scale in the frame. Unusual artefacts, noteworthy features or modified conservation treatments will be photographed whenever appropriate.

All images will be recorded in the conservation report, and each slide labelled with the context and find number. The archaeological contractor will use Professional grade film, and a professional developing service to ensure maximum film stability. The slides form part of the conservation archive, and will remain with the artefact.

25.15 *On-site conservation and conservation on call*

A conservator can be available on site if required, and the conservators of the archaeological contractor can provide immediate advice over the phone at any time (specific arrangements must be made for out of hours working).

Advice on packing, lifting and transporting artefacts may be given in the early stages of a project.

25.16 *Conservation treatments*

The requirements of each artefact will be considered individually, and any remedial treatments carried out will use only recognised conservation treatments and approved materials. The archaeological contractor will be committed to CPD, which ensures that its conservation staff are fully cognisant with new developments in the field.

25.17 *Post-excavation storage*

It is recognised that budgetary arrangements may mean considerable time can elapse between excavation and conservation or Finds Disposal. All finds will be examined by a conservator on receipt; packing and storage materials will be renewed as necessary, and the archaeological

contractor will ensure that all finds will be kept in a secure, stable environment until conservation treatments begin. Any finds that require immediate treatment will undergo conservation as soon as the conservators have consulted the Project Field Officer. Large volume storage at 1° C and -20° C; and storage for waterlogged material will be available in-house.

25.18 *Packing*

All artefacts will be packed in suitable inert materials, with silica gel if required. Fragile objects will be supported by Ethafoam, or similar, and lifting and handling instructions on the container. Especial care will be taken for artefacts, which will be going into long term storage. All containers will be carefully labelled, and box lists supplied.

APPENDIX 26
Archiving and finds disposal

26.1 *Finds disposal*

All artefacts and ecofacts recovered during an excavation sponsored by Historic Scotland (HS) are reported directly to HS via their own collections registrar. If all material has been fully analysed at this point, it is in most cases, transferred to an HS store. HS's Finds Disposal Panel (FDP) with permission of the Queen and Lord Treasurers Remembrencer (Q&LTR) then allocates the material to the appropriate museum for long term storage and possible display.

Artefacts and ecofacts recovered from excavations sponsored by other funding bodies are reported to the Crown via the Treasure Trove Advisory Panel (TTAP). The TTAP with permission of the Q&LTR then allocates the material to the appropriate museum for long term storage and possible display. Once the material has been allocated, it is then the museum's responsibility to arrange collection from the archaeological contractor.

26.2 *Archiving*

All archiving will be undertaken according to standards and guidelines set out by the National Monuments Record of Scotland (NMRS), located at the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS). The archives of all archaeological works will be deposited to the NMRS.

APPENDIX 27
Publications

27.1 *General*

All publications by the archaeological contractor will be clear, correct and concise accounts of what was done and will reach standards acceptable to the archaeological profession. Final reports will be published within five years of the end of fieldwork. Publications should be published in popular archaeological, general and specialist formats to inform a wide readership of what work was done and must be made available to both lay and professional audiences for the foreseeable future. Publications must also provide good value for money in terms of the content and style of the publications. In DES entries and journal publications the role of the client will be fully acknowledged. In the popular publications and monographs suggested below the role of the client will be more fully promoted, with the display of the client's logo on the cover and a foreword by their representative. The over-riding aim of the procedures outlined in this section is to ensure that,

during the duration of the project, a continuous stream of information about the archaeological works is made available for peer review and public consumption. The following stages and publication vehicles are envisaged;

27.2 *DES entries*

After the completion of each piece of on-site work, whether it be a watching brief, evaluation, set-piece excavation or building recording exercise a Data Structure Report (DSR) will be produced (see Fieldwork procedures). These are not reports intended for publication but they usually include a short summary which will be submitted for publication in *Discovery and Excavation Scotland* (DES), an annual summary of fieldwork published by the Council for Scottish Archaeology. It is proposed that an individual entry for each piece of on-site work will not be submitted; rather a single entry summarising all the works carried out in any one year will be compiled by the Project Manager. The DES summary is a standard requirement of planning authority archaeologists and ensures that notice of ground-breaking works is disseminated throughout the archaeological community.

27.3 *Journal publications*

Reports on the results of excavations are normally published either as an article in an academic journal or as a monograph in an appropriate series, depending on the scale of the results. The results of the set-piece excavations will be published as journal articles with reference to other on-site works such as watching briefs and building recording, where appropriate. The publication of these articles will follow on timeously from the completion of post-excavation works.

27.4 *Monograph publications*

The results of all the on-site works will be drawn together in a single volume, a monograph designed primarily for academic consumption. This will be published within 5 years of the completion of on-site works.

27.5 *Popular publications*

The results of all the on-site works will also be drawn together in ‘popular’ publications that augment the academic publications in making the results available to a wider public. This is a method of providing ‘community gain’ to the local and national community in return for its consent, through the planning process, to alter or demolish elements of the archaeological heritage. Popular publications may include, as deemed appropriate by the client, Internet reports within the web site of the archaeological contractor, printed colour booklets, leaflets, on-site interpretative panels and exhibitions.

27.6 *Editorial procedures*

The archaeological contractor will apply their in-house editorial policy and procedures, through which any projects nominated for publication are normally submitted.

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