



THE UNIVERSITY *of York*

DESIGN GUIDELINES
Heslington East
Landscape Masterplan
for University of York

White Young Green Environmental

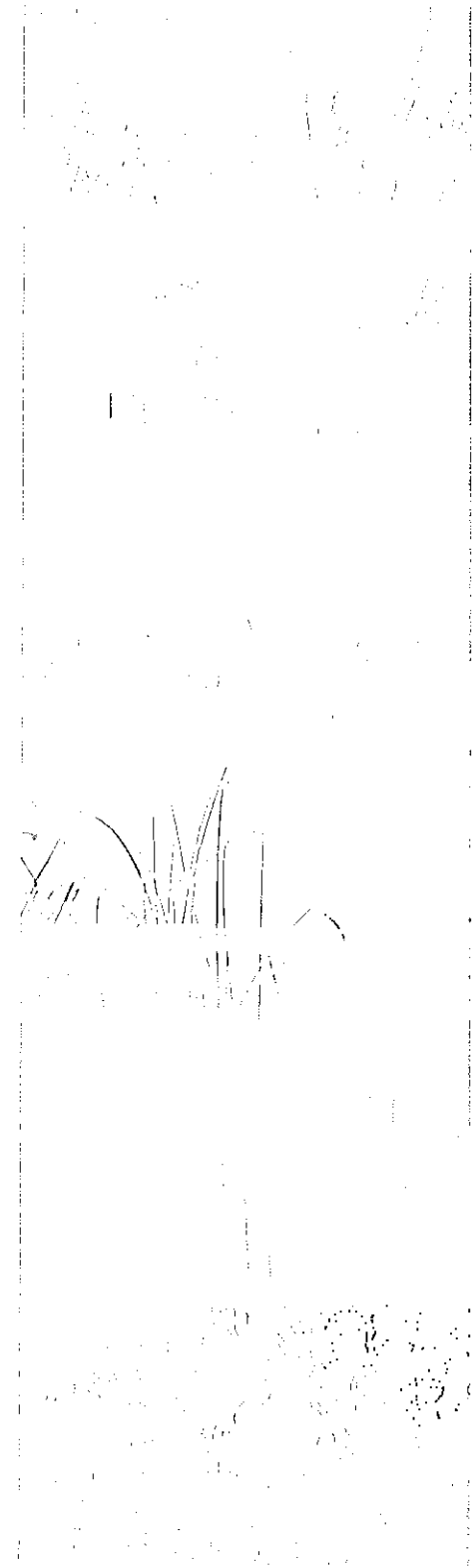
July 2008



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 - Chapter 4 Environmental Considerations
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1.0 INTRODUCTION

The University of York has commissioned White Young Green to develop the Landscape Masterplan for the Heslington East Perimeter Landscape. The Heslington East development will be located to the east of the existing campus and to the south-east of the City of York.

This design guide is intended for use primarily by landscape architects, urban designers and architects, but it will also provide background information for a range of secondary users. It is also aimed at the departments that will have responsibility for managing Heslington East. The guide sets out a process and method for design development of the landscape and the external environment.

The report format is as follows and includes the sections set out below:

- Section 2.0 describes guiding factors which have arisen out of the design and scheme development to date;
- Section 3.0 defines landscape character areas. The character areas examine, through briefing notes, the vision for the master plan and ultimately the best landscape design standards;
- Section 4.0 looks at implementation and phasing including notes on permanent and temporary landscape areas;
- Section 5.0 provides guidance on short term maintenance and long term management issues; and
- Section 6.0 examines constraints and limiting factors which have affected design development so far.

As part of the development of Heslington East the University will provide extensive landscaping and publicly accessible open spaces together with a comprehensive network of pedestrian and cycle routes to permit access throughout the campus.

The master plan for the original campus was based on a number of key principles: a collegiate university with open public access; a landscape dominated campus; a layout based on pedestrian movement with a 10 minute walking time across campus and a large lake around which the colleges and other central facilities were located.

A number of landscape mitigation measures have also been proposed in the Environmental Statement (Casella Stanger Ltd April 2004) to inform the evolution of the landscape master plan proposals for Heslington East:

- provision of a high quality parkland setting;
- provision of landscape buffer zones to the Badger Hill and Heslington Residential areas;
- provision of a lake as major feature;
- retention of existing hedging and trees where possible;
- early establishment of buffer zone landscape;
- establishment of a high quality entrance 'central vista' with semi-mature tree planting;
- establishment of an 'amenity' corridor 100 metres (minimum width), consisting of a linear park and woodland, separating Badger Hill from the campus development and linking with Kimberlow Hill;
- use of landform to increase the height of Kimberlow Hill;
- Heslington village to be separated from the development by an access restricting landscape area to the east; and
- creation of a paddock at the south east corner of village.

As well as the development of Heslington East the University will continue to redevelop the existing campus on Heslington West. This will incorporate a number of the principles contained within this guide. (Refer to the Landscape Strategy developed for the existing campus).

2.0 LANDSCAPE GUIDING FACTORS

'Holistic intermingling of different activities in an attractive landscape setting'

University of York Vision Statement

This section of the design guide provides a framework of guiding factors and landscape design concepts which determine the scope and parameters that will ultimately influence the landscape masterplan. The report is structured so that the guiding factors can be applied in a logical and analytical way to the design development process. It must be a process which understands the sensitivity of the initial design and the long term design expectations of the whole site. The landscape guiding factors (which are described in the following sections) are:

- Landscape and Natural Systems
- Landscape and Development
- Landscape and Sustainability
- Access and Circulation
- Recreation, Play and Sport
- Cultural Heritage

As part of the design guide development, WYG have undertaken an analysis of the Terence O' Rourke masterplan contained within the Outline Planning Application (April 2004). The masterplan is based upon thorough research and the application of strong design principles. White Young Green have taken this opportunity to examine the Terence O'Rourke masterplan in some depth before developing and proposing the landscape design principles and objectives that will move the project forward to the next stage. The landscape masterplan has also been informed by guidance set out in the City of York Council Development Brief for Heslington East and aspects taken from the original campus on Heslington West. These have been used to develop the landscape masterplan strategy which has been translated within distinct landscape character areas and sets the landscape vision. This is described in Section 3.0. However there remains areas where key decisions need to be made in order for the landscape masterplan to develop further. The proposals need to demonstrate how a network of green spaces can be successfully incorporated into the overall masterplan providing purpose and interest to the campus whilst recognizing all of the other development constraints. Areas that need to be developed further include:

- the built form and how the buildings will sit in relation to the landscape;
- the green vistas
- the Lake, its sustainability, ecology and recreational factors; and
- the peripheral areas, the effective integration with areas outside the site.

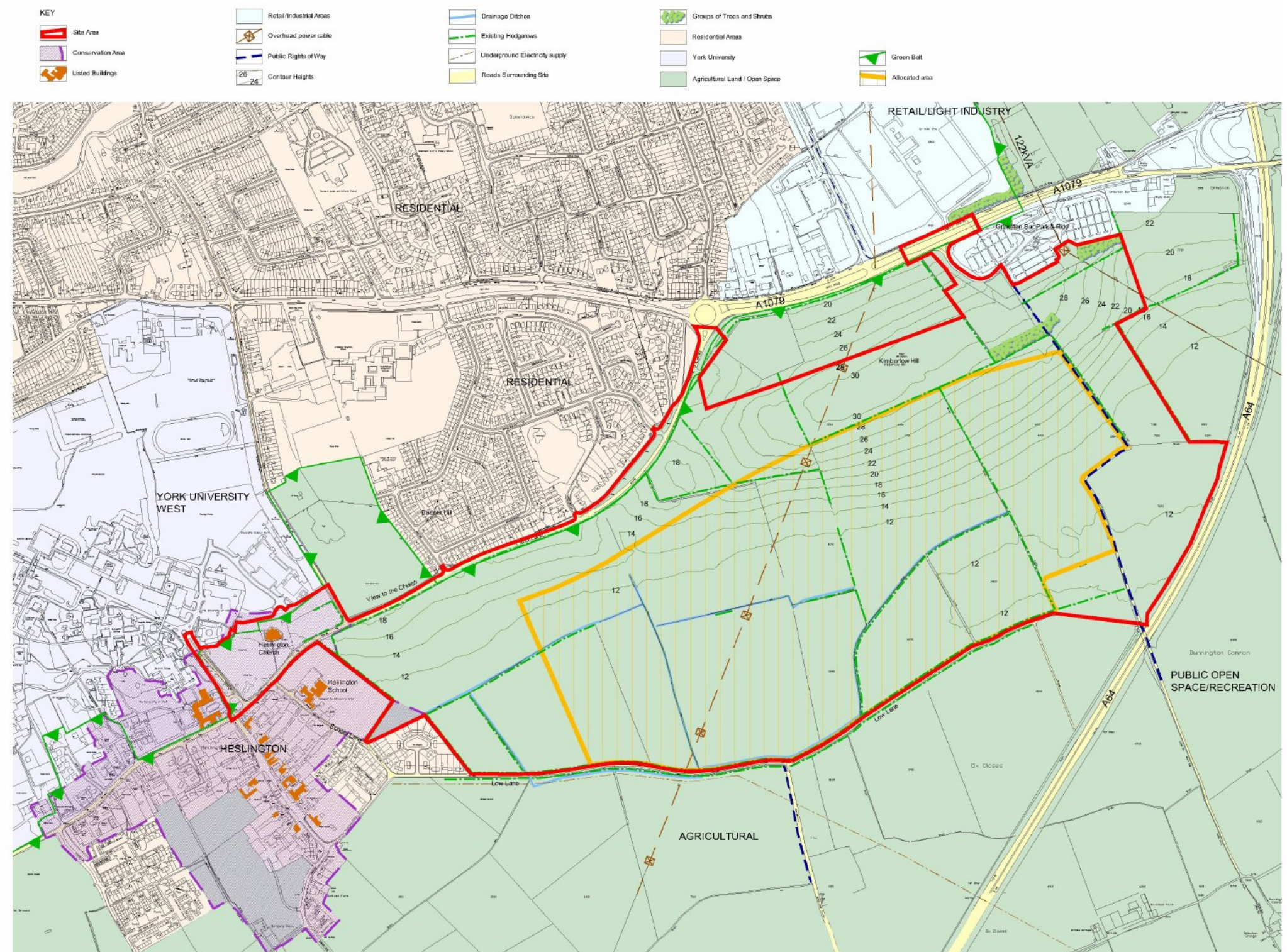


2.1 Landscape and Natural Systems

2.1.1 Landscape Survey

The landscape survey has identified the natural characteristics of the site. Trees, hedgerows, wooded areas, topography, grassy areas, ponds and ditches are the natural Landscape components that can enrich the campus and provide each part with a distinct character. The design of the landscape will draw inspirations from the site features and reinforce the existing landscape character.

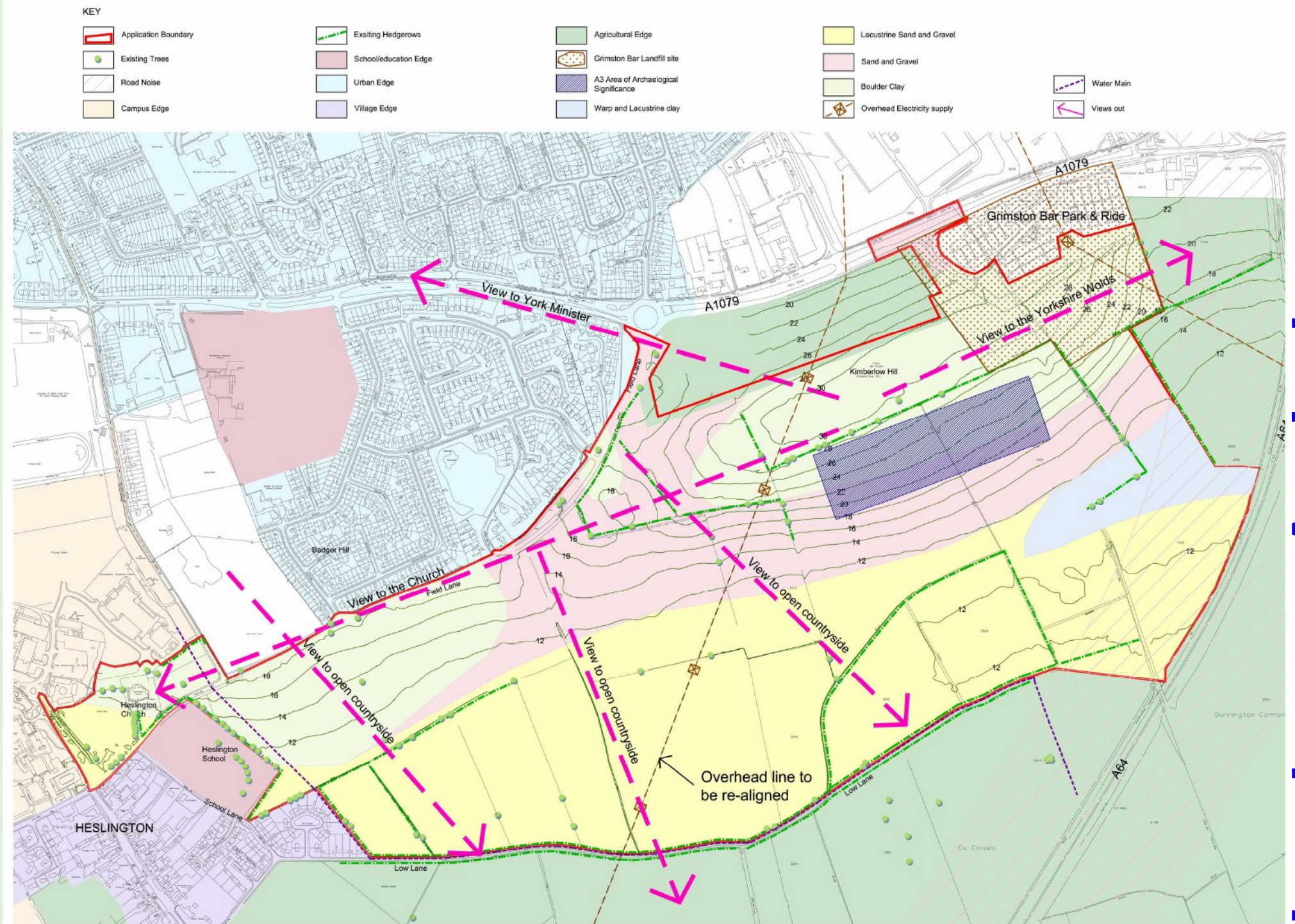
Green Belt boundary as shown on the **North Yorkshire County Council Structure Plan, 1995**



Landscape Survey

2.1.2 Landscape Analysis

The landscape analysis has quantified the elements arising out of the landscape survey in order to determine a series of opportunities, constraints and design parameters which may affect the final masterplan. When determining the design principles for each part of the site the designer must assemble these to ensure a coherent and practical, yet attractive and high quality landscape design for Heslington East is developed.



2.1.3 Key Views

In the development of Heslington East the visual landscape will be altered, however the key views are to be protected where possible (refer to Figure 2.3 Topography and Landform which also illustrates key views out of and into the site). From the A64 to Heslington village across open fields the viewer will see a significant change of landscape character from open arable farmland to the campus development. This impact will be minimized by the creation of an open space at the western end of the development area, so that views towards Heslington village will still be across an open landscape. The two areas that will experience the greatest visual impact from the proposed development will be the relatively modern housing on the eastern side of Heslington village (the Crescent) and the Badger Hill Estate. This impact will be mitigated in part by the landscape design and will include: the size of the buffer zones; retention and enhancement of hedgerows; the use of land forming; retention of land in agricultural use in the SE corner of the village and selective structure tree planting. Views of the development are also possible from Grimston across the A64. Design measures to mitigate visual impacts have been included within the Environmental Impact Assessment and include:

- the impact of the proposed development from the A64 and other areas outside the site. The massing of built development needs to be carefully considered such that it will sit within a designated green framework providing controlled views to and from the site;
- the impact of the A64 itself will also be a key factor in determining landscape and development proposals. The masterplan will need to address both visual intrusion and the noise generated by the road;
- visually the landscape will be altered and new build should complement the existing landforms, the natural patterns of the site and views as much as is practicable; and
- a new lake located along the southern edge of the site is provided to soften and reinforce the southern interface with the open countryside and to enhance the setting of the campus when viewed from the A64.

Those views which will be improved are the views from Kimberlow Hill. Building heights have been designed so as not to conflict with these views and they will be further enhanced by planting to frame and focus additional vistas towards the lake. Key views from Kimberlow Hill that will be enhanced by its raising include:

- the view of York Minister;
- views of Heslington parish church;
- views towards open countryside to the south; and
- views east towards the Yorkshire Wolds.



2.1.4 Existing Vegetation

Kimberlow Hill is the most prominently vegetated part of the site which is currently characterised by arable fields, boundary hedging, isolated deciduous trees, a significant group of mixed tree planting to the south of the Grimston Bar Park & Ride and a small block of deciduous and coniferous trees occupying the higher ground to the south east of Kimberlow Hill. There are also marginal areas of improved grassland to be found on field edges, adjacent to roads and around the Heslington Church environs.

As part of the overall aim to provide a high quality and sustainable development, where possible existing trees will be retained; however, inevitably, some will be lost because of changes to existing ground levels, changes to the water tables, or the fact that their poor health requires removal. Most of the trees identified are hedgerow trees, with others occurring along ditches, or in lines along possible former field boundaries (where the hedgerow itself has been removed and the two fields ploughed as one, but the trees have been retained). Existing species of the trees to be retained include *Acer pseudoplatanus* (sycamore), *Quercus robur* (pedunculate oak), *Fraxinus excelsior* (ash), *Populus* spp. (poplar) and *Salix fragilis* (crack willow).

There are a number of hedgerows present on site identified as grade 2, 3 and 4 hedges (Environmental Statement – Casella Stanger Ltd. April 2004). There are no Grade 1 hedgerows. Grade 2 are the best overall quality on site and will be conserved where possible. The mounding at Kimberlow Hill has been designed to retain a Grade 2/Grade 4 hedge (H21/H22 – Environmental Statement – Casella Stanger Ltd April 2004) running east-west.

Any losses of existing vegetation will be replaced by replanting of similar appropriate to the development and preferably of native origin. Temporary visual impacts will be mitigated by the retention of hedgerows and trees wherever possible, especially along the boundary areas of the site. The hedgerows are locally distinctive with visual significance in the landscape. There are areas of remnant hawthorn hedging and mature hedgerow trees (predominantly oaks and sycamores) and in some places the field boundaries have disappeared with hints of the former field pattern being given by now isolated mature trees.

A detailed Arboricultural Survey (in accordance with the categories identified in BS 5837:2005 – Trees in relation to Construction – Recommendations) will identify the condition of the trees.

2.1.5 Ecology and Biodiversity

The Environmental Impact Assessment concluded that within the site, there are two ecological features that are covered under Conservation Regulations. These are the hedgerows and bats. There are a further five features of local importance, namely aquatic invertebrates, breeding barn owls, kingfishers, water voles and badgers. The loss of the mosaic of arable, grassland and hedgerow habitats will reduce the availability of some foraging habitats, in particular barn owl, which feed primarily on small mammals in grassland habitats.

Subsequent surveys carried out to provide evidence for the Public Inquiry have shown that:

- None of the hedgerows qualify as important under the 'wildlife and landscape' criteria of the Hedgerow Regulations 1997
- No barn owl breed within the site
- Water voles can be safely assumed to be absent from the site
- There are no badger setts within the site

Relevant plans through which habitat creation will be targeted include the City of York Biodiversity Action Plan and the Vale of York Countryside Character Area. Two of the habitats present are considered priority habitats under the UK Biodiversity Action Plan (BAP):

- ancient and/or species-rich hedgerows; and
- cereal field margins (if managed to benefit wildlife).

Several ditches run across or adjacent to the site. The loss of ditches could have an impact on water voles as the species require ditches with bank-side vegetation. It is anticipated that the loss of ditches in the short term could also reduce valuable foraging habitat for many bird species. Within the Environmental Site Management Plan the University will provide details of the proposed mitigation measures for this. In response to an English Nature request, wildlife and habitat surveys have been carried out in relation to:

- protected species, especially bats, badgers, great crested newts; and
- features of nature conservation interest.

The landscape design and Environmental Site Management Plan will include information on the habitats to be provided to deliver the proposed ecological mix.

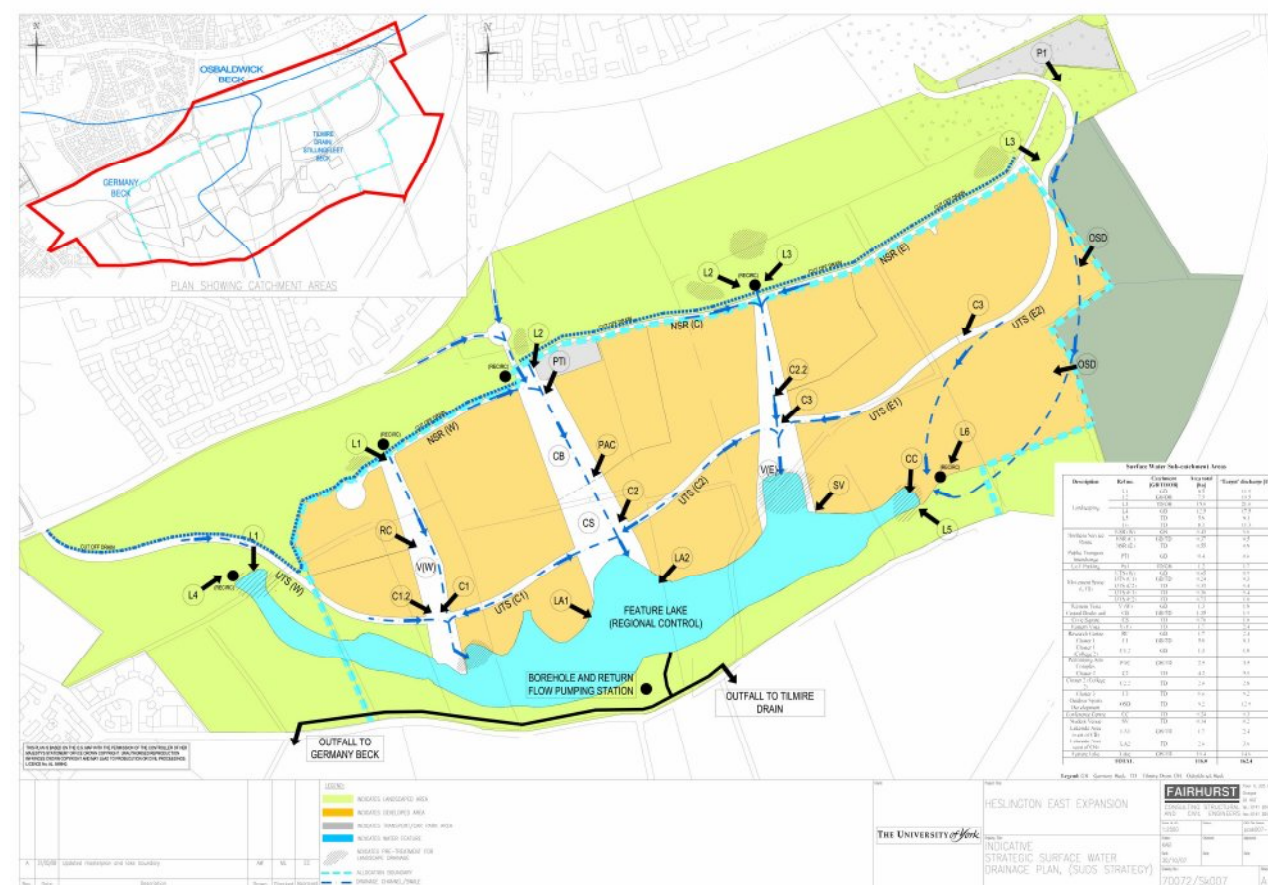
2.1.6 Agriculture

Agricultural land will inevitably be lost as a consequence of this development. Although there are similar habitats to those being lost in the surrounding countryside, the opportunity should be taken in the design of the perimeter landscape to create habitats for the existing wildlife if possible.

2.1.7 Hydrology and Drainage

The site lies within flood zone 1 and therefore is not within the Environment Agency 1 in 1000 year indicative flood map.

The design of the drainage system will consider that run-off will flow southwards across the site and then west into Germany Beck. The east of the development site naturally flows in a southerly direction into the Tillmire Drain and ultimately into Stillingfleet Beck. A public storm sewer draining the Badger Hill Housing Estate also connects into the field drain network. Downstream of the site, Germany Beck has a history of flooding at its confluence with the River Ouse. For this reason attenuation, restricted to current agricultural run off rates, is required as part of the surface water disposal arrangements. The achievement of this is by the proposed lake. Additionally, ditches to be removed will be re-routed and new ditches created to drain the site. Culverting will be minimised and will be carried out sensitively where it cannot be avoided. Ditches will be connected to the new lake which will include a series of ponds and reed beds that will help to enhance biodiversity. To minimize the seasonal fluctuations in the level of the lake the key approach will be to capture the maximum amount of water run off, including that from the public storm sewers from the nearby Badger Hill Housing Estate.



This diagram is illustrative and full details are contained within the Sustainable Drainage Strategy Report.

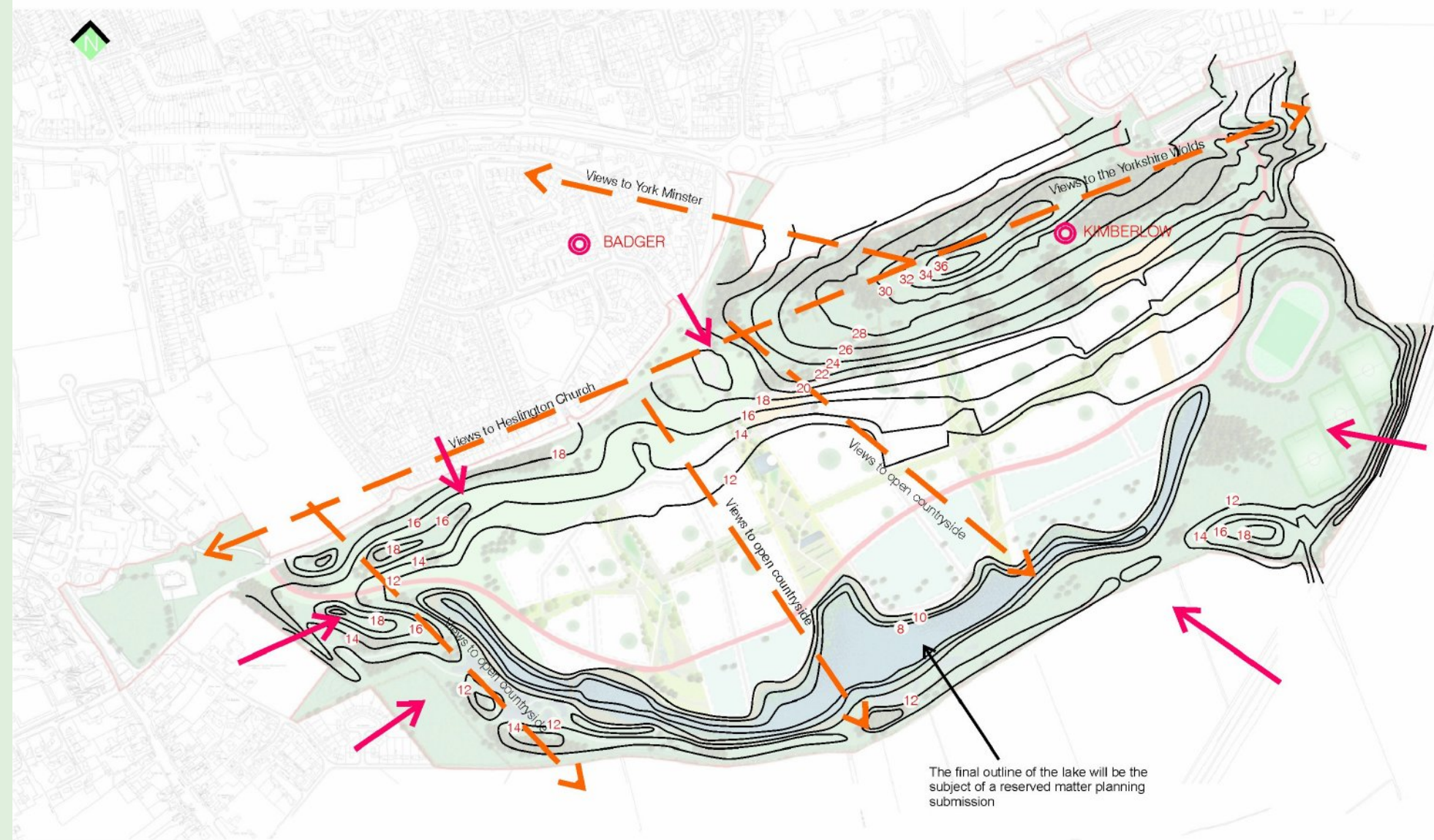
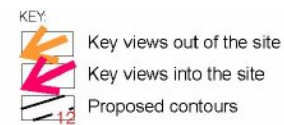


2.1.8 Topography and Landform

The site currently comprises agricultural land of fields surrounded by a system of open drainage ditches. The topography and landform is dominated by Kimberlow Hill situated at the north-east corner of the site. The lowest lying areas of the development are along the Low Lane southern boundary. The design of the landscape for Heslington East will ensure that the required land forming is achieved from spoil removed from the lake area and other excavations. The existing spoil will be used to facilitate the following key areas of design:

- the construction of the water bodies;
- the contribution to landscape mitigation measures by providing additional mounding; and
- the establishment of basic development levels for the buildings.

The suitability of areas for habitat creation and where certain habitats are possible is predominately influenced by the lithological sequence beneath the site which comprises boulder clay deposits with some sand and gravel deposits to the north of the site and Warp and Lacustrine clay and sand and gravel to the south of the site. The northern area of the site will mainly be suitable for grassland and woodland planting due to the freer draining nature of the soils and ground conditions. The type of grasslands specified here will obviously need to respect the soils and management regime proposed for them. The southern habitat areas should be capable of supporting any of the wetter habitats as well as grassland.



Topography and Landform

2.2 Landscape and Development

The University of York has a series of key principles for development and a series of overarching principles has been developed from these. The key principles relating specifically to landscape design of the public realm are:

- **Easy to move around:** to put people before traffic;
- **High quality Public Realm:** to create attractive streets and spaces that encourage social activities;
- **Vitality:** to create a landscape setting that promotes intermingling;
- **Easy to understand:** to promote landmarks and views that help people find their way round;
- **A quality landscape:** to create a high quality landscape made up of distinctive character areas;
- **Contemplation:** to provide quiet places that allow for quiet study;
- **A distinctive place:** to create new covered walkways that provide a distinctive focus for movement;
- **A secure place:** to provide a Campus that is both welcoming and secure.

In order to achieve these key principles the following elements of the design have been considered:

- careful siting and massing of buildings at appropriate scales and key locations;
- no buildings nearer than 200 metres to Heslington village;
- careful siting of the development to the south of Kimberlow Hill;
- the influence of historic areas and locally distinct details;
- the adoption of standardised primary street furniture elements and their generic details;
- fully integrated hard and soft landscaping;
- secure by design principles of overlooking spaces;
- A landscape that flows consistently through the development with complementary pockets of interest through green open spaces between buildings within each cluster of development

2.2.1 Open Spaces

There are places on the new campus that are worthy of special treatment and respect. These places, which are described further in section 3.0 include:

- Kimberlow Hill and the linear Park areas;
- The Central Vista Open Space leading towards the lake.

The Terence O'Rourke masterplan contained only two open spaces known as green wedges in the early designs. However during the review of its principles, it was concluded that a third green wedge should be added to benefit the landscape and open space strategy towards the western end of the development. In principle the University supports the idea of this third green wedge however it will remain designated as a non-mandatory open space area. Expansion for development should not be ruled out within this open space in the long term and the possibility of future development should not be compromised by this designation.

Other key open spaces include the open space immediately to the east of Heslington Village. This area will form a part of the Linear Park. Planting and mounding proposals within this open space will be configured to filter views of the development, conserve the green edge of the village and dissuade access to the village through it.

2.2.2 Principle Nodes of Interaction

The consideration of the smaller scale open spaces within the development must not be overlooked and the masterplan emphasises their connection to the wider campus. The spaces have a function relating directly to the buildings of each development plot and each space is a distinctive place. At the same time the spaces are connected to the wider development and the outlying landscape areas of the site through the use of the vistas and other elements of the landscape framework.

For the principle pedestrian routes all paths will be designed to a common standard. Materials for footpaths will be defined to be in context with surrounding colour and pattern of the built form. To enrich the design of the pedestrian routes and provide special places, materials other than the standard choice can be specified in key places, for instance:

- entrances to buildings;
- transport intersection areas;
- pedestrian crossing points;
- people places such as greens courtyards and plazas; and
- major pedestrian entrances to the campus.

2.2.3 Campus Safety

The design of the campus public realm will seek to enhance personal safety and security. It is not possible to explore crime prevention fully within this Design Guide, but an awareness of existing spaces and their crime prevention aspects is essential. The proposed development will attempt to ensure that best practice is followed in its layout and design so as to minimize the opportunities for crime. This approach will be subject to a stakeholder review. The Local Authority Supplementary Planning Guidance 'Designing out Crime' will provide further guidance for design development. Personal safety and security will be an important consideration in the design and maintenance of routes within the new campus and links to the existing campus, particularly during hours of darkness. The concentration of uses along the central pedestrian ribbon and movement spine will help to achieve natural policing through active use. In other areas, buildings will be designed to specifically overlook public areas and pedestrian / cycle routes wherever possible in order to encourage natural surveillance. The design development of the masterplan will ensure that Heslington East will:

- be secure by design and provide and maintain safe public access;
- be proactive in promoting crime prevention;
- ensure that car parking areas will take into account Government initiatives and guidance on secure car parking. Design principles will be adhered to which will ensure safety and security in parking areas and between parking areas and destinations within the campus;
- have regard to the fact that views should also promote a positive outlook for neighbouring residential areas and enhance the safety and security of green spaces;
- consider the design and maintenance of routes within the new campus, particularly at night; and
- consider other elements such as landscape and lighting which will be important factors in the overall strategy towards on campus security.

The general policy of minimising clutter will help increase clear sight-lines, especially at night. Good lighting, including white light that highlights true colours, may aid recognition and identification by means of high resolution CCTV surveillance. High levels of light increase the perception of safety on walking routes, as well as aiding all classes of user. However there is a need to minimize the visual impact of light pollution on the edge of the City and Heslington village. The overall aim is to create a welcoming environment by providing a layering of security from areas identified as open to those that are more restricted.



2.2.4 Building Services and Utilities

The landscape design should develop a strategy in the early stages to ensure full co-ordination with all building services and utilities providers. Aspects of the design development should consider the following issues:

- the allowance for underground combined services corridors in the master plan which provide adequate easements for planting;
- the adequate provision of access to utility areas, buildings and structures;
- the careful siting and design of services buildings and structures; and
- the provision of specialist advice towards the preparation of the waste management and lighting strategy documents.

The site for Heslington East has a number of constraints which need to be addressed as part of the overall development of the scheme. The services issues which form part of the site constraints are summarised below:

Site Constraints

Water Services

There is a 700 mm water main, which runs just north of Low Lane. At Heslington it turns northwards behind properties on the east side of the village. It has a wayleave of 5m on each side, which will run into the campus site. The development of the landscape in this area will need to respect this way leave.

A 300 mm water main is located to the south of the Hull Road. The development of the landscape and access strategy will need to provide a methodology for protecting this main during any construction works and subsequent development.

Surface Water Drainage and Waste Water

Routes will be required into the development for freshwater and out for foul water. These should avoid crossing through the landscape buffer zones and be routed along roads and movement spine.

Electricity

Overhead cables bisect the site and require to be diverted.

Integration of Utilities with the Landscape Design

The building plots within Heslington East will be fully serviced. The landscape design will need to accommodate the buried services so that access and maintenance of the buried services can be achieved with minimal disruption and without detrimental effect to the landscape. Continued access availability to the services to the individual plots is a key requirement in order to facilitate plot development in accordance with the overall services strategy.

The buried services will predominantly run along the services routes.

External/Separate Buildings

External separate buildings for operational services will be required and will need to be carefully considered as part of the overall landscape infrastructure. These could include:

- electricity sub-stations;
- gate house/security centre;
- bin stores;
- cycle storage
- recycling points and disposal points;
- bike parks/stores;
- boat house;
- storage for tanked supplies and gas bottles etc (where applicable); and
- sewage pumping station.

Waste management

A waste management strategy will be developed. General principles should address the careful integration with the landscape. Collection, storage and recycling points should be well designed and accessible. Waste recycling should be maximised to reduce the need for provision of general waste disposal on site and the amount of waste to landfill. Liaison with the design teams early on is essential to ensure appropriate facilities meet the requirements of the architectural and landscape design briefing documents. Aspects to consider are:

- design of bin stores, size appearance and location;
- access for collection vehicles;
- walking distances and access for disposal;
- cleaning and maintenance issues, including provision of water supplies;
- segregated locations for waste uplifts away from areas of people movement; and
- compliance with the University's sustainability strategy for waste management.

Lighting

On the existing campus, with the exception of the sports field lighting, the general level of light pollution in the area is low. The objectives of the lighting design on Heslington East are to replicate this balance by providing light levels that convey and enhance the character of the buildings and spaces at night and minimize the visual impact on the surrounding areas and enhance public safety. In selective areas lighting might be used to enhance some of the landscape features.



2.3 Landscape and Sustainability

This section outlines a sustainable approach to landscape design on Heslington East.

The World Commission on Environmental Development defined sustainable development as ‘*development which meets the needs of the present without compromising the ability of the future generations to meet their own needs*’ (WCE 1987). A sustainable approach will help the University to comply with Local Authority Local Agenda 21 strategies, and will help the future developers satisfy planning regulations and other environmental legislation. A sustainable approach to the landscape will also assist the achievement of a very good BREEAM rating (the Buildings Research Establishment Environmental Assessment Method is used as a measure of best practice in environmental design and management).

The following areas have been identified where it is possible to take practical steps towards a sustainable approach at Heslington:

- Environmental Systems;
- Ecological Systems;
- Materials and Construction; and
- Social Systems.

2.3.1 Environmental Systems

Any human developments will impact upon local environmental systems such as water, soil and climate. The general aim is to minimise negative impacts of the development and use landscape design to improve local soil conditions, water conditions, and microclimates.

Retain rainwater on site to allow for replenishment of groundwater supplies, mitigate against flood risk and minimise irrigation requirements.

- the design of Heslington East will be in accordance with the principles of sustainable drainage (SUDS);
- geological and hydrological impacts are to be appraised. This will include the design of drainage, the handling of surface water run off and the design and management of the lake to provide a water regulatory function;
- the lake will be designed to meet the requirements of the appropriate environmental and drainage standards;
- the use of permeable paving will allow water to drain into subsoil, instead of leaving the site via the drainage system;
- an impermeable surface is proposed for the car park with separate drainage. This will prevent the flow of hydrocarbon pollutants into the main surface water drainage system and any infiltration into the former landfill site;
- investigate the use of soakaways as an alternative method of water retention. Use of this system depends upon local geological and hydrological conditions;
- investigate the use of small holding ponds to store water in localised areas. These can also be used as an educational resource and as a way of increasing the ecological value of the site;
- investigate the options for rainwater harvesting while maintaining the health of the lake; and
- use groundcover plants on steep slopes to reduce runoff and erosion.

Maximise use of existing topsoil and other materials on site

- retain existing topsoil for re-use on site;
- consider the sustainable benefits of using top soil as a resource to be used in other parts of the City rather than burying it;
- carry out remedial work if soil contamination is evident;

- influence the design of the landscape to provide a balance between the spoil removed and the mounding requirements;
- develop the landscape in two stages. Limiting the work on the eastern side of the development in the early stages will allow this land to be kept in agricultural use until it is developed at a later stage; and
- the development of both stages of the landscape should be on a stand alone basis to ensure that the initial infrastructure is sufficient to support the phase 1 buildings and the planning obligations.

Design planting to create a beneficial microclimate

- trees planted on site keep air temperatures at ground level cooler, reduce air pollutants and provide shelter from the wind; and

Use planting to improve temperature control in building

- use trees to complement the solar gain of the building. Trees planted to shade east/west facing windows will reduce solar gain in the summer. South facing windows should not be shaded to maximise solar gain in the winter;
- shrubs planted next to building can create dead airspace, which will improve insulation of the building; and
- climbers on the building provide shade to wall surface, and some insulating effects from the wind.

2.3.2 Ecological Systems

Hard and soft landscape areas can often have complex ecological systems which need to be recognised and protected. Good landscape design can enhance these, and also create new ecological systems in many landscape environments. The need for self-sufficient bio diverse planting schemes must be balanced with other requirements in a well populated area and provide a balance between security, formality and durability.

Retain and protect existing ecological value of site

- ecological surveys of the existing site have been carried out. These will be used to develop an ecological mitigation strategy to be included within the Environmental Site Management Plan. Where necessary ditches will be re-routed and connected to the lake, culverting will be kept to a minimum; and
- existing trees will be protected during construction in accordance with British Standards.

Enhance ecological value of site

- plant a variety of appropriate species to improve the ecological value of the site. This should include native species where appropriate, and species which will attract local fauna;
- provide micro-habitats e.g. mixed hedgerows, log piles and ponds;
- copy natural plant community and structure to facilitate lower maintenance and provide stronger visual impact; and
- take all opportunities for planting e.g. climbing plants on buildings and groundcover on steep slopes.

Design planting to minimise maintenance requirements

- species should be chosen to thrive in the local growing conditions e.g. drought-tolerant sun-loving plants in exposed areas, shade loving plants under trees;
- maximise the suitability of areas for habitat creation. The northern area of the site will mainly be suitable for grassland and woodland planting and the southern area more suitable for wetland species;
- carry out soil survey to allow for planting of appropriate species; and
- produce maintenance plan for the long-term success of a scheme.

2.3.3 Materials and Construction

The design process should consider the sustainability of the materials specified and encourage environmentally sound construction. This is addressed more fully within the “Heslington East Master Plan and Design Guide”.

2.3.4 Social Systems

A sustainable development should be economically viable and relevant to local communities and wider society. This is determined at the planning level, and is supported by good site design.

Support cycling and walking to site and a car free campus

- measures will be implemented to reduce the need to travel by car;
- a high quality of pedestrian and cycle routes on the new campus will be provided to link all important buildings and areas with each other and with the central movement spine;
- provide high quality pedestrian and cycle routes linking the two campuses together and providing access to routes out, with both campuses offering attractive, convenient and direct access to surrounding areas and with the city centre;
- an internal transit system running along the movement spine on the new campus and linking both campuses together providing the means to move rapidly between the two;
- work with the City Council to improve local environment for pedestrians e.g. clear network of routes to, around, and across the site, positive functional public spaces;
- work with the City Council to improve local environment for cyclists e.g. cycle routes, secure storage for cycles on site; and
- implement the University's sustainable travel plan.

Provide secure environment

- the long term success of any development will depend on secure private areas combined with a safe public realm, (e.g. in accordance with Secure by Design advice).

Environmental issues can be made a part of the mission of the university to educate

- provide spaces appropriate for outdoor study areas;
- eco-schools programme provides framework for curriculum activities; and
- investigate the educational use of the lake margins.

2.4 Access and Circulation

2.4.1 Grimston Bar Park and Ride

In the north east corner of the Application Site there is part of a former landfill site, adjacent to York City Council's Grimston Bar Park and Ride. The principal access for cars into the development will be through this site via an extension to the Park and Ride road layout. This access road will link with the Movement Spine that runs through Heslington East. It is proposed to construct part of this access road including some of the additional car parking areas above the landfill areas. Existing ground levels will remain unchanged to minimise disturbance to the area of landfill capping. The detailed design of the land modelling will need to consider the impact on existing ground levels outside the site boundary. Further development of the landscape design will recognize any impact of the Park and Ride site, and in particular mitigating light pollution through structure planting for screening and effect. This principal eastern entrance provides easy access for those travelling to the campus by car. The additional car parking associated with the Heslington East development is to be concentrated at the eastern end of the site. After parking people will be required to board the University's Transit System for transfer to other parts of the University. The eastern entrance also provides easy access to those visitors wanting to use the sports pitches and recreation areas, which are also situated to the east of the site.

The car parking assessment that has been carried out for the first cluster of development shows that Grimston Bar car parking will not be required for the first occupation.

2.4.2 Community safety

Careful landscaping will play a key role in encouraging safe and direct pedestrian/cycle linkages to the existing campus across Field Lane. The University will be essentially car free with pedestrians and motor vehicles segregated wherever possible. The layout will distribute service traffic to the northern service road. Servicing should be designed so that large delivery vehicles do not penetrate into the campus. Pedestrian and cycle routes through the development will be segregated in areas of high volume. The car free setting provides an opportunity for the landscaping of pedestrian and cycle routes to reflect the parkland campus setting.

2.4.3 Traffic Calming

To minimize the impact of increased University through traffic associated with the development, car parking will be concentrated on the periphery of both campuses and linked to main arrival routes. The main transport link through the extended campus will be the University Transit System. This will traverse Heslington East along the Movement Spine. As the volumes of traffic along the Movement Spine will be very low, conventional methods of traffic calming such as raised speed tables and pedestrian crossings should not be required. This provides the opportunity for the landscape design to identify designated crossing points.

2.4.4 Principal Gateways

There are three access points into Heslington East which have their own distinctive characters:

- the western access opposite Windmill Lane is for pedestrians, cyclists and the Movement Spine. This access should respect the objective of the landscape buffer zone that it passes through which provides visual protection to the village;
- the access from Field Lane will be through the central vista. Although there will be a public transport and visitor transfer interchange at the point where the access road enters the development site, the principal character of this entrance will be the view created through the vista and over the lake.

Apart from the transport interchange, this entrance will be principally for pedestrians and cyclists. In the early stages of development this will also be the area for initial car parking.

- as described earlier the eastern access is principally for car access or transfers from public transport onto the Movement Spine.

The access points are designed to provide a sense of welcoming and entry to the campus. This could be by creating gateway spaces or landmark features on entering the site.

2.4.5 Cycling

The principal west to east pedestrian and cycle route will be along the central pedestrian ribbon. Throughout the Campus there will be areas for cycle parking. The planting around these should screen the affected areas, but not to an extent that creates a security risk. The design should deter scattered parking of individual bikes around the campus.

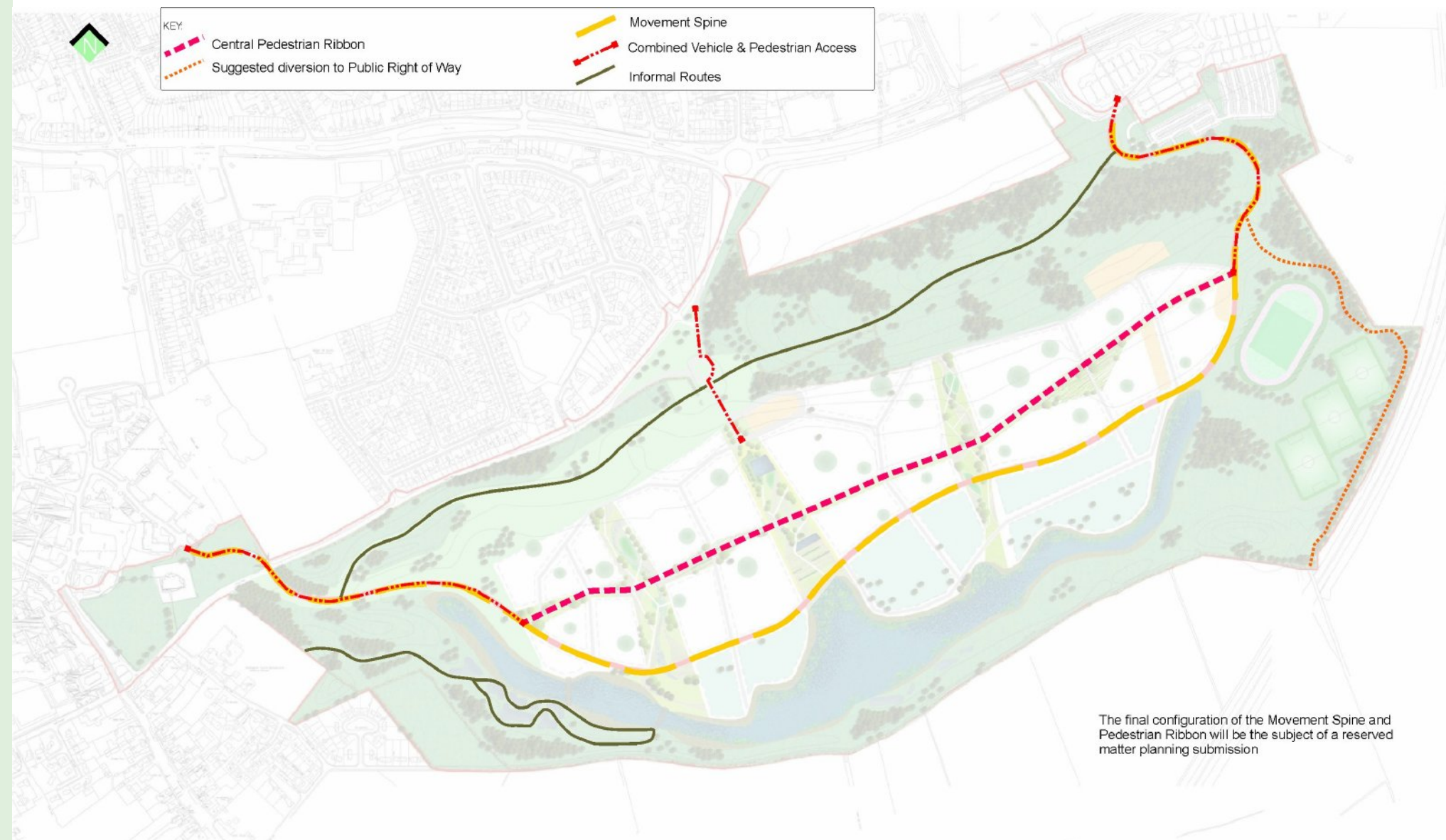
2.4.6 Campus paths

Shrub planting along campus paths will need to be low and spaced in a way that does not obstruct visibility at all. They must provide open views in all directions and should not be combined with any kind of wall that would form a barrier. Feature pedestrian scale way finding and signage should be designed in context with the surrounding community and campus paths be wide enough to serve as pedestrian drop off areas. Pedestrian scale paving (especially not asphalt) will aid in keeping the campus on a pedestrian (rather than car) dominated scale.

An existing track runs along Low Lane to the south of the site and a public right of way along the eastern boundary, from the Park & Ride site southwards to the bridge over the A64. A suggested diversion to the public right of way is shown in figure 2.4, although this diversion will require prior authorization from the Highway Authority (refer to Supporting Technical Information: Outline Planning Decision).

The University will maintain formal control of the various paths.

Priority will be given to non-vehicular movements across the site and along the movement spine other than the UTS. A characteristic of the Movement Spine will be the presence of public spaces and focal points at key locations along the route. These are dwell areas well away and set back from the busy central route. In particular a large social space is proposed at the heart of the new campus where the Central Pedestrian Ribbon meets with the central green vista.



2.5 Recreation, Play and Sport

'The nature of the existing campus is such that it provides a parkland quarter for the city. This quality space is an amenity that can be enjoyed by all the citizens of York. An expansion of the university will provide an extension of this quality environment and an attractive eastern edge to the city.'

Terence O'Rourke Ltd 2004

The development of Heslington East will be accompanied by the provision of formal and informal sport and recreation facilities. As with the existing University Sports Centre these will be accessible to the staff and students of the University, the local community, the wider general public, schools and college and local clubs. Heslington West is presently relatively underprovided for indoor sport, all-weather surfaces, and leisure/fitness facilities, including facilities for people with disabilities. To start to address this imbalance some provision for sports and recreational facilities will be provided at an early stage within the development of the new campus. The sporting facilities to be provided could include:

- a fitness centre;
- a swimming pool; and
- a dance studio.

Consideration of the overall provision of sport facilities will be in consultation with:

- The City Council;
- Sport England; and
- other local sport bodies.

The development of any facilities for sport and leisure, will take account of the environmental impacts of noise and light pollution, and traffic generation by audiences, spectators and participants.

The landscape can provide opportunities for:

- informal recreation such as walking, cycling and jogging; and
- bird watching and ecological educational resource on the waterside environments of the proposed lake.

Land to east and south of the Application Site is designated in the draft local plan as *"recreational opportunity area"*. This designation is currently under review as part of the establishment of the Local Development Framework. It is anticipated that it will remain in agricultural use in the interim.

The following recreation activities have been identified as potentially suitable for the site and the landscape design should be able to accommodate these:

- trim trails;
- nature trails, taking in the scenic aspects of the site to include the lake, wooded areas, meadow and wildflower areas, marsh and wetland areas. Information boards and signage could help increase awareness and educate;
- vantage point on top of Kimberlow Hill;
- cycle paths to link to the City of York network;
- winter toboggan site;
- boules area. Either a specific facility or a flat area suitable for boules (petanque);
- a frisbee course;
- an outdoor area suitable for concerts;

- sensory garden; and
- sculpture park.

2.5.1 Water Sports

As a secondary function, the lake provides opportunities for recreation. To facilitate this additional facilities will need to be accommodated within the design. These could include:

- boathouse to accommodate various craft using the lake including rowing, canoes, windsurfing, recreational rowing, and sailing dinghies,
- ramp and steps to allow the launching of boats and crafts, with access for trailers
- a rowing tank whereby 4 rowers can train and be coached in technique without leaving the mooring;
- a jetty landing stage required to secure the rowing tank; and
- road access to the boathouse.

As a matter of policy, there will be no fishing, no casual swimming and no motorised activities on the lake.

2.6 Cultural Heritage

This section considers the impact of the campus development on important cultural and social characteristics. The overall design of the new campus will recognise the distinctive qualities of the existing campus, including Heslington Hall and the setting of the Heslington Village Conservation Area. Heslington East provides opportunities to expand the University's contribution towards the performing arts, community sports facilities and will incorporate other cultural pursuits which involve the wider community.

An archaeological investigation has been carried out of the whole site. This has identified a number of areas of interest. The area around Kimberlow Hill contains the remains of a Roman Bathhouse and presumed accompanying villa. This offers the potential for long-term research projects for both the University's Archeological Department and local community interest groups. The landscape design needs to recognise this.

The traffic management proposals included as part of the Outline Planning Application provide opportunities to reduce the traffic flows through the Heslington Village Conservation Areas and result in improvements to the setting of the village, Heslington Hall and the Green. The new link road across Dean's Acre needs to be handled sensitively so as to minimise its visual impact and the setting of the church as does the Movement Spine and its impact on the village conservation area.

The historic and rural character of the Green Belt land will be retained by preserving rural country lanes, such as Low Lane, and retaining existing hedgerows and hedgerow trees as well as via additional structure tree planting.

The impact of any directional, informative and highways signage within the new campus developments also needs to be considered within a Cultural Heritage framework. Type, design, lighting and location must all be in-keeping with Heslington's character as well as COYC Highways Department guidelines.

In order to ensure the continuing cultural development of the site, there should be an on-going program of commissioning international standard and local public artworks.

The increase in amenity and recreation space, parkland and ecological environments as well as the open access to the development, should lead to an increase in the community use of the area as a cultural resource.



3.0 LANDSCAPE VISION

High quality environment to attract best students and researchers

University of York Vision Statement

This section of the guide illustrates a process of design ideas for all the open spaces in the new campus development. This involves understanding three issues relating to landscape character:

- the character that the various parts of the site might behold;
- the character of the existing West Campus; and
- the landscape character of the surrounding areas including the Heslington Conservation Area.

It then shows how landscape design principles might apply to the particular character areas on the site.



Design elements from the existing Heslington West Campus

Understanding the design principles which delivered the existing campus provides an insight into the sense of place at Heslington West. Within the article: 'Landscapes Revisited: A Methodology of Criticism' (Owen D Manning - Landscape Research 20/2 1995) the author describes four landscape defining principles that he considers appropriate in assessing the landscape of the Heslington West campus at York. These are:

- convenience and comfort of users;
- an enrichment of the whole environment socially and ecologically;
- a sense of order, a clear structure and a positive interrelationship of parts; and
- a memorable sense of beauty and excitement in what has been created.

These remain valid for the development of the landscape for Heslington East.

The positive elements to come out of the original design were the:

- entry plantings;
- integration of covered walkways;
- walkways penetrating the lawns;
- well spaced trees creating an appealing lakeside zone;
- grand lake enhanced by bridges and trees at either end;
- sequential views offered by the lake; and
- buildings gradually revealed through trees.

The negative elements to come out of the original design were the:

- fragmented spaces;
- lack of building and landscape interface;
- backyard landscapes within service areas;
- bare grass verges;
- the lack of clear pedestrian routes;
- recent building extensions and landscape are bland;
- lack of sense of space offered by new buildings to south; and
- the lack of age diversity in the planting.

The Terence O'Rourke masterplan defines a 'Sense of Place' as the balance between Physical Activity, Movement, Meaning and Activities.

Application to Heslington East

This section of the guide takes these design principles and applies them in the context of the landscape masterplan. The masterplan is rationalised to provide seven distinct character zones based on an analysis of their dominant physical characteristics including topography, drainage, vegetation, management, social identity and atmosphere. Each of these characteristics provides the area with a particular 'Sense of Place' and it is important to recognise them and build upon their diversity. The reinforcement of each character area should be considered not only throughout the feasibility and design process but also the implementation and management lifetime of the project.

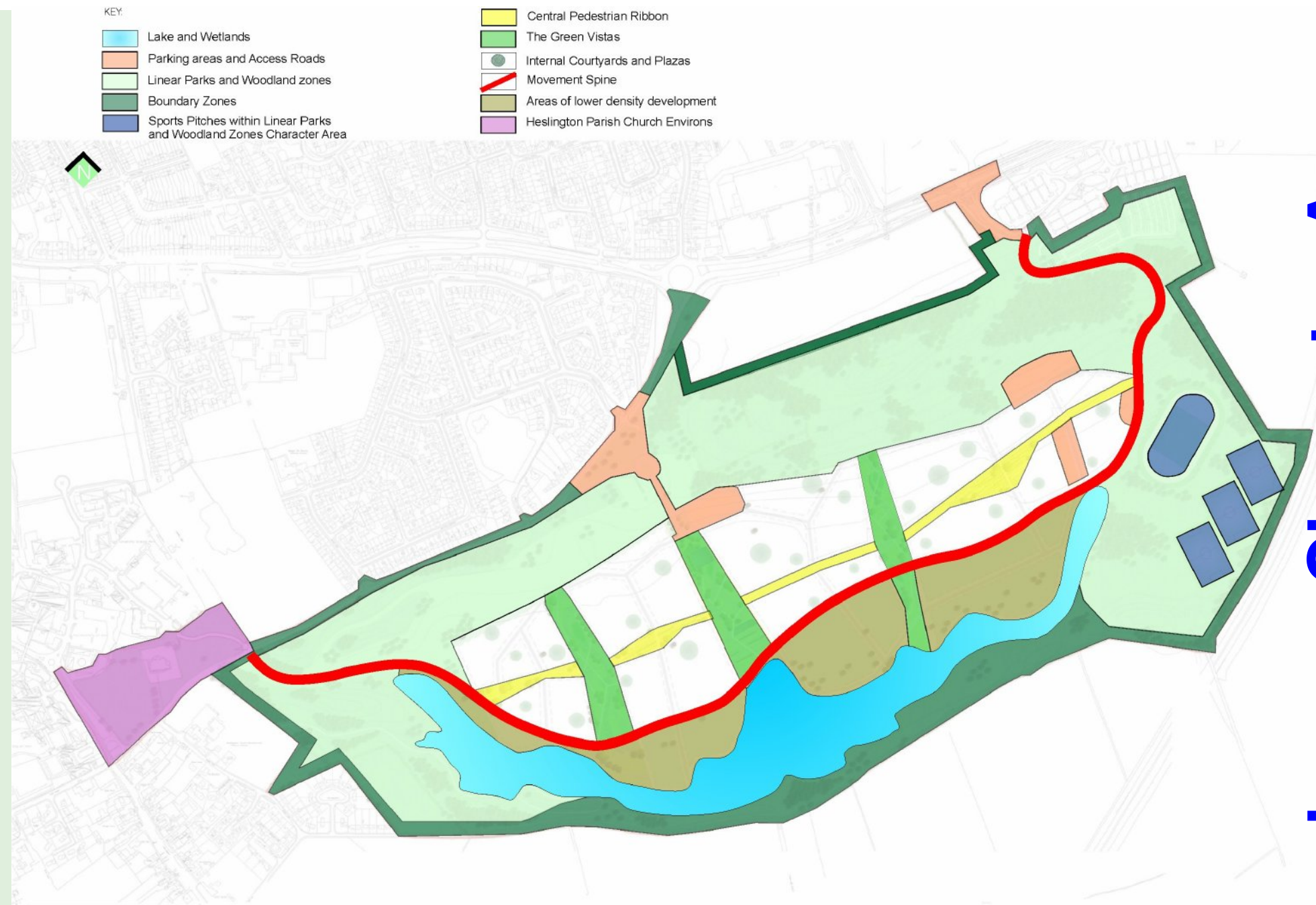
Before embarking on detailed briefing notes, an extensive amount of time has been spent understanding the site so as to fully appreciate its constraints and opportunities. In each zone we have identified certain assets, constraints and opportunities, which in turn inform a series of area-specific briefing notes. The

detailed design of each area is to be developed from these guidelines. Possible application of the design guide using sample areas taken from each character zone is illustrated in Section 3.4.

3.1 Landscape Character Areas

Landscape types are distinguishable by several key components that make up their character, such as degree of use, form and character. The distribution, frequency and configuration of these key components defines the particular landscape type.

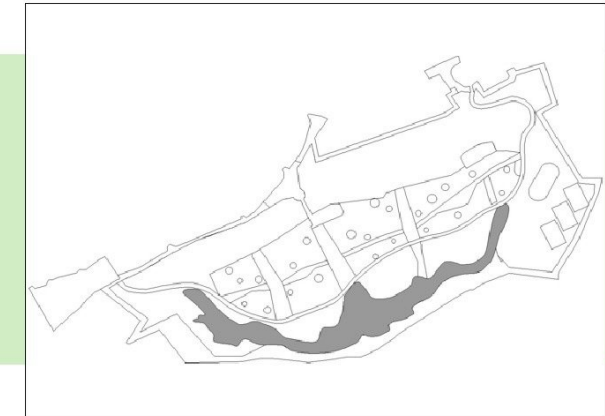
Understanding the landscape helps to focus the design and its function on preserving and enhancing the existing key features of the landscape. This section groups together similar areas within the proposed design' and the following sections describe issues related to these individual character areas.



Lake and Wetlands

The campus extension includes a large water area comprising a lake with associated wetlands. The lake is located in the lower lying areas of the site and its primary role is to be an integral part of the storm water management and drainage within the site.

The lake at Heslington West is a defining feature of the existing York Campus. Water has been identified as a unifying theme to help provide a coherent identity for the overall expanded campus in contrast to the relatively formal, ornamental and intensively managed body of water at Heslington West. There will be a soft edge generally to the lake and hard edges where the green vistas intersect the edge of the lake. The lake is to be informal and ecologically diverse with provision for water sports to optimise its amenity value.



Lake and Wetlands

Parking Areas and Access Roads

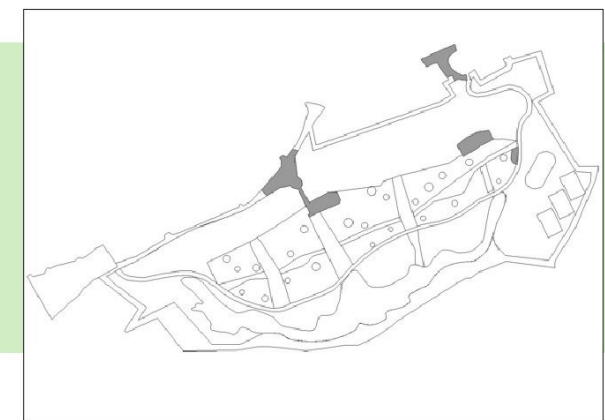
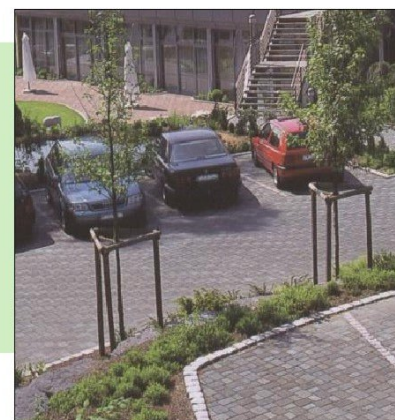
The main vehicle entrances to the site are referred to as the 'western gateway' and the 'eastern gateway'.

The western gateway will provide a strategic point of entry into the heart of the campus for students and staff particularly those travelling between the two halves of the campus.

Vehicular access through the western gateway will be limited to the Movement Spine.

The eastern gateway will be the principle vehicular access for cars with links to the existing Park and Ride Site.

- The access provisions are as follows:
- Western Access
 - Movement Spine
 - University Maintenance Vehicle
 - Pedestrians/Cyclist
 - Central Access
 - Main Entrances
 - Public Transport Offloads
 - Vehicles Limited to Visitors & Servicing
 - Emergency Access
 - Pedestrians/Cyclist
 - Eastern Access
 - Main Vehicular Access to Cars

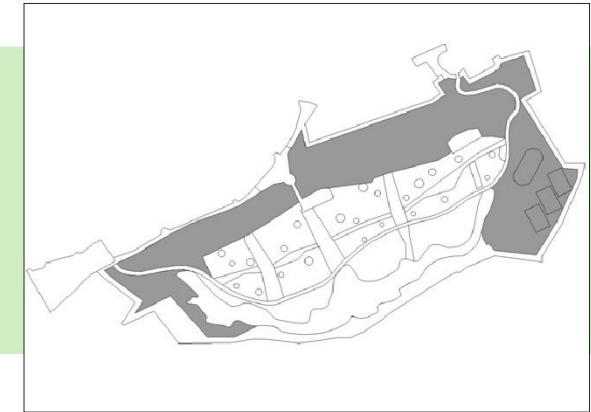


Parking Areas & Access

Linear Park and Woodland Zones

The open space fronting onto Field Lane and the west edge of the site is to be developed as informal parkland for use by the whole community. This area will contain west/east pedestrian and cycle links providing a connection to the Park & Ride, and north/south links to provide access to the campus extension and its facilities. The NW parkland area will welcome people to the campus, clusters of trees, country paths and 'statement trees' being used to achieve this and separate it from the woodland. The design of this parkland will provide the opportunity of ensuring a positive relationship between the adjacent Badger Hill housing area and the campus development.

Kimberlow Hill forms an integral part of this linear park and provides the opportunity for a significant area of woodland planting to the east of the site. This will form a background to development when viewed from the south, whilst also being designed to take advantage of the fine views from this local high point. Views from this elevated area to the Minister and the Wolds will be protected and framed by the proposed tree and woodland planting. Kimberlow Hill provides a landscape setting for the Universities residential neighbours also. The semi-rural quality of Field Lane is retained in the new scheme and enhanced by the natural landscape of the adjacent linear park and woodland zones. There will be different forms of grassland treatment including mown high maintenance grassland and meadow grassland areas. Where possible existing hedges are to be protected.



Linear Park & Woodland Zones

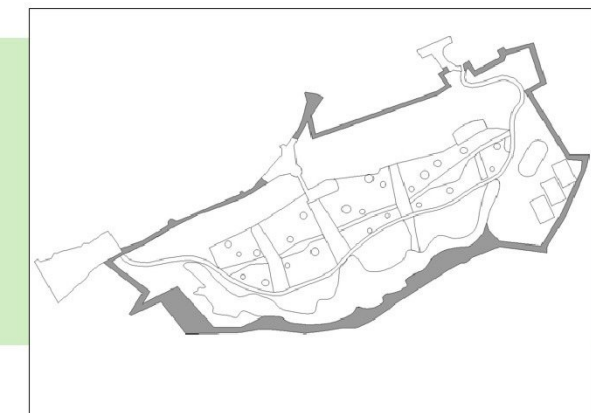
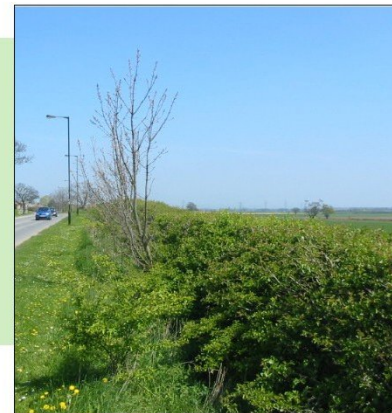
Boundary Zones

The boundary zones consist of all the edges to the site (up to 10m in width) which contain mainly existing hedgerows.

The northern and southern boundaries are quite different in character and the expectations for these will be delivered differently in the proposals.

The northern boundaries have a clear distinct edge to the site which clearly separates and divides the site from the surrounding areas. There is a marked contrast between the 'urban' edge of the city of York and the surrounding countryside. At the western end this edge/boundary is defined by Field Lane.

The southern boundary has a more seamless divide and these areas blend more naturally into the surrounding agricultural landscape.



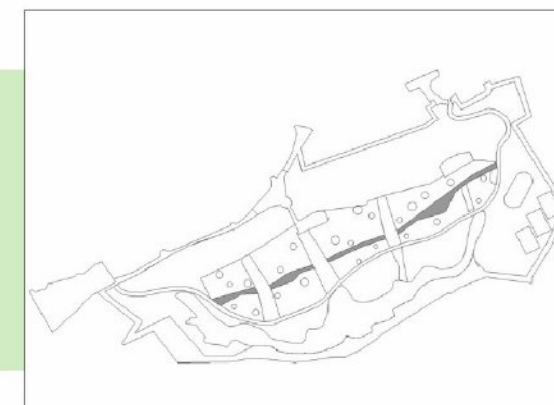
Boundary Zones

Central Pedestrian Ribbon

A Central Pedestrian Ribbon will be created to provide the opportunity for a connecting and unifying route running west/east across the site. It will be broad in scale and designed with formal and informal gathering spaces and 'squares' associated with adjacent built development. It will accommodate foot, cycle and the disabled.

The Central Pedestrian Ribbon will be more formal in character, the other landscape areas less so. Generally hard spaces are proposed but interwoven with pockets of green spaces at nodes and intersections.

A fast track route with a hard central ribbon will assist with the rapid movement of people. Planting, short mown grass and soft areas are proposed at the edges next to buildings to provide softening, colour, interest and greening. Planting will include low shrubs and compact fastigate species of trees.



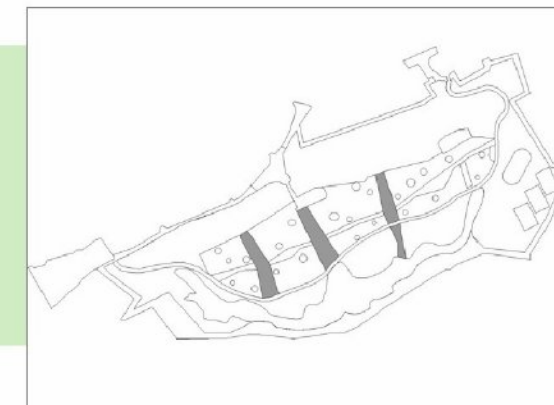
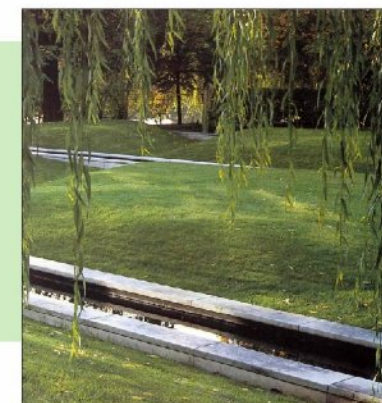
Central Pedestrian Ribbon

Green Vistas

The main development area will be subdivided by a series of three green vistas running across the contours, breaking down the apparent mass of the development and providing a positive connection to open countryside. They will provide green links for pedestrians and cyclists from adjacent communities to the Central Pedestrian Ribbon and the full range of facilities offered by Heslington East.

The east and west vistas will be informal in character with meandering routes and small intimate spaces rather than expansive areas of open space. The vistas provide an inspirational setting for the buildings and an important visual connection to the north shore of the lake. The east and west vistas are generally a mixture of hard and soft areas and a formal but contemporary landscape. There is a need to provide a hard edge to each side of the vista to allow for emergency and vehicle access and possibly the temporary route for the Movement Spine.

The central vista cascades in a formal manner down to the waterside area. The design of this vista is a formal and classical landscape which reflects the historic qualities in the formal gardens of Heslington Hall. At the heart of the development lies the area of waterfront. The main, high density, development area is not considered as a habitat creation area, but the green wedges should support native species of tree. They will form part of the overall connectivity of habitats (especially where ditches and hedges run through them).



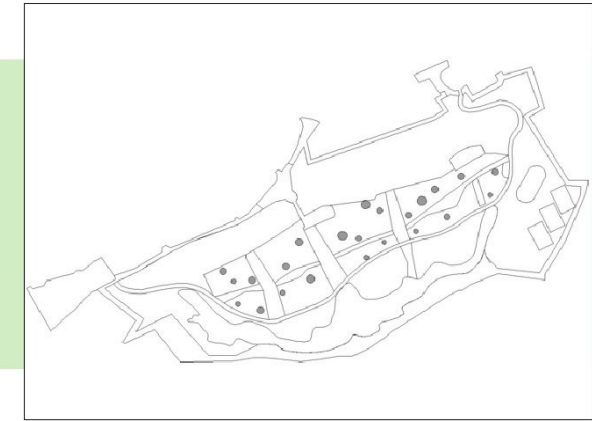
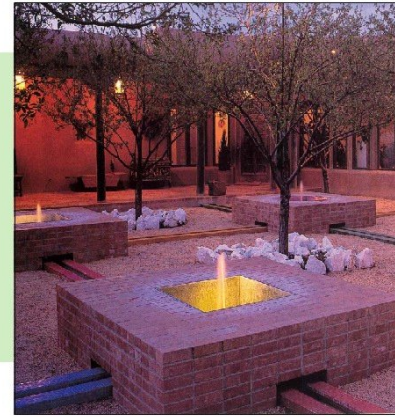
The Green Vistas

Green Spaces, Courtyards and Plazas

These are the smaller shared open spaces that lie directly between the campus buildings in what is commonly termed as the 'plot areas'. The role of the buildings by arrangement and orientation is to physically define these spaces and the buildings are grouped to define three distinct types:

- Campus Greens
- Courtyards
- Plazas

The surrounding landscape shall reflect the heights of the adjacent buildings and be designed accordingly so that the landscape complements the buildings and vice-versa. Each green, courtyard and plaza is a hub of interaction and is characterised as mixed use containing a variety of activities in the buildings that serve the spaces. The viability of the spaces depends on the interest and engagement between the building uses and the natural population and movements across the spaces. The placement of public spaces and entrances is critical to providing a setting for interaction and communication. The placement of buildings should frame views and allow a smooth transition to other shared open spaces.

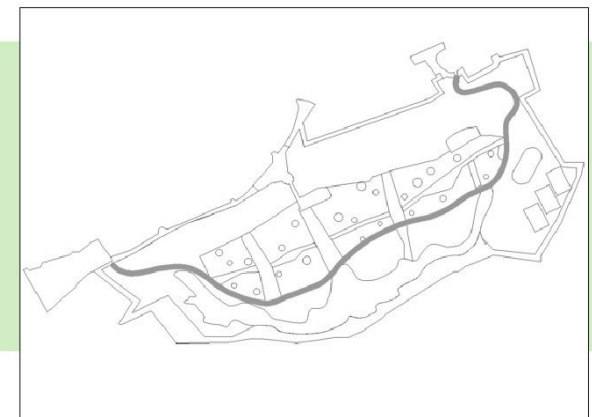


Movement Spine

Primarily a space which is hard in character relying on specimen trees to soften the spaces. This is an active movement route but there are associated key spaces linked to the Movement Spine designed for quiet reflection and less active pursuits along the way.

Open pastoral landscape is to be created along the southern edge of the Movement Spine creating uninterrupted views across the lake edge.

Particular attention must be given to softening the way in which the movement spine passes through the buffer zone. Planting and landform must be used to provide visual screening which protects the village and prevents the development of shortcut routes to the eastern edge of the village and school.



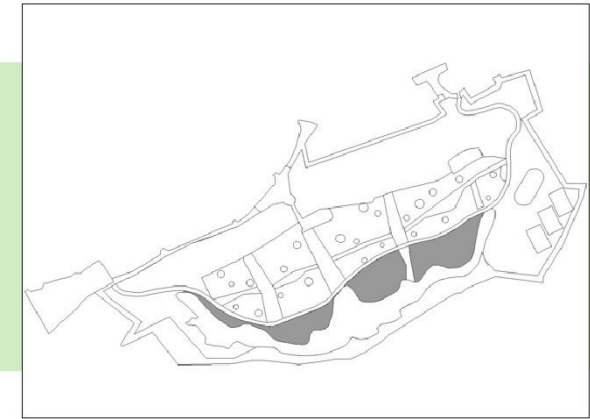
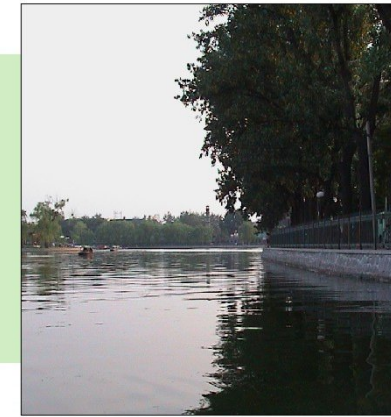
Green spaces, courtyards and Plazas

Movement Spine

Lake Shores

The north shore of the lake provides a parkland and green open space that evokes a connection to nature. In addition to the quality of open space it provides new habitats through ecology and linkages with the lake edges and wetland areas. There will be areas along the south shore where limited access will promote undisturbed areas ideal for nature conservation, enhancement and study. The north shore provides the opportunity for alternative passive recreation in the wide open spaces.

The greater part of the waterfront of the north and south shore is soft-edged with parts of the pedestrian routes provided as a wooded path to view the development that sits behind. Part of the lake shores overlook boardwalk areas and viewing areas for recreational users. Larger areas operate at different levels with some step seating for viewing of water based events and general performance areas. Some vehicle access to the water's edge is retained as an integral part of the scheme but is informal and none intrusive.

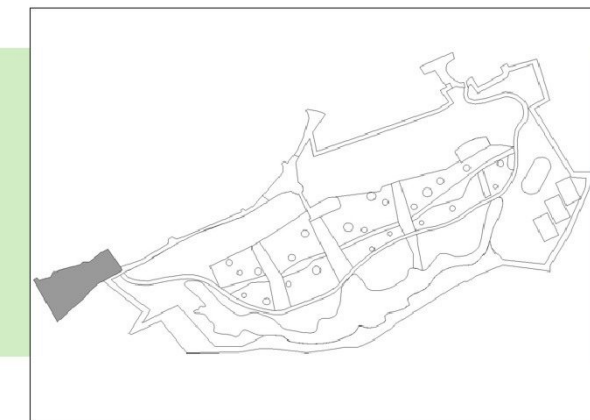


Lake Shores

Heslington Parish Church Environs

The land between Heslington village and the north western end of the allocation requires careful design to provide an appropriate setting for the village. It will be necessary to consider in detail proposals for the traffic and pedestrian treatments to ensure the best interface with Heslington Village and in particular the Heslington Parish Church Environs. Treatment will ensure the environment is enhanced and not compromised. The residents of Heslington have prepared the Heslington Village Design Statement (2004) which is contained in the supplementary document: Supporting Technical Information.

Careful consideration needs to be given to the landscaping associated with the new link road across Dean's Acre. This needs to respect the conservation area and the setting of the church.



Heslington Parish Church

3.2 Planting Strategy Guidelines

Various areas of planting are proposed across the site and the drawing opposite illustrates the various categories of planting and locations. The main groups of planting include:

- Informal parkland setting;
- Structure planting-to blend the built development into the landscape;
- The use of trees of similar species may be used to provide a signature to a particular part of the site. Tree types could also be used to assist way finding. This type of planting would be interspersed with grass areas formal hedges or ground cover planting beneath the canopies;
- Natural planting-species would be mainly native or cultivars such as ash, hornbeam, alder, birch and fastigate oak;
- Ornamental planting within the green vistas and courtyards some species might be used for particular effect such as red oak for colour and Pyrus 'Calleryana' for narrow spaces;
- The movement spine in the west will act as a buffer zone, with planting restricting movement west towards Heslington Village. This will be achieved through more naturalistic and less open planting, and by the implementation of hedging and ditches. This may have more of an ecological role to play as opposed to the more open parkland buffer zone;
- The paddock has a strong agricultural context which must be retained through appropriate landscape treatment; and
- Planting along the southern edge of the UTS movement spine will consist of few individual trees, retaining open views to the south and integrating the campus with the adjacent agricultural land.



The planting will be aimed at providing character to the site and help to integrate the various aspects of the design. Key areas requiring planting include:

- the Movement Spine: there will be a requirement to consider the visual impacts of the Movement Spine where it passes through the open parts of linear park. There will be a need to soften the impacts of this with planting especially where it emerges on Field Lane and where it is on the skyline nearest the village and can be seen from the village;
- an area of particular sensitivity is the new link road that crosses Dean's Acre. Planting in this area needs as far as possible to minimise the impact of this new road on the conservation area and the setting of the church;
- the Boundary Zones: The proposals for the boundary treatment of the site will, wherever possible, retain existing hedgerows and hedgerow trees, particularly along Low Lane. The proposed boundary planting will include structure tree planting (including evergreen species). The early establishment of the boundary tree planting, at the start of the scheme, is essential;
- access to Low Lane should be restricted using planting with fencing set behind to aid integration of the fence with its surroundings. It is important at the same time to provide open views to the south and take into consideration that the boundary planting should not impede views. The planting design should consider the use of low shrubs with occasional standard hedgerow trees to allow views to filter through. There should be limited but identified access points to the lakeside;
- it is known that the western boundary has prevailing winds and planting along this boundary should be used to minimise the effects of the wind. Likewise planting along the eastern boundary should be used for sound attenuation purposes;
- trees with light canopies and low water demand characteristics e.g. *Tilia cordata* 'Ranch' (Small leafed lime) are recommended close to buildings to allow maximum light penetration and reduced impact from tree roots. All planting close to buildings should follow the standards set out in the Trees in Relation to Construction – Recommendations (BS5837:2005). Shrub species should be chosen on the basis that they are highly ornamental with intense visual interest and generally with small scale features; and
- there is an opportunity to provide an open pastoral landscape to north shore with minimal tree planting to offer uninterrupted views across the lake edge. Planting of trees could include the use of parkland specimen trees and some species may be more ornamental on the north shore than the south. On the south shore there will be a strong natural landscape designed to meet with the character of the adjacent agricultural land. This landscape will consist of few individual trees and very little shrub planting. The landscape will be open with views to the south.



3.3 Briefing Notes



Briefing Notes:

The lake will be designed with 'moat-like' qualities towards its western end to prevent inappropriate movement patterns across the site, specifically short cuts by students through Heslington Village via Low Lane. This will support a key master planning principle, that of the good neighbour, by protecting sensitive nearby areas.

The southern edge of the lake would need to be planted with isolated groups of trees only, to enable as much sunlight to hit the lake as possible which is essential for a healthy lake. At the same time it will be necessary to reduce impacts of road network by providing some screening vegetation on south shore combined with shelterbelt species. It will be necessary to provide some woodland margins to water area on the south shore to consist of native and provenant species.

The scheme should introduce wildlife and conservation objectives into the detail design of the lake banks and provide protected habitat areas specifically for wetland marginal fauna and flora and areas specifically for nesting and breeding marginal birds e.g. Islands.

The design should provide wetland treatment areas in the form of reed beds for water quality control. These are to control water entering the lake feeding from the development to the north.

The rise and fall figures of water levels will be determined by the detailed hydrological proposal. The rise and fall is also determined by the slope profiles and edge detailing to some extent and variation in edge detailing and slope profiles will create varying drawdown zones.



Planting:

TREES AND SHRUBS ASSOCIATED WITH WETLAND AREAS:

Alnus glutinosa (Alder)
Populus tremula (Aspen)
Salix alba (White Willow)
Salix caprea (Grey Willow)
Salix cinerea (Goat Willow)
Salix fragilis (Crack Willow)



RECOMMENDED REEDS & AQUATIC SPECIES:

Phragmites australis (Common Reed)
Typha latifolia (Bulrush)
Iris pseudacorus (Yellow flag)
Alisma plantago-aquatica (Water plantain)
Sparganium erectum (Branched bur-reed)
Potamogeton natans (Broad-leaved pondweed)



PARKLAND SPECIMEN TREES

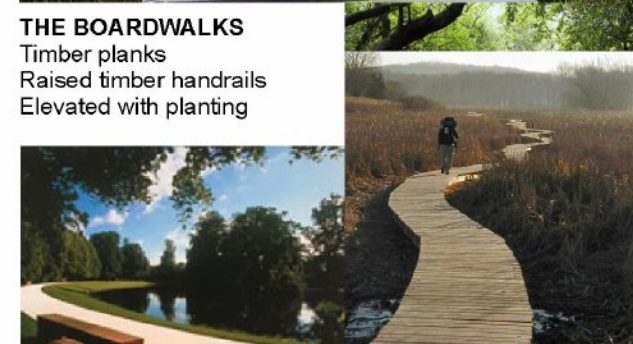
Betula pendula (Silver Birch)
Crataegus monygra (Hawthorn)
Fraxinus excelsior (Ash)
Fagus sylvatica (Beech)
Malus sylvestris (Crab Apple)
Prunus avium (Wild Gean)
Acer campestre (Field Maple)
Quercus Robur (Common Oak)
Quercus petraea (Sessile Oak)
Sorbus aucuparia (Mountain Ash)



Hard Materials:



THE BOARDWALKS
Timber planks
Raised timber handrails
Elevated with planting



**FOOTPATH/
CYCLEWAY
SURFACING**
Hoggin
Exposed aggregate
Loose granular



Lake and Wetlands



Briefing Notes:

The main focus will be the provision of street tree planting for all roads where possible. Combined services and utilities corridors are carefully integrated into the road layout and design at the outset to ensure sufficient space is allowed for the trees to thrive. The impacts of tree root on services, utilities or adjacent buildings and structures should be considered in the design of any road corridors. Medium to large street trees with a compact and fastigate habit e.g. *Carpinus betulus* 'Fastigiata' (Hornbeam) are recommended on most access roads. Where roads are wide enough trees of a rounder habit e.g. *Fraxinus excelsior* 'Westhof's Glorie' can be used if there is sufficient space for their canopies to develop without the need for continuous crown lopping.

Parking areas will benefit from the use of ornamental standard trees with rich colours and flower and fruit variations. This could particularly assist with wayfinding and orientation across the site e.g. the lime car park. This will also promote learning and recognition of tree species. All trees in car park areas should be underplanted with low ornamental shrubs or ground cover and again the use of bold colour and contrast in the selection of species could be explored. The planting should not be too fussy and only include a few key species and varieties. Trees in hard paved areas in car parks to reduce impacts from moving and reversing vehicles. Shrub planting should always be used at low level to break up the visual massing of the cars in parking areas.

Low cost and man made paving materials in the car park areas is an acceptable choice. Charcoal and dark coloured paving is recommended to reduce effects of oils and petrol spills, eg. Concrete concrete blocks or tarmac. Avoid the use of white lining to delineate parking bays and use natural materials such as granite or york stone setts to mark out the bays. Always consider pedestrian movement through the carpark and ensure routes are clearly distinguished where pedestrians have priority over vehicles.



Planting:

CAR PARK TREE PLANTING:

Carpinus betulus 'fastigiata'
Acer campestre 'streetwise'
Liquidambar styraciflua
Sorbus aucuparia 'Joseph Rock'
Betula pendula



CAR PARK SHRUB PLANTING:

Cornus alba
Hedera colchica
Choysia ternata 'Sundance'
Euonymus japonica 'Emerald gaiety'
Lonicera nitida
Mahonia aquifolium
Ribes sanguineum
Weigelia florida
Berberis thunbergii
Hebe 'Mrs Winder'
Taxus baccata



ACCESS ROAD TREE AND SHRUB PLANTING:

Sorbus aria 'Lutescens'
Sorbus aucuparia 'Sunshine'
Carpinus betulus 'Fastigiata'
Symphoricarpos albus
Symphoricarpos chenaultii 'Hancock'
Rosa rugosa
Rosa canina
Leycesteria formosa
Hypericum 'Hidcote'
Ribes sanguineum
Syringa vulgaris

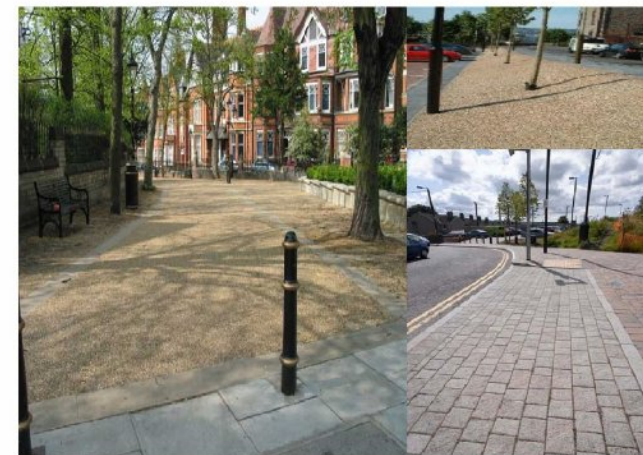


Hard Materials:



FOOTWAYS, CAR PARK AND ACCESS ROAD SURFACING MATERIALS:

Resin bound grave finish to asphalt surface
Granite curbs
Random tegular concrete sets
Concrete block paving





Briefing Notes:

This character area consists of two sub character types with an area of parkland situated in the west of the campus and an area of woodland in the east. It is proposed to add further material to Kimberlow Hill to emphasise this semi-natural landscape feature and to use the area for material arising from the lake and development (avoiding transportation of material off site). It is proposed that Kimberlow Hill will be raised from 32.0 metres to 36.0 metres AOD. This will help to mitigate the development, retain soils on site and ensure that Kimberlow Hill is retained as a distinctive landmark. Designed as a backdrop to the development and envisaged as a receding landscape using naturalistic forms and indigenous and natural species. Establishment of this 'amenity' corridor (100m min. wide) separating Badger Hill from the campus development will provide a proposed mosaic of grassland and woodland habitats will provide a more diverse bird habitat than the current arable dominated habitat. New woodland planting is proposed for Kimberlow Hill, this provides both physical and visual amenity benefits for the development. Emphasising the height of the hill and providing a strategic backdrop for the development. The new mixed woodland will cover an area of some 23ha. The aim is to provide small woodland groups with a range of planting densities.

The open habitats of the existing farmed fields are suitable for some hare species. The new habitats to be provided on Kimberlow Hill will provide some habitats suitable for hares, it is possible, however, that the species may survive within the grasslands to be created on site also. A large area of grassland, woodland edge and water edge habitats will be created that will provide better habitat for small mammals than the current habitats. This will in turn lead to provision of better foraging habitat for barn owls. Current hedges and other features such as ditches will be connected to the woodland areas wherever possible. Landform will play an important design role in the new linear park and woodland zones by:

- providing spatial definition;
- influencing patterns of movement;
- influencing sound attenuation; and
- providing additional screening.

There is a need for a cycle/pedestrian route along the Badger Hill buffer zone and up Kimberlow Hill, this should be within the application site. There is a need for a direct route (steep) and an indirect route (gentle) up Kimberlow Hill. New habitats will be created and these will be designed to fit with the York City BAP and other strategic conservation plans. The aim is to maximise connectivity of features eg ditches connecting to the lake and ponds and hedges connecting to new woodland planting. Relevant plans through which habitat creation will be targeted include the City of York Biodiversity Action Plan and the Vale of York Countryside Character Area. This part of the site should attempt to provide area for open air music and drama events and also create opportunities for local community to develop art and sculpture in the landscape.

Non-native species may be used to create more interesting planting on fringe areas to include specimen parkland tree planting. But generally the aim is to plant broadleaved trees and shrubs native and provenant to the area. Conifers may be used as a 'nurse' species with broad-leaved trees. Species should be based on pioneer dominant woodland mix found in the local vicinity and it is anticipated that in time oak will be the dominant woodland species.

Careful use of levels and landform is required to minimise the impact of car parking and the establishment of woodland structure planting belts to extended Park & Ride car park and associated access roads will help to mitigate the new proposals.

Lighting to be provided along pedestrian routes/cycleways. The design of the lighting is to be sufficient in terms of security, without being visually intrusive and creating additional light pollution.



Planting:

WOODLAND AND TREES SPECIES

Acer campestre (Field Maple)
Alnus glutinosa (Alder)
Betula pendula (Silver Birch)
Betula pubescens (Downy Birch)
Corylus avellana (Hazel)
Crataegus monogyna (Hawthorn)
Fagus sylvatica (Beech)
Fraxinus excelsior (Ash)
Ilex aquifolium (Holly)
Pinus sylvestris (Scots Pine)
Prunus avium (Wild Gean)
Quercus petraea (Sessile Oak)
Quercus robur (Common Oak)
Sorbus aria (White beam)
Sorbus aucuparia (Mountain Ash)
Taxus baccata (Common Yew)



SHRUB SPECIES:

Cornus sanguinea (Dogwood)
Ligustrum vulgare (Wild Privet)
Rosa arvensis (Field Rose)
Rosa canina (Dog Rose)
Salix viminalis (Osier)
Sambucus nigra (Elder)
Ulex europaeus (Gorse)
Viburnum opulus (Guelder Rose)



Bulb Species:

Anemone nemorosa (Wood Anemone)
Crocus (Crocus)
Eranthis hyemalis (Winter Aconite)
Hyacinthoides non-scripta (Bluebell)
Galanthus nivalis (Snowdrop)
Liliaceae (Fritary)
Narcissus (Daffodil)



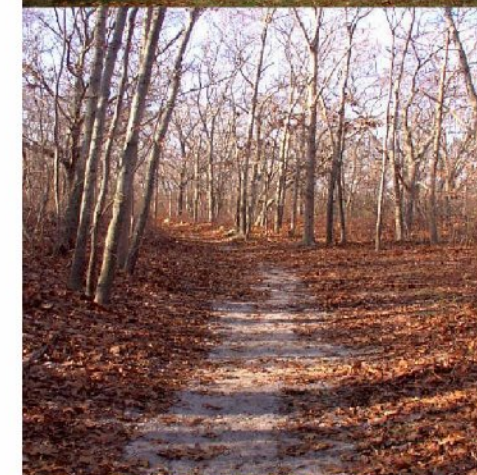
Hard Materials:

FOOTPATH/CYCLEWAY:



Materials for Woodland zones

Hoggin or loose granular material
Woodchip
Recycled seating/edging



Linear Park & Woodland Zones



Briefing Notes:

This scheme will aim to retain existing strategic hedgerows and hedgerow trees along the A1079 and where possible along Field Lane and Low Lane. The retention of mixed species hedgerows are of particular importance. The University will seek to provide possible mitigation for loss in terms of enhancement of existing hedgerows and provision of new ones where appropriate. It is important to manage and retain viable hedgerows by 'Agri-environment' schemes where environmentally friendly farming methods are practiced to provide viable ecologically rich habitats.

Interpretation for sites of wildlife value for the benefit of the public using signage and way marking.

There will be a need to continue to survey the hedgerows and maintain them in a healthy and ecologically viable condition throughout their lifetime.

Landscape and development on the edges should generally be outward looking and not turn its back on the surroundings. Edge location should make more of the development to benefit from views of the water.

Establishment of further structure tree planting along Low Lane and southern boundary of campus will form part of the hedgerow and its natural vegetation structure.

The establishment of screen planting, both trees and shrubs on land between the new entrance and Deramore Drive is an important part of the structure planting to be implemented in the early stages to minimise the impacts of the new development.

Various landscape features will express or form entrances to the site this can be created by a building or gatehouse or the way the street changes width. Strong features such as public art or landmarks can also reinforce these gateways. Their prominence assists in the recognition and mental mapping of the place, to create a memorable landmark.

New ditches, individual trees and hedgerows will all add greatly to the nature conservation interest of the boundary zones. This includes having regard to the need to use a range of locally appropriate native tree and shrub species, to ecologically sensitive management and to introducing features considered important in the existing hedgerows, including:

- standard trees;
- minimisation of gaps in the hedgerow;
- a ditch alongside the hedgerow;
- connectivity i.e. hedgerows link up to form a coherent network;
- a hedgebank; and
- grass verge managed for wildlife.

Planting:

Boundary Zone Tree Species:

Acer campestre (Field Maple)
Betula pendula (Silver Birch)
Carpinus betulus (Hornbeam)
Corylus avellana (Hazel)
Crataegus monogyna (Hawthorn)
Fagus sylvatica (Beech)
Fraxinus excelsior (Ash)
Quercus robur (Common Oak)
Sorbus aucuparia (Mountain Ash)



Trees for Hedgerows:

Acer campestre (Field Maple)
Ilex aquifolium (Holly)
Quercus robur (Oak)
Sorbus aucuparia (Mountain Ash)
Fraxinus excelsior (Ash)
Fagus sylvatica (Beech)



Boundary Zone Shrub Species:

Cornus sanguinea (Dogwood)
Sambucus nigra (Elder)
Ulex europaeus (Gorse)
Viburnum opulus (Guelder Rose)
Salix viminalis (Osier)
Ligustrum vulgare (Wild Privet)
Rosa canina (Dog Rose)
Rosa arvensis (Field Rose)



Hedgerow Species:

Crataegus monogyna (Hawthorn)
Ligustrum vulgare (Wild Privet)
Rosa canina (Dog Rose)
Corylus avellana (Hazel)
Prunus spinosa (Blackthorn)

Hard Materials:



Boundary materials

Loose granular material
Wooden edging/fencing
Hoggin/aggregate



Boundary Zones



Briefing Notes:

This is to be promoted as an area for wayfinding using notice boards combined with landscape elements to aid orientation and directions along routes. The design will provide partially enclosed/covered ways along entire length which will link to themed entrance courts at each building entrance to help with area recognition and local identity.

There will be a predominant use of man made materials using formal geometric patterns to evoke a bold modern character to each public open space. Higher cost materials will be used at entrances to buildings.

The overall signage, street furniture and general clutter should be minimised with routes and entrances being made clear by use of materials, colours or planting.

Signage and street furniture is also to be consistent with that used at Heslington West.



Planting:

Trees for Squares and Green Spaces:

Carpinus betulus 'Fastigiata' (Hornbeam)
Carpinus betulus 'Frans Fontaine' (Hornbeam)
Quercus robur 'Fastigiata' (Common Oak)
Sorbus x thuringiaca 'Fastigiata' (Whitebeam Hybrid)
Populus nigra 'Italica' (Lombardy Poplar)
Tilia cordata 'Rancho' (Small Leafed Lime)
Quercus rubra (Red Oak)

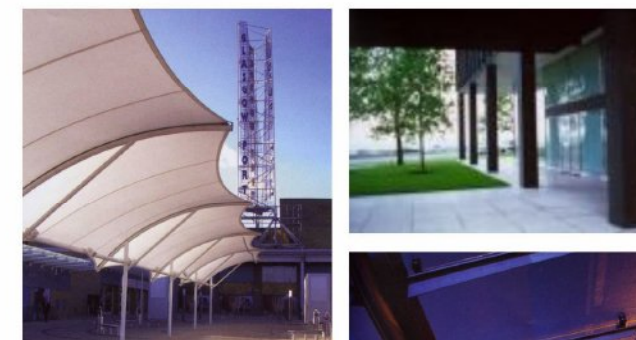


Shrubs for squares and Green Spaces

Amelanchier lamarckii
Caryopteris x clandonensis 'Heavenly Blue'
Choysia ternata 'Sundance'
Cornus stolonifera 'flaviramea'
Cotoneaster horizontalis 'variegatus'
Euonymus europaeus 'Red Cascade'
Weigela florida
Viburnum tinus
Viburnum bodnantense
Hebe 'Great Orme'
Hebe 'Mrs Winder'



Hard Materials:



Footpath/cycleway materials:
Resin bonded gravel
Tegular concrete setts

Canopies/street furniture/signage



Central Pedestrian Ribbon

Briefing Notes:

The Central Vista will be the key vista and focal point of the site including a space to act as a civic square. Emergency vehicle access will be required.

The main theme of the Central Vista will be a more formal landscape designed to link the Field Lane entrance to the lake. Through a series of landscaped areas water could be used to provide some continuity through the space.

The planting in the east and west vistas will consist of semi-formal and mainly ornamental species of trees, shrubs and ground cover. Some species will be native to provide a transition between the formal Central Vista and the informal areas in the Linear Park and Woodland Zones. Some species may be a complete mix between semi-natural and ornamental varieties for example the use of fastigate but native tree species like *Quercus robur* 'Fastigiata'.

There will be an opportunity to provide a waterside promenade where the Central Vista meets the lake edge and the use of avenue planting, trees and sculpture will provide false perspective along the space towards the water areas.

There will be a predominant use of natural materials especially in the east and the west vista and in areas of amenity grassland and species rich grassland which are managed to provide areas of long and short swards depending on the intensity of use. Areas of species rich swards will require more protection and reduced amount of cutting. In the main amenity grassland will be the key landscape component of the vistas. Feathered trees, multi-stemmed specimens and natural shrub areas will offset the species rich and amenity grassland areas. Exotic plants will be used at key locations where there is shelter from prevailing winds to provide focus and surprise in the landscape.



Planting:

Trees for Squares and Green Spaces:

Carpinus betulus 'Fastigiata' (Hornbeam)
Carpinus betulus 'Frans Fontaine' (Hornbeam)
Quercus robur 'Fastigiata' (Common Oak)
Sorbus x thuringiaca 'Fastigiata' (Whitebeam Hybrid)
Sorbus aria 'Lutescens' (Whitebeam)
Populus nigra 'Italica' (Lombardy Poplar)
Tilia cordata 'Rancho' (Small Leafed Lime)

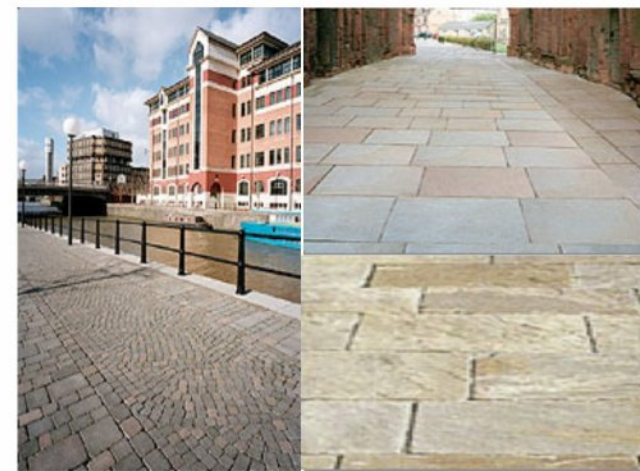


SHRUB PLANTING:

Cornus alba (Dogwood)
Acanthus spinosus
Hedera colchica (Ground Ivy)
Juniperus squamata
Jasminum nudiflorum (Winter Jasmine)
Choysia ternata 'Sundance'
Euonymus japonica 'Emerald gaiety'
Lonicera nitida
Mahonia aquifolium
Ribes sanguineum
Weigelia florida
Hypericum 'hidcote'
Berberis thunbergii
Hebe 'Mrs Winder'
Taxus baccata (Yew)
Coryllus avellana (Hazel)



Hard Materials:



The Green Vistas



Briefing Notes:

Connection to each major building entrance with a clear landscape design element is a key requirement. There will also be a prominent visual and physical connection to the Central Pedestrian Ribbon and the Movement Spine.

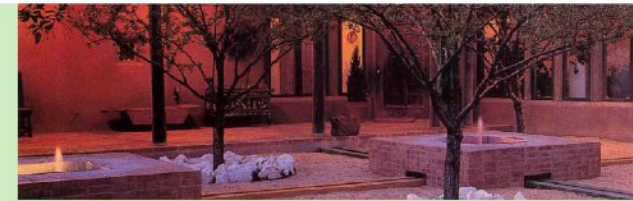
Each space will provide a variety of seating opportunities and focal points using the edges and the central areas of the space depending on the pedestrian desire lines and general patterns of movement across the space.

Very high quality landscape materials will identify building entrances.

Activities will be located at the centre of the space where the centre expanse remains open with minimum use of shade. The edges are paved and planted to provide a more friendly microclimate for seating areas to focus on the central area.

Arrival at the buildings through the spaces should be enriched to provide an interesting series of links, focal points and nodes of interaction.

Each individual development package will have a detailed landscape scheme based on the established design principles for the campus plot area.



Planting:

Trees for Squares and Green Spaces:

Carpinus betulus 'Fastigiata' (Hornbeam)
Carpinus betulus 'Frans Fontaine' (Hornbeam)
Sorbus x thuringiaca 'Fastigiata' (Whitebeam Hybrid)
Betula pendula
Malus tschonoskii
Prunus avium 'Plena'



Shrubs for squares and Green Spaces

Amelanchier lamarckii
Caryopteris x clandonensis 'Heavenly Blue'
Choysia ternata 'Sundance'
Cornus stolonifera 'flaviramea'
Cotoneaster horizontalis 'variegatus'
Euonymus europaeus 'Red Cascade'
Weigela florida
Viburnum tinus
Viburnum bodnantense
Hebe 'Great Orme'
Hebe 'Mrs Winder'

Perennials for squares and Green Spaces

Acanthus spinosus,
Achillea 'Moonshine'
Bergenia x schmidtii
Euphorbia amygdaloides 'Rubra'
Heuchera 'Bressingham White'

Bulb Species:

Hyacinthoides non-scripta (Bluebell)
Narcissus spp. (Daffodil)
Crocus
Galanthus nivalis (Snowdrop)



Hard Materials:



Materials for squares

High quality granite
Metal details
Slate and brick



Materials for squares

High quality granite
Metal details
Slate and brick





Briefing Notes:

This space will provide simple elegant design combined with contemporary materials to give the space a unique character of its own.

There will be a requirement to reduce impacts of the Movement Spine network by the use of screening vegetation in particular where the Movement Spine crosses the Linear Park and Woodland Zone Areas.

Planting:

Tree Species:

Carpinus betulus 'Fastigiata' (Hornbeam)
Corylus avellana (Hazel)
Fagus sylvatica (Beech)
Fraxinus excelsior (Ash)
Quercus robur (Common Oak)
Sorbus aucuparia (Mountain Ash)
Sorbus aria 'Lutescens' (Whitebeam)
Populus tremula (Quaking Aspen)

Shrub Planting:

Symphoricarpos albus
Symphoricarpos chenaultii 'Hancock'
Rosa rugosa
Rosa canina
Leycesteria formosa
Hypericum 'Hidcote'
Ribes sanguineum
Syringa vulgaris



Bulb Species:

Hyacinthoides non-scripta (Bluebell)
Narcissus spp. (Daffodil)
Crocus
Galanthus nivalis (Snowdrop)

Hard Materials:



Materials for Movement Spine

Contemporary materials
Innovative use of materials
Modern street furniture
Concrete pavers/setts
Stainless steel bike racks/seating
Modern lighting solutions
Exposed aggregate path network
Resin bounded gravel



Movement Spine



Briefing Notes:

There will be an informal footpath along north shore but no footpath provision on south shore.

There is to be provision for a slipway and boathouse on the north shore which will be integrated with the landscape of intermittent trees. Also a provision for a watersport launching area and possibly a restaurant. Opportunities for canoeing and rowing should also be provided.

Clear views should be maintained across the north and south shores. Views out across the lake to open countryside can be retained through the planting on the south shore if it is left relatively open.

Along the south shore will be restricted access to protect the habitat enhancement areas at the edge of the lake.

An obelisk, monument or tower on the south shore will act as a focal point linking to the ends of the strays.

There will be a need to reduce the impacts from the road network and the built development by screening vegetation on south shore.



Planting:

Trees and Shrubs Associated With Wetland Areas:

Alnus glutinosa (Alder)
Populus tremula (Aspen)
Salix alba (White Willow)
Salix caprea (Grey Willow)
Salix cinerea (Goat Willow)
Salix fragilis (Crack Willow)

Parkland Specimen Trees

Betula pendula (Silver Birch)
Fraxinus excelsior (Ash)
Fagus sylvatica (Beech)
Prunus avium (Wild Gean)
Acer campestre (Field Maple)
Quercus Robur (Common Oak)
Quercus petraea (Sessile Oak)
Sorbus aucuparia (Mountain Ash)

Plants for Waters Edge

Iris laevigata variegata
Iris pseudoacorus (Yellow water Iris)
Iris sibirica (Bog Iris)
Juncus effusus Spiralis (Corkscrew rush)
Lythrum salicaria (Purple loosestrife)
Lobelia cardinalis

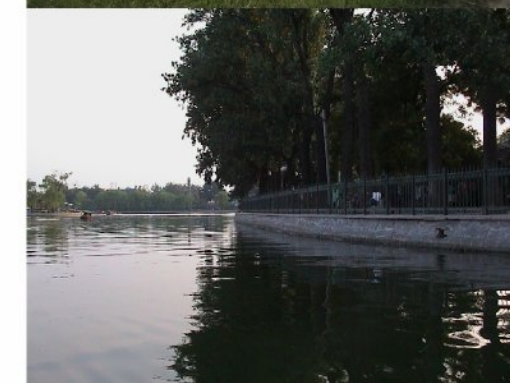


Hard Materials:



Materials for Areas of Lower Density Development

Soft materials which will blend into the view
Hoggin/resin bonded gravels
Tarmac/textured concrete
Concrete setts
Timber boarding
Metal/wooden handrail barriers





Briefing Notes:

The open space (known as Church Field) around the Church should be preserved in its entirety and not be interrupted by paths. The existing trees should be specifically protected and preserved by active management to prolong their life expectancy.

Church Field should continue to be a place for informal recreation at the centre of the village. The area to the front of Heslington Hall should be developed to provide a place which enhances the historic qualities of the Hall.

The new link road to the Science Park will result in a reduction in vehicle traffic to the front of Heslington Hall. This will allow the area in front of Heslington Hall to be remodelled to improve the setting. Improved parking facilities for the churchgoers off Field Lane will be provided. Additionally, a safe school drop off point along Field Lane is needed as are safe cycleways along Heslington Lane, Field lane and University Road.

There is a need to consider how to manage access from the campus onto Low Lane and the Movement Spine and people movements from the western access and around the church and green needs careful consideration. Additionally, retaining low key links to the north of the church must be retained; the new car park at the church site requires screening; and as many mature trees as practical need to be conserved.

The new link road across Dean's Acre is to be visually screened so as to protect views of the church as far as possible and recognise the needs of the Heslington Conservation Area. There is to be sympathetic treatment of the additional car parking to be provided at the church.



Planting:

Tree Species:

Betula pendula (Silver Birch)
Carpinus betulus (Hornbeam)
Corylus avellana (Hazel)
Fagus sylvatica (Beech)
Fraxinus excelsior (Ash)
Quercus robur (Common Oak)
Sorbus aucuparia (Mountain Ash)
Prunus avium 'Plena' (Flowering cherry)



SHRUB PLANTING:

Hedera colchica
Choysia ternata 'Sundance'
Euonymus japonica 'Emerald gaiety'
Lonicera nitida
Mahonia aquifolium
Ribes sanguineum
Hebe 'Mrs Winder'
Taxus baccata

Bulb Species:

Hyacinthoides non-scripta (Bluebell)
Narcissus spp. (Daffodil)
Crocus
Galanthus nivalis (Snowdrop)

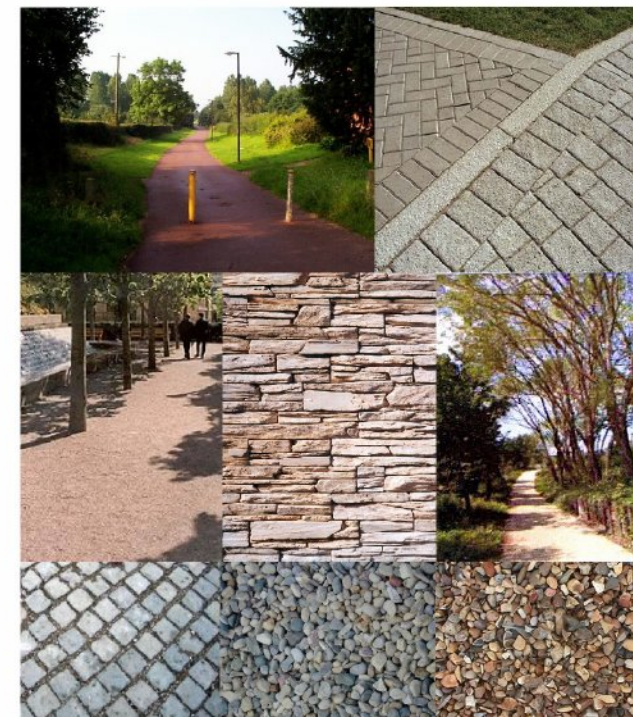


Hard Materials:



FOOTWAY SURFACING MATERIALS:

Resin bound gravel finish to asphalt surface
Granite setts
Hoggin
Loose, natural soft materials
Wooden board edge detail



Heslington Parish Church

4.0 LANDSCAPE IMPLEMENTATION STRATEGY

To continue to develop as a major centre for the advancement of learning, where influence is global, whose research is fundamental, viable and useful, and where students are exceptionally well equipped to lead successful lives and contribute effectively to society'

University of York Vision Statement

This section outlines possible ways to implement the masterplan and examples of possible milestones in the programme of implementation. Implementation could be processed in a mixture of ways:

- according to demand;
- by area; and
- by theme

There will be a defined landscape framework that will include:

- the movement spine and central pedestrian ribbon;
- the lake; and
- the vistas.

The landscaping within the built development will not be defined but developed by the building architect in line with defined guidelines to ensure coherence across the development.

4.1 Phased Landscape Development

The landscape will be constructed in two main phases. The first phase landscape covers the western extent of the site and includes the whole of the eastern vista. The re-routing of the overhead lines will be required to be finished before the first phase landscape can be completed. The land in the second phase will be left in agricultural use for as long as possible with the existing drainage remaining unaltered where possible.

All major earth movements will be completed early in the project. Phase 1 will include the creation of the majority of the lake and related drainage systems. The spoil created will be used for the mounding of the linear park and for raising Kimberlow Hill. Phase 2 may include any lake area to the east and the cut required for the buildings on the northern edge of the allocation area. This will be used to provide the landform adjacent to the A64.

The early on-site activities following the creation of the phased 1 landscape will include the first building development, comprising:

- i. construction of associated internal access ways and the western end of the movement spine;
- ii. installation of infrastructure for the first phase buildings;
- iii. building construction starting on around the central vista; and
- iv. landscaping within the allocation area including hard surfacing.

The buildings in the first phase of development will front onto three main areas: the central pedestrian ribbon, the north side of the UTS Movement Spine and the strays. Further progressive development of the site, generally from west to east will follow. This will include the creation of the eastern access from Hull Road, through the Grimston Bar Park and Ride site. The timing of this second access will be dependent upon the sequencing of later building development.

The early on-site activities will include the following:

- i. further archaeological investigations;
- ii. the re-routing of the 132kV overhead cables;
- iii. the creation of a temporary access for construction traffic off Field Lane close to the Hull Road roundabout;
- iv. ground excavations and creation of the lake;
- v. spoil from the lake will be used to provide landform for spatial definition, sound attenuation and screening;
- vi. raising of Kimberlow Hill;
- vii. advance structure planting; and
- viii. creation of the permanent access off Field Lane.

In addition to this Landscape Design Guide, the development of the site will be managed by the following documents:

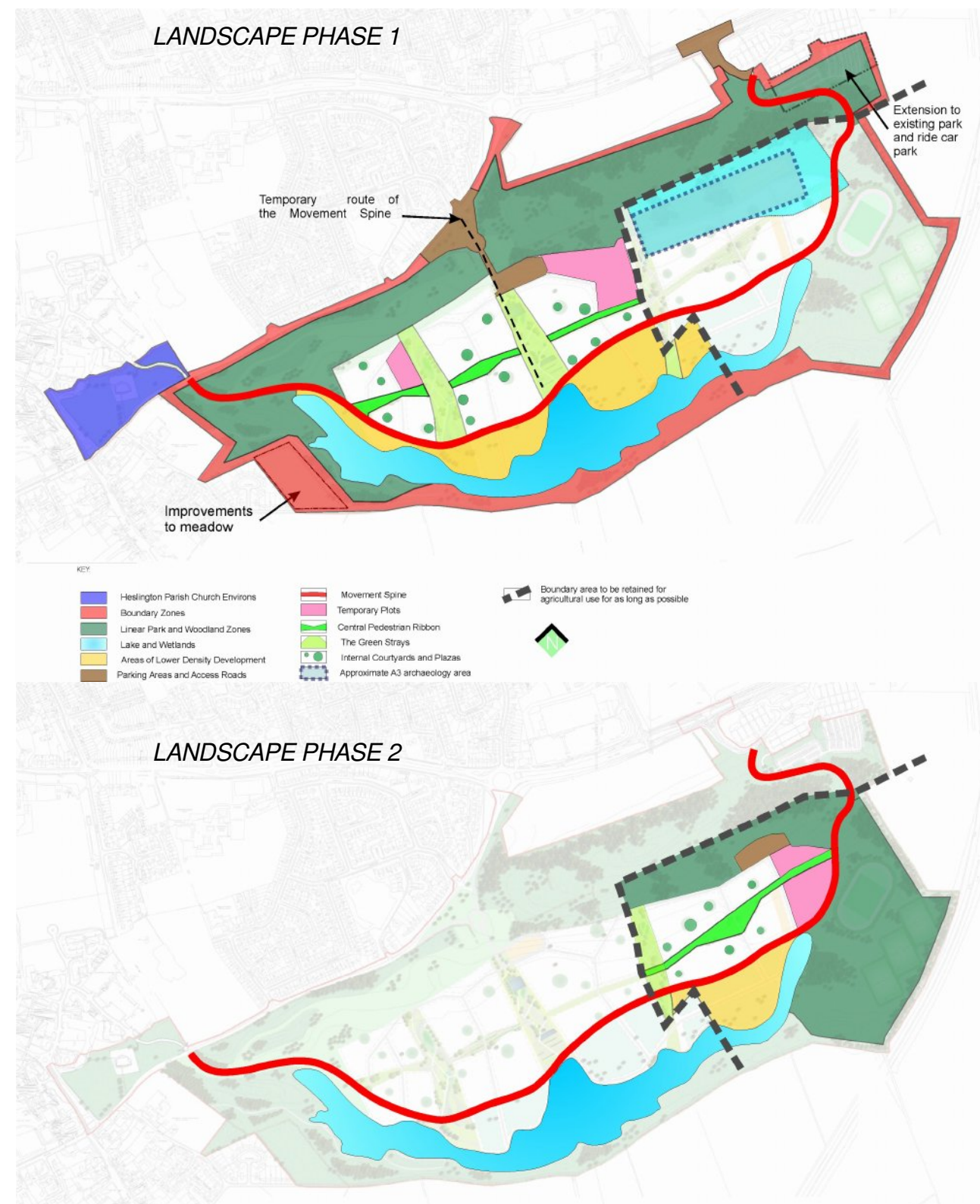
- a Landscape Management Plan – to include the survey and protection of trees;
- a Construction Environmental Management Plan – detailing environmental safeguards to be applied through construction; and
- an Environmental Site Management Plan – detailing the proposed protection of water courses; the management of the land through the development phase; ecological development and habitat protection.

Landscape Development Phase 1 (*associated engineering works are show in italics*)

- a) (Heslington Parish Church Environs) planting and improvements to open space adjacent to Church and to the front of Heslington Hall;
- Creation of temporary access for construction off Field Lane*
- b) (Boundary Zones) planting of the boundary areas around the entire site, to include protection of existing hedgerows and the creation of new structure and screen planting using indigenous species;
- The re-routing of the 132kV overhead cables;*
- Ground excavations and the creation of the lake from west to east, including ground remediation at Grimston Bar Park and Ride;*
- c) (Linear Park and Woodland Zones), to include ground modeling, contouring and planting to provide sound attenuation and visual screening to the village area in particular (for area shown in phase 1 plan only). Also includes the planting surrounding the car parking area at Grimston Bar Park and Ride;
- d) (Lake and Wetlands), including planting to lake edges and island and boardwalk areas and reed beds for water filtration and cleaning of surface water run off (for area shown in phase 1 plan only).;
- The creation of car parking for 500 cars at Grimston Bar;*
- e) (Lake Shores), to include planting of the north and south shores (for area shown in phase 1 plan only); landscape works and planting within the Grimston Bar car park;
- The creation of the Movement Spine;*
- f) (Movement Spine), to include structure planting and open space provision linking the spine areas (for area shown in phase 1 plan only);
- The creation of parking areas and access roads;*
- g) (Parking Areas and Access Roads), to include structure planting to all access roads and traffic infrastructure areas and permanent access off Field Lane (for area shown in phase 1 plan only). The implementation of temporary landscape treatments within the temporary plots;
- The creation of the Central Pedestrian Ribbon;*
- h) (Central Pedestrian Ribbon), to include structure planting and open space provision linking to the ribbon areas (for area shown in phase 1 plan only);
- i) (The Green Vistas), to include all soft and hard landscape areas (for area shown in phase 1 plan only).;
- The creation of the buildings within the Phase 1 development plots*
- j) (Internal Courtyards and Plazas), to include all soft and hard spaces in the development plots (for area shown in phase 1 plan only);

Landscape Development Phase 2 (*associated engineering works are show in italics*)

- Ground excavations and the creation of the remaining sections of the lake (if required);*
- a) (Lake and Wetlands), remaining planting to lake edges, including islands and boardwalk areas;
- b) (Lake Shores), to include the remaining planting of the north and south shores and the sports areas;
- The creation of the Movement Spine;*
- c) (Movement Spine), to include the remaining structure planting and open space provision linking the spine areas;



The creation of the parking areas and access roads;

- d) (Parking Areas and Access Roads), to include the remaining structure planting to all access roads, parking areas, traffic infrastructure areas and permanent access off Field Lane. Also includes the implementation of the temporary landscape treatments within the temporary plots;

The creation of the Central Pedestrian Ribbon;

- e) (Central Pedestrian Ribbon), to include remaining structure planting and open space provision linking to the ribbon areas;

The creation of the Phase 2 development plots;

- f) (Internal Courtyards and Plazas), to include all remaining soft and hard spaces in the development plots.

The creation of the buildings within the temporary expansion areas

- g) Internal Courtyards within temporary expansion areas, to include all soft and hard spaces in the temporary development plots (for area shown in phase 3 plan only).

Park and Ride access has been considered, however the disruption to the park and ride facility and the potential disruption for construction traffic make this an unattractive option.

There are additional constraints affecting the phasing, in particular the A3 Archaeological site. This is the area of the Roman Bath House and there is interest in a long term University research and community archaeological programme in this area. To facilitate this programme there should be an avoidance of land forming in this area until investigations are completed. The area will require vehicle access and site working areas for the duration of the project.

4.2 Permanent and Temporary Landscape

The basic landscape structure will be established to include the major water bodies and land drainage, basic development levels, open space associated with Heslington Village, Field Lane Parkway and Kimberlow Hill landform. The establishment of the proposed Green Vistas will form an integral part of each development phase.

Early establishment of the landscape infrastructure will be essential to mitigate the impact of the proposed development. This will include movement of soils, creation of new landform, excavation of the lake and planting of the principal woodlands, structure planting and boundary screen planting. As a matter of principle smaller tree stock will generally be used to establish the woodland and structure planting as this has been shown to accelerate beyond stock planted as semi-mature. Tree species will be based principally on indigenous and naturalised forest scale trees based on oak as the climax species. In addition to the basic structure planting a distinctive new parkland will be established by the use of:

- A secondary planting framework of indigenous and exotic species, avenues, tree groups and hedging;
- A tertiary layer of ornamental shrub and perennial planting;
- Further habitat creation especially associated with the lakeside wetland areas; and
- Grassland establishment with varying swards ranging from formal lawns to wildflower meadows.

4.3 Advance planning

The major areas of tree and woodland planting associated with Heslington Village Green Space, the Field Lane Parkway and Kimberlow Hill will be established in advance of first occupancy This will provide the broad scale 'enclosure' planting for open space areas and primary mitigation in relation to the adjacent areas of housing. The planting in relation to Low Lane will be reinforced to help conserve the rural quality of the lane and to filter views to and from the A64.

4.4 Constraints and considerations

In the early stage of construction there will need to be a temporary construction access. This will be subject to prior approval. Having considered the options, the preference is to have this access off Field Lane running and to the east of the permanent access into the new campus. The Grimston Bar

5.0 LANDSCAPE MANAGEMENT AND MAINTENANCE

There will be a significant improvement in the overall ecology of the site through the creation of a woodland and lake area. This will be managed through an Environmental Site Management Plan for the site. A Landscape Management Plan will describe how the land is to be maintained through the development period and beyond.

5.1 Short Term Maintenance

The landscape management regime will change progressively from one associated with intensive agriculture use to an amenity landscape. The planting works will be subject to a five year establishment maintenance regime to ensure satisfactory establishment of the young planting and guaranteed survival of all trees and shrubs.

5.2 Long Term Management

The management plan will be prepared to address the full range of management issues for both the hard and the soft landscape areas.



6.0 REGULATING FACTORS

6.1 Factors affecting lake design

The Supporting Technical Information includes some briefing notes on lake design but the following are key factors that need to be considered:

6.2 General design

There is a need to integrate the major water bodies and wetlands as distinctive visual features, which also serve as balancing regulators and to direct movements between campuses.

6.3 Drainage

The surface water from the parking areas and the highway (high risk pollution) would enter the lake via interceptors and reed beds (or similar) and the low risk water from the remaining soft areas would enter directly into the lake. Other medium risk water (roof water etc) would be piped to the lake in underground pipes. Consideration should be given to the rainwater harvesting potential of this water. The water would run through reed beds where possible in order to remove general atmospheric pollution. Additionally, planted margins and buffer zones will help to protect the lake from polluted run off.

6.4 Erosion

Erosion protection measures are generally not needed where planting and vegetation management are well designed and implemented. Some measures will need to be taken where;

- water is flowing, such as inlet streams or structures and drainage channels;
- vegetation is proposed to ensure establishment before effective protection;
- areas are subject to constant abrasion i.e. access points or wave erosion;
- areas are more prone to wave action i.e. SW facing shores.

Geotextiles and Vegetation are the most economic, ecologically beneficial and aesthetically pleasing methods of shore protection alleviating wave action by dissipating wave energy. However, vegetation can take time to establish meaning that initial control measures may be required. Boards/logs and stakes can provide this in the short term as can the use of a willow fascine mattress. Stone pitching, hardcore or broken stone will provide durable slope protection, especially when used within mesh gabions. Although an expensive solution, gabions would work well in combination with vegetation, however they will require overplanting to mitigate their visual impact.

6.5 Lake depths

The main lake needs to be over 1m deep where open water is required for landscape or habitat reasons and will also need deeper areas (over 1.5m) for winter survival of fish and recreational use. However, some of the highest priority habitats require temporary ponds (seasonally dry) and fish-free water bodies (for species of invertebrate intolerant of fish predation). The habitat creation plan will therefore include a number of small ponds and marsh/swamp areas.

Shallow depths (generally 1-2m) provide the optimum level for planting and water quality. Plants establish more efficiently in shallow water depths (less than 500mm), and such areas provide ideal habitats for invertebrate life. Deeper water (up to 3000mm) is less hospitable for plant life but does provide habitat for

other animals. Ideally, a variety of water depths will be incorporated, since this helps promote habitat diversity and nature conservation value.

It is highly desirable to have a seasonally fluctuating water level within the lake and pond area. By alternating bank and bed profiles, it will be possible to ensure some areas are permanently wet swamp, others become temporarily wet and others become drought areas. Although it is unlikely that new pools will attract many of the BAP priority species, they may well develop into suitable sites for re-introductions in the future. By having such a range of water levels, a wide diversity of habitats and vegetation types will develop over time. Initial planting programmes and ongoing management will encourage this. For example, in areas where water levels are predicted to fluctuate by approximately 1m, Reeds (*Phragmites*) will be planted. These swamp/marsh areas will have varying ground profiles which will allow other species to out compete the reeds in the extreme shallow and deep areas, thus increasing species diversity.

The shape of the shoreline is also important both aesthetically and ecologically. A series of bays and spits provides shelter which encourages plant establishment and increases the length of shoreline which increases habitat potential. Grading and infill will be used to create gently sloping banks (1:10 is sufficient) which allow improved vegetation establishment and access to and from the lake by wildlife.

6.6 Habitat creation and wildlife

The wetlands are an ecologically important element of the lake and will be designed to incorporate the following habitats:

- bare mud on the drawdown zone;
- vegetation on the drawdown zone;
- small pools in the drawdown zone;
- higher tiered wetlands;
- emergent areas;
- submerged areas; and
- marginal woodland.

Other issues relating to the ecological value of the lake that need to be considered include:

- running water for attracting kingfishers;
- aeration of water to avoid algae blooms;
- varying water height for ecological diversity;
- the southern shore will be an undisturbed area, designed for habitat development and protection;
- the provision of sheltered areas (using planting) are recommended to provide protection from south westerly winds;
- wildfowl issues will need to be considered (NB: the University of York working party have prepared a paper addressing issues relating to wildfowl 'The Management of Wildfowl and other Fauna' (April 2004));
- fish habitat requirements in the summer and winter;
- aquatic flora for oxygenation, to act as a source of food and to provide shelter and spawning areas, and
- sheltered, shallow open water with sunny and shaded areas are important for insect life, with tussock forming vegetation and scrub is ideal for food and shelter for many amphibians.

6.7 Planting

Planting should be designed to represent the ecological gradient from dry land plants, through marginal plants and emergents, to submerged and floating species. In some areas, planting should be designed to

achieve a variety of heights from ground layer through to tree canopies. Scrub should also be included in the design as it can provide food and breeding sites for wildlife. Allowing for these different layers provides habitats to a much greater diversity of flora and fauna and will achieve greater aesthetic and ecological benefits. Native species should be used as they maintain a better ecological balance and minimise the risk of domination by particular species.

The Southern and Eastern shores of the lake will be left fairly open, with only small pockets of trees, so as not to limit sunlight penetration into the water. Restricted light penetration prevents flora and fauna from developing. On the Northern and Western shores, tree planting will be more prolific (such as willows and downy birch) and offer valuable habitats, although here too, retention of open views is essential.

Soil quality dictates what types of plants will be suitable on lake edges and until this is established any species given are for guidance only.

6.8 Lake construction

The excavation of the lake may need to be done in phases and it may be necessary to dewater areas of the site prior to excavation.

The excavation of the trial pits for the geo-environmental engineering review demonstrates the difficulties that will be experienced in excavating the proposed lake profile. An impermeable layer will undoubtedly be necessary to ensure that the water body does not leak and to prevent bank instability. Based on analysis only a small volume of the total excavated materials would appear to be appropriate for re-use as a clay liner material. A geotextile clay liner may be the best option; it is 'relatively' cheap although more difficult to install due to its weight. This type of liner would be covered with poor quality sub-soils with low levels of nutrients which promotes the best water quality. A smooth clay base would be the best alternative; seeded at the edges to prevent disturbance. If the clay were to be disturbed it would produce 'milky' water which would restrict the entry of sunlight thus reducing water quality. A number of studies are required before the design of the lake can be finalised.

6.9 Ditches

Current ditches that are retained will not be changed unless accepting greater flows from remedial diversion works, whereas new ditches can be designed to increase variation of type on site. Ditches will be varied in profile (some steep, some shallow banked) and depth of water and will offer an increase in habitat potential throughout the site. Flow control/methods can be utilized to set waters in ditches if required. Culverting will be limited as far as possible, since it can create a barrier to movement for some species. Where it is essential, sensitive designs with ledges will be used which allow connectivity between habitats. The drainage requirements including ditches will be designed at detailed planning application stage.

6.10 Earthworks Considerations

An outline (3D-computational) model has been prepared in order to validate the masterplan proposals. Its purpose was to determine whether nett zero earthworks balance is achievable within the context of the intended development. This is important to the University as one of its key principles is to promote a sustainable development by neither exporting to landfill nor importing materials won from other sources to create the proposed landform.

The headline reading from the earthworks modelling assessment is that zero balance should be achievable but this is conditional on several key assumptions which can only be validated by further site investigations and during detailed design.

The key points of reference for the earthworks model are:

1. the lake shall not be created by impounding (to avoid any long term maintenance obligations which it would otherwise be subject under the 'Reservoirs Act').
2. accordingly, the lake level has initially been set as the minimum existing ground level (south shore) less 750mm which has been allowed for subterranean drainage, freeboard and attenuation.
3. the lake is required to provide a 1.5m deep clear rowing area and buffer zone with gently graded banks back up to ground level
4. excavations for the lake and wetlands will be used to raise Kimberlow Hill as well as to provide other strategic screening in accordance with the Environmental Statement
5. The west end of the lake has been set at a higher level (weir) to avoid a deep 'ravine' adjacent to the Movement Spine.
6. The outline model has been developed by optimising the balance for each of the development plots as identified on the architectural masterplan.

This latter point provides a range of opportunities for the future detailed design of the plots whilst aligning itself with the key architectural masterplan principles which is to work in empathy with the existing landform so that no sudden variations in grade and form will appear within the allocated area. The final design is expected to include varying degrees of stepped plateaus or gradually graded slopes within each of the principle plots as befits the density, layout and context of buildings that are allocated to respective areas.

It was also important to recognise that the creation of the raised profile of Kimberlow Hill and its construction access had to be fitted inside the application boundary. Another consideration is the area of key archaeological interest the further studies that are intended on the flanks of the raised Kimberlow Hill.

It is important that these areas can be 'released' for local investigations in the short term (5-year plan) without unduly impeding the overall ambition to raise Kimberlow Hill. The changes in these areas has therefore been minimised but it should be recognised that further detailed design development will be required to work out the archaeological investigation strategy with the earthworks construction strategy.

Earthworks changes are shown on the 'hotspot' picture (Cut Fill Depth Bands and Contours – refer to supplementary document – Supporting Technical Information section 7.0) which highlights the key areas of change across the site. The significant 'grey areas' shown on plan will be subject to changes within $\pm 1.5\text{m}$ and the majority of these have been minimised over the priority archaeological areas.

More detailed information is provided in the Supplementary Document 'Supporting Technical Information'.

APPENDIX A

Report Conditions

WHITE YOUNG GREEN ENVIRONMENTAL

REPORT CONDITIONS

LANDSCAPE DESIGN GUIDE

HESLINGTON EAST

UNIVERSITY OF YORK

This report is produced solely for the benefit of the University of York and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

This report is based on a visual site inspection, reference to accessible referenced historical records, information supplied by those parties referenced in the text. Some of the opinions are based on unconfirmed data and information and are presented as the best that can be obtained without further extensive research.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, being subject to risk analysis, we are unable to give categoric assurances that they will be accepted by Authorities or Funds etc. without question as such bodies often have unpublished, more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYGE. In time improved practices or amended legislation may necessitate a re-assessment.