LANCASTER UNIVERSITY CAMPUS LANDSCAPE MASTERPLAN

CONTENTS
1.0 Summary
2.0 Introduction
3.0 Site Analysis
4.0 Key Issues
5.0 Masterplan proposals:
   • Strategies
   • Masterplan (whole campus)
   • Masterplan (core area)
6.0 Materials & Unit Costs
7.0 Implementation Schemes and Costs:
   • Design Review Committee
   • Woodland management
   • Woodland creation
   • Campus grass maintenance
   • Sports field rehabilitation
   • Sculpture Park & Thomas Mawson Garden
   • Chaplaincy
   • Perimeter road
   • Service areas
   • Pedestrian Spine
   • Alexandra Square
   • College Quadrangles
   • New crescent route
   • Furniture and bicycle storage
   • Covered walkways
8.0 Priorities
9.0 Conclusion

Appendices:
A Landscape Maintenance & Woodland Management Plan
B Scheme Cost Spreadsheet
C Sports field soil analysis
1.0 Summary

1.1 Lancaster University forms an attractive campus with a large and varied landscape estate. The original Epstein and Shepheard building layout has changed, particularly in recent years as expansion and replacement of buildings has accelerated. Much of the external fabric is at the end of its life and in need of renewal. Increased car use and a reducing maintenance budget have also exerted pressure on the quality of external spaces and soft landscape. The University has recognised the impact that these various factors are having on the campus landscape, and the need to reappraise the campus landscape design so that progressive improvements can be commenced.

1.2 The proposed Landscape Masterplan presents an analysis of the current site, identifying key factors which need to be addressed, and develops a unifying plan and language of materials which will successfully regenerate the University campus. This masterplan is broken down into a number of discrete 'projects' which have been costed and prioritised, so that the University can adopt an incremental approach in response to funding and programme constraints. The Action Plan which these projects make up is a simple means to ensure continual improvements are taken forward in a coherent manner and allows financial planning in the medium and long term.

1.3 The Landscape Masterplan complements the Lancaster University Masterplan produced by Faulkner Brown Architects. It incorporates new building developments which are currently in progress or likely to be implemented in the near future; in some cases amended layouts have been proposed to improve the landscape design.

1.4 Key to taking the masterplan and action plan forward will be instigation of a Design Review Panel within the University, tasked with assessing each new building project against the needs of the masterplan so that full co-ordination is achieved. The quality and character of landscape works must be consistent between different sites on campus, and no development should impair the aims of the masterplan without well-informed reason.
2.0 Introduction

2.1 Lancaster University possesses an extensive campus setting of varied character and quality. Established during the early 1960’s on the estate of Bailrigg House and adjacent farmland, the campus expressed a well considered relationship of architecture to landscape.

2.2 A comprehensive landscape master plan was implemented in the 1960’s. The strong woodland structure, which creates a parkland setting, generous amount of sports ground, and a segregated pedestrian core with an intimate collegiate atmosphere gave the university a unique character. However, over recent years development pressures have increased as the university has sought to expand to meet demand for Higher Education. The campus has needed to accommodate new buildings, replace existing buildings and find room for ancillary uses such as car parking; all have impacted upon the landscape character and quality. In addition, maintenance resources have been gradually reduced so that the size of workforce available to maintain the new campus in the 1960s is no longer viable; this has thrown into light some of the demands imposed by the original design. An updated master plan is required to renew the quality of setting and accommodate new developments.

2.3 Looking toward the future, with ongoing new academic and residential construction transforming the campus, the university commissioned the development of a landscape masterplan for the campus in September 2004.

2.4 The brief for this study required the following:

- Assessment of the current campus to identify what does and does not work. With this understanding, the task of generating a coherent approach to the campus as a whole, exploiting positive aspects of the existing site whilst addressing past problems, is made relevant and site specific.
- Development of a master plan which is both sustainable and deliverable, to last for the next 10 years.
- Production of a landscape management plan, to include a woodland management plan for the campus.
- The master plan to address in particular improvements to pedestrian routes and the variety of social and breakout space.

2.5 As a vital part of this process, definition of costs and priorities has been drawn into an Action Plan. This breaks down the proposed masterplan into a series of separate projects, allowing an incremental approach according to the availability of funds or site areas.

2.6 The action plan is prioritised according to cost, complexity and urgency of action; this approach suits such a complex and long term project, allowing a rolling programme of incremental improvements.

2.7 The masterplan will guide future developments, to ensure a unified approach to external spaces and the landscape structure.
3.0 Site Analysis

3.1 The University occupies a site of 264 acres in area (107 hectares), between the M6 and A6 roads. It has a clear structure in two parts; the core campus of University buildings lies within an encircling road and woodlands; beyond this lies an extensive area of remnant parkland that contains sports fields and minor ancillary uses, access roads etc. extending to further woodland on the site perimeter.

3.2 The built core of the campus lies on a ridge top location sloping towards the west and south; it takes up 79 acres (32 hectares). The M6 lies in partial cutting immediately to the east; the A6 runs along the local valley bottom to the west. Rising up from the A6, there are two minor ridge features which divide the site into distinct parts; the sports pitches lie on flat land along the foot of these slopes, with open grassland and woodlands on the slopes.
3.3 Woodlands provide very effective containment of the original University Colleges, despite their elevated position. Woodlands occupy a steep slope which runs north-south across the centre of the site, so that on entering the campus the visitor passes first through a parkland landscape before winding up the slope through the woodland to reach an arrival point in front of the Ruskin Library. The northern and eastern boundaries benefit from retained estate woodlands dating from the 1850s, providing substantial screening of the M6 (although noise remains intrusive). Most of the other woodlands date from the 1960s, being planted at the time of construction of the University. There are also thinner shelterbelt woodlands alongside the A6, affording glimpse views into the University.

3.4 Expansion of the new residential facilities to the south-west of the site has broken through the previous woodland containment, and lies very exposed to views from the south and west. Whilst Infolab 21 is a building of architectural distinction, the new residences are of indifferent quality and are out of character with the original campus buildings. This site occupies 23 acres (9 hectares). Re-establishment of an effective woodland belt around the southern boundary of the site is key to achieving a cohesive landscape masterplan.
3.5 Existing woodlands are of 2 age types. Original woods dating from the 1850s consist of Beech, Elm, Oak, Austrian Pine and self-sown Sycamore; the structure is rather dense and lacks younger generations in some parts; ground flora is limited, and there are broad swathes of invasive Rhododendron ponticum understorey. These woods are in need of selective thinning and restocking to improve age structure and species balance. Newer woods dating from the 1960s consist of Norway Maple, Poplar, Alder and Beech; structure is dense and they require selective thinning (to remove pioneer species Poplar and Alder in particular) with some restocking of Oak, Beech and Pine to improve species balance.
3.6 Extensive grassland covers approximately a third of the campus area. The majority of this is mown on a regular basis, although this is relaxed on the steepest slopes and immediately around some woodland edges. Seasonal reduction of mowing for the benefit of wildlife does not form part of the maintenance regime.

3.7 Sports pitches occupy the lowest ground along the foot of the slopes. Pitches suffer from very poor surface drainage, and remain unplayable for large parts of the winter season. It is probable that the original field drainage installed in 1960 has deteriorated and no longer functions effectively; this is vital due to the location of the pitches at a natural seepage line in the base of the slope. In addition, a soil texture analysis has revealed that the soil has a high proportion of fine graded sand which is not conducive to good drainage. Proposals for amelioration of pitch conditions are given later in the report.

3.8 Lake Carter lies on the first terrace along the entrance road; it is an attractive feature marred by poor water quality. The water body is narrow and shallow, extensively shaded by overhanging trees and subject to heavy leaf fall. Water entering the pond from seepage in the adjacent grassland appears to be anaerobic and the pond water itself suffers seasonal fluctuation in quality and visual appearance. Given the scale of the campus, Lake Carter is rather insignificant, and would benefit from enlargement and deepening to improve its visual and water quality; proposals are given later in the report.

3.9 There are 3 roads entering the campus, each of different character. The main entrance forms an attractive sequence passing through the parkland and rising up to meet the University colleges revealed between woodland copses. It is tree lined and does not have the character of a standard public road. Green Lane is more rural in nature and serves only a limited function in accessing the hotel. The new road access to the south west corner of the site is by contrast visually intrusive; dominated by standard highway design features and crude earthworks, it lacks sensitivity to the setting. Combined with the massing of the new residences, this campus gateway presents a poor visual quality greatly contrasting with the careful design evident elsewhere.
3.10 The perimeter road defines the edge of the original University buildings. It is both a 2-way road and an aisle for the car parking bays to both sides along much of its length; this is not ideal and results in congestion at busy periods. Congestion is exacerbated by the number of service yards that gain access onto the road. Pedestrian footways are absent in many places, and where present are of insufficient width once the overhang of parked cars is taken into account. There is a paucity of safely demarcated pedestrian crossings. Cyclists are especially ill-served due to their vulnerability to cars reversing from parking spaces.

3.11 Due to recent development works causing disruption and to past failures of trees, the perimeter road lacks a coherent landscape framework. Rows of trees are present in some parts (for instance at Grizedale or County Colleges), however they are often located too close to buildings or to paths and roads; thinning to re-space maturing trees is required throughout. The quality of trees is variable, many showing poor canopy shape or damage.

3.12 Grass areas around the perimeter road and access areas suffer from vehicle over-run and pedestrian desire-lines. Due to the presence of steep transition slopes, fragmented areas and numerous signposts etc, maintenance of grass verges is difficult and an untidy effect results.

3.13 Within the core area there are many external spaces of varying scale and complexity; an intimate pedestrian scale creates a comfortable environment. A primary pedestrian route runs through the heart of the University with Alexandra Square at its centre, colleges and academic departments lying to either side. This route has a canopy over much of its length; these walkways are rather gloomy spaces due to darkly coloured soffits and limited external lighting. The paving consists of pre-cast concrete slabs, with lines and panels of blue brick paviors at drainage features and surrounding trees; it is drab in appearance and showing signs of wear and tear (open joints, spalled surfaces and staining).
3.14 Alexandra Square is a well-proportioned space popular with students and staff. Steps along the northern side are very well used for sitting out in the summer. Paving is a simple diagonal grid of pre-cast concrete slabs in two contrasting tones, the pattern enlivens the space and distinguishes it from other areas. There is a coiled ramp in the northeast corner which is heavy in appearance and creates a dark corner to the square. Norway Maples along the south side of the square are in good condition although the paving below them has been lifted by root heave.

3.15 A range of courtyards is accessed from the spine route. In general these are plain and austere (consisting of either slab paving or grass lawn) although well-proportioned with a college quadrangle character. There is nothing in the treatment of external spaces to distinguish each college.

3.16 Trees planted within the core areas adjacent to buildings comprise Norway Maple, Ash, Lime, Cherry, Rowan, Whitebeam and Oak; other species occur occasionally. Many are planted too close to buildings or hard surfaces, and after 40 years of growth are impeding windows and lifting adjacent paving. Many exhibit signs of stress, which appears to be due to poor soil conditions, poor planting, physical damage and compaction of soil (by vehicles, pedestrians and mowing machinery).

3.17 Away from the main part of the University, the south-west residential area is currently in the process of construction. Those parts that have been completed do not demonstrate good landscape design. Mixing of vehicles with pedestrian surfaces through the core areas has resulted in damage to planting, and invites abuse by car owners wishing to park outside their door. The central paved space outside the bar could be an attractive focal point, however it requires new trees of large stock and adequate protection (tree guards and bollards). The amount of dense shrubbery will require an ongoing maintenance commitment.
4.0 Key Issues

4.1 Analysis of the existing campus reveals a wide range of issues which affect current landscape quality and point to future landscape development. These key issues are presented below in terms of strengths, weaknesses and opportunities.

4.2 STRENGTHS

The University has a strong large scale structure formed by the original estate shelterbelts and younger woodland blocks planted in the 1960s. An attractive approach from the A6 passes through extensive parkland containing an abundance of land suitable for sports pitches. The core part of the campus is pedestrianised, with an intimate human scale and variety of external spaces defined by the architectural layout. Interesting buildings such as the Chaplaincy and the Ruskin library form landmark features with strong identity.

4.3 WEAKNESSES

New building works have caused extensive damage to verges, trees and footways which have not been effectively reinstated. The new residential area is visually prominent with inadequate woodland screening. A lack of effective integrated design review for new developments has led to a decline in landscape quality and to difficulties with grounds maintenance.

The volume of cars present on campus is overwhelming current car parking facilities. The perimeter road is congested and poorly serves pedestrians and cyclists; it has damaged verges, poor tree quality and an absence of containment to car parking.

Changes in levels have been unresolved around buildings and service roads, leaving awkward paved slopes, retaining walls and verges. Maintenance of the landscape is hindered by the fragmentation and unmanageable gradients of grass verges in these areas. Insufficient space has been allowed for the growth of trees which have often been planted into narrow verges or too close to buildings. Within the pedestrian realm species selection of trees has been poor in places, resulting in excessive shade or damage to paving surfaces.

The quality of paving materials is utilitarian; it is dull in appearance and, with the exception of the main square, lacking in pattern or variety; some areas show signs of damage and wear. College courtyards are rather austere and lack vegetation in many cases. Walkway canopies cast heavy shade, making confined spaces dull and unattractive.

Sports pitches are poorly drained and are often unplayable despite the notionally high level of provision. There is no effective formal management plan for the pitches to ensure consistency. Lake Carter is foul smelling, overshadowed by trees, overstocked with wildfowl and subject to anaerobic runoff.
4.4 OPPORTUNITIES

The regular orthogonal layout of service yards and car parks offers the chance for a simple unifying landscape treatment to create order and containment around the perimeter road and service areas. Tree and hedge planting, combined with improved verge finishes and slopes, would transform these spaces. Additional and better quality cycle parking facilities would complement the Green Travel Plan objectives of encouraging modal share and managing car parking demand, and reduce obstructions to pedestrian routes (where bicycles are currently locked to railings, downpipes, seats etc).

Refinement of the pedestrian paving, replacing the plain concrete slabs with a simple pattern of contrasting slab tones, would bring greater visual liveliness to the pedestrian realm. New planting of climbers and groundcover plants will also soften the appearance, especially within the college courtyards. Allied to renewal of the paving, progressive replacement of the canopies would rejuvenate the currently gloomy walkways.

Regrading of some grass verges to remove awkward mounded profile would permit easier and more effective maintenance; some steep grass slopes might be replaced with low-maintenance groundcover planting.

New woodland planting to enclose the evolving campus would maintain an attractive parkland setting. Woodland management could improve woodland canopy structure and species balance, to favour native forest tree species. Grass mowing regime can be adapted to favour increased sward diversity in lightly used areas, both improving biodiversity and reducing maintenance costs.

4.5 In summary the key issues that require addressing in the Landscape Masterplan are:

- Development pressure in the core area has damaged landscape character and quality
- Traffic and car parking demand have increased
- New and future developments need to be integrated into the masterplan
- Trees and grass areas in core of campus are in poor condition
- Paving materials are reaching end of life
- The pedestrian realm is utilitarian in appearance and lacking in comfort
- A woodland management plan is needed to improve woodland structure and diversity
- Landscape quality and sports provision are major attractants to prospective students
5.0 **Masterplan Proposals**

A series of strategies have been drawn up for each distinctive part of the campus landscape. These have then been developed into a landscape masterplan layout.

5.1 **Strategy : Woodland Management**

- Underplant original 1850 woodlands with replacement native broadleaves in gaps. Original woods dating from the 1850s are in need of selective thinning and restocking to improve age structure and species balance.
- Selective removal of rhododendron from woodland alongside paths and roads; retain along the eastern boundary as a managed understorey to screen the M6.
- Selective thin of 1965 plantings to remove pioneer and self-sown species (alder; sycamore and white poplar). The increased spacing will improve tree form and amenity value. Interplant with native trees (oak, beech and pine) and shrub species to improve structure and species balance.

5.2 **Landscape Strategy : Parkland and entry roads**

- Maintain the quality of approach from the A6 by controlling ancillary developments, access points etc along the entrance drive.
- Extend new large scale woodland planting from main campus along A6 frontage of new campus land, and along rising land above sports fields.
- South west access road verge gradients to be eased, woodland planting extended to fill residual spaces to site boundary, SuDS pond regraded to form an attractive feature.
- Develop a network of walking/running paths around the woods and parkland, using wood chippings generated by woodland management operations.
- Expand and deepen Lake Carter, in conjunction with redevelopment of the Byre for the Peter Walker Gallery and a sculpture park. Integrate the Lake into roof and surface water drainage as part of a SuDS network.

5.3 **Landscape Strategy : Sports fields**

- Undertake investigation of field drainage to determine whether system requires replacement.
- Install an interceptor drain along the foot of the slopes to intercept seepage of groundwater before it enters the pitches. If necessary, replace field drains (laterals) and connect in to the toe drain as collector. Mole plough to connect into field drainage.
- Where pitches have deteriorated badly, the surface should be renewed. Apply herbicide to sward, plough soil, spread and incorporate medium/coarse sand, harrow and re-seed with a site-specific seed mix (to STRI design).
- Implement a written maintenance plan for sports pitches, to include verti-draining, sand top-dress, feeding and selective herbicide.
5.4 Landscape Strategy: Perimeter Road and Service Areas

- Establish a strong framework of specimen trees and hedging to visually and physically contain car parking. Remove existing damaged trees and undertake thinning to re-space trees worthy of retention.
- Remove some car parking from the Chaplaincy to allow development of an appropriate setting to this landmark building.
- Provide new and widened pedestrian pathways around the perimeter road and penetrating through service areas.
- Rationalise the layout of service areas, concentrating tree planting only where viable, and creating a structure of hedges to separate disparate uses.
- Introduce strengthened paving to junction corners, both to withstand damage and provide a setting for signage.
- Increase provision of secure sheltered cycle parking between service areas and the pedestrian spine route.

5.5 Landscape Strategy: Core Areas of Existing Campus

- Introduce planting to some of the paved courtyards. Planting to include climbers on masonry or wires, and especially on pillars of the covered walkways.
- Selectively remove trees and large shrubs no longer of appropriate scale or form for the small spaces they occupy. Plant new specimens where appropriate.
- Introduce paving pattern through replacement of concrete slabs with new units in a simple contrasting band and grid layout.
- Introduce break-out spaces for offices, with semi-private character, utilising aspect and shelter of the buildings.
- Improve layout of ramped accesses to ensure DDA compliance.
- Enhance natural lighting of covered walkways, through replacement with transparent roof panels. Improve artificial lighting.
- Prioritise action using a hierarchy of routes: main thoroughfares and squares, secondary connections to buildings, and functional alleyways not subject to general use.
- Introduce robust litter bins and seats throughout the campus; consider use of segregated bins to allow recyclables to be segregated at source.
5.6 Landscape Strategy: Future Campus Developments

- Create a second major pedestrian route linking Alexandra Square to Pendle College on an arc through Furness and Fylde Colleges.
- Maintain the hierarchy of pedestrian routes and gathering spaces, with an intimate pedestrian scale.
- Ensure high quality and coherence to hard and soft landscape, using a simple palette of robust materials and a strong planting structure to enclose car parking (hedges, verges, avenue trees).
- Integrate new and old with care, paying particular attention to levels and finishes at the interfaces.
- Use a unified suite of furniture throughout new and existing external spaces (light columns, seats, bins, bike stands and shelters).
- Establish a new structure of woodlands to maintain the campus character in the long term.
- Initiate a procedure for design review and approval for all developments on the campus. This will ensure that a common coherent strategy is applied to external works.

5.7 Landscape Strategy: Sustainability

- SuDS on-site water management to reduce flood impact, ensure water quality and develop valuable wetland habitat.
- Reduction of maintenance resources used for grass cutting.
- Promotion and provision of cycling facilities and a safe attractive pedestrian network.
- Use recycled aggregate, green-waste compost, FSC sourced timber and material with low ENVEST score.
- Encouraging recycling through use of segregated bins.

5.8 Whole Campus Landscape Masterplan
(see A1 plan at 1:2500 scale)

5.9 Core Area Landscape Masterplan
(see A1 plan at 1:1250 scale)
6.0 Materials and Unit Costs

The palette of materials for the external works must reflect the need for robustness, attractiveness and durability.

6.1 Hedge Planting

Achieving visual order and physical separation of car parking from footways and buildings is important; Beech hedging offers attractive year-round colour and solidity.

- Prepared trench 750mm x 400mm depth, topsoil/compost backfill and basal drainage
- Metal post and wire fence 1.10m height to protect hedge during establishment
- Planting stock to be 60-80cm bare root transplants, with thick collar, planted in triple staggered rows at 300mm centres.
- Composted fine bark mulch applied to 75mm depth over trench to control weeds
- Where a mixed native hedge is more appropriate (eg. in the parkland landscape and site boundaries), plant double staggered rows at 400mm centres consisting of 40-60cm transplant Hawthorn, Blackthorn, Hazel, Guelder Rose and Dog-Rose. Vermin protection by temporary mesh fencing may be required.
- Establishment maintenance to include regular weeding, annual trim, fertiliser and watering as required

- Beech hedge £21 per linear m
- Mixed hedge £14 per linear m
- Metal post and wire fence £30 per linear m

6.2 Avenue and Specimen Tree Planting

New tree planting requires adequate space to grow to maturity (both above and below ground) and thorough ground preparation.

- Prepared pit 2.0 x 2.0 x 0.7m depth, topsoil/compost backfill, basal drainage and an aeration pipe around the root-ball.
- Timber stake and 2 ties, unless root-balled trees are used (when underground guying would be preferable).
- Tree size to be 16-18cm or 18-20cm Semi Mature specimen, minimum 2.2m clear stem to first branch. Species to be Lime, Ash, Oak, Norway Maple, Pear, Birch.
- Establishment maintenance to include regular weeding, light pruning, fertiliser and watering as required

- 16-18cm tree in pit £165
- 20-25cm tree in pit £300

6.3 Woodland Planting

Forestry planting methods are economic and produce dense cover of young trees within 5 years, provided weed control is adequate.

- Ploughing to 450mm depth
- 40-60cm bare root transplants planted at 1.50m centres. Species to be Oak, Beech, Ash, Cherry, Scots Pine (container grown), Holly and Hazel
- Timber post and wire fence 1.10m height with vermin mesh erected around new planting areas.
- Establishment maintenance to include regular weeding, fertiliser and watering as required
- Preparation, planting and 1 year maintenance £1.25 per m²
- Timber post & wire fence £10 per m²
6.4 Floral Meadow
This is an alternative to rank grassland where maintenance is awkward yet a vibrant display of flower colour is sought. It consists of native and non-native perennial meadow plants which produce a very long flowering season of complimentary colours.

- Existing grass sward killed with herbicide; prepare a clean seed-bed
- Sow ‘Pictorial Meadow’ seed mix at specified rate
- Cut and remove arisings annually in Autumn
- £1.90 per m²

6.5 Groundcover planting
This is proposed for small areas in the core adjacent to buildings, patios and in courtyards. Evergreen, deciduous and herbaceous perennial planting designed to clothe the ground in foliage to prevent weed growth, with seasonal flower and foliage effects and feature plants providing varied structure. Climbing plants to cloth walls and pillars introduce a vertical dimension that softens austere masonry.

- Prepared bed with minimum 300mm depth of topsoil with compost
- Planting at centres down to 300mm according to plant habit; container grown 2Litre stock
- Composted fine bark mulch applied to 75mm depth to control weeds
- Establishment maintenance to include regular weeding, light pruning, fertiliser and watering as required, and mulch top-up
- £16 per m²

6.6 Ground Finish Concrete Slab Paving
The use of a high quality slab with a smooth ground finish, such as Marshalls Conservation Slab smooth ground, brings several benefits. Such paving is bright in appearance due to the crystalline aggregate at the surface, has a smooth face that cleans relatively easily, and is more durable than standard pressed concrete slabs.

- Lift and remove existing slab surfaces and bedding layer
- Regulate sub-base to suit adjusted finish levels and paving slab depth
- Lay slabs on sand/cement bedding to a grid pattern, with fully grouted joints
- 600 x 600 x 50mm depth is suitable for pedestrian areas; if vehicle over-run is envisaged, then 400 x 400 x 65mm depth is appropriate. Marshalls Conservation slab smooth ground.
- Silver-grey slabs form the main areas, charcoal-grey for grid bands and column lines etc.
- Unit rate £37 per m²

6.7 Concrete Sett & Cube Paving
Paving of surface drainage channels, doorways and transitions using cube setts allows flexibility in shaping to ramps and awkward corners whilst forming a contrast with the slab finishes.

- Lift and remove existing slab surfaces and bedding layer
- Regulate sub-base to suit adjusted finish levels and paving slab depth
- Lay setts on sand/cement bedding to a grid or radial pattern, to manufacturer’s recommendations
- Marshalls Tegula cube 80 x 80 x 60mm, colour pennant grey
- Cast iron yard gullies to be installed, connecting to existing drain spurs
- Unit rate £36 per m²
6.8 Concrete Dimple Slab Paving
For minor pedestrian alleys and paths away from the main spine route, the use of a British Standard grey concrete slab is appropriate. In many cases the existing slabs in these locations are in acceptable condition and do not require replacement.

- Lift and remove existing slab surfaces and bedding layer
- Regulate sub-base to suit adjusted finish levels
- Lay slabs on sand/cement bedding to a grid pattern, with fully grouted joints
- 600 x 600 x 63mm depth
- Where laid through grass areas, no kerb edging is required; edges should be haunched
- Unit rate £22 per m²

6.9 Other Paving Types
Footways to the perimeter road to be asphalt, which is durable and capable of withstanding occasional vehicle over-run:

- 30mm asphalt wearing course with white chippings applied, 40mm dense bitumen macadam base course, 150mm DoT Type 1 sub-base
- 50 x 150mm concrete pin kerb flush edging with concrete foundation and haunch
- Paving Unit rate £19 per m²
- Pin kerb edging Unit rate £8 per linear m

In the college courtyards it is appropriate to develop specific materials palettes, so that each has a distinctive feel unique to that college. The classic college quadrangle form with ‘cloistered’ paths around a central space lends itself to smaller unit paving such as brick paviors, setts and cubes. An intimate garden scale, with strong pattern to path form and paving layout, adds a richness in detail not appropriate to the bustle of the main pedestrian thoroughfares.

6.10 Furniture
Presently there are few bins and seats, of indifferent quality and appearance. A co-ordinated range of simple and robust litter bins, seats and where necessary bollards is proposed. Stainless steel offers durability, low maintenance and aesthetic appeal; it dries rapidly and is easy to clean; for an overwhelmingly young population it is sufficiently comfortable and able to withstand unorthodox use (such as sitting on the back-rest with feet on the seat, horseplay etc). Double container litter bins allow collection of ‘litter’ and ‘recycling’ (cans, glass, papers) separately; provided that waste collection and storage facilities are able to deal with such segregation. This is likely to become standard practice in large premises in the future, and the University might benefit from the pro-active image this conveys to its staff and students.

- Stainless steel benches and seats with in-ground mounting e.g. MWH Object B500. Unit rate £1,100
- Stainless steel litter bins with in-ground mounting e.g. MWH Object A170. Unit rate £900
- Stainless steel bollards 1000mm x 140mm diameter e.g. Broxap BX47 0140. Unit rate £250
6.11 Cycle Storage
A good distribution of cycle storage across the campus is necessary, otherwise bicycles will be chained to other fixings and cause obstruction to pathways. Cycle storage facilities must offer secure fixings, shelter, lighting and surveillance (natural or electronic). For most users a hoop stand is adequate, but for overnight storage greater security is desirable. Individual cycle lockers are one solution, lockable cycle stores are another. The design of cycle storage at the new Infolab 21 should be used as a guide.

- Stainless steel cycle hoop with in-ground mounting e.g. Broxap Harrogate. Unit rate £160
- Galvanised steel cycle locker e.g. Broxap SLH. Unit rate £650
- Cycle shelter e.g. Vekso GVE. Unit rate £3000

6.11 Lighting
Currently the core areas of the campus are lit mainly from building mounted fittings; lamp posts are used for the service yards, perimeter road and peripheral areas beyond. This approach should be maintained to avoid clutter.

- Replace light fittings with modern luminaires to improve efficiency of lighting, correcting colour balance and reducing light pollution
- For the new pedestrian route, which has a more open character, lamp-posts are appropriate; attractive modern design will ensure these columns are positive features rather than municipal in form.

6.12 Covered Walkways
The existing covered walkways perform a useful function in protecting people from the weather, but are rather dark and dated in appearance. Given their age it is likely that wholesale maintenance or replacement is due.

- Replace solid conventional flat roof with a transparent canopy to improve daylighting
- Remove brick pillars, so that a much lighter steel structure is used and increased space is created below the canopies
- Canopy material can be glass patent glazing, or alternatively tensioned fabric, which might complement well the white roofscape of the original University buildings. Glazing has a longer design life than alternatives: white glass-PTFE cloth gives a 30-tear design life whilst clear polycarbonate only offers approximately 10 years. Glazing would also offer ease of maintenance and replaceability if damaged, and would complement the orthogonal architectural style.

- For the quantity of canopy and variety of fixings (column mounted, building mounted, combined) it would be best to develop a bespoke design in discussion with a suitable supplier. Costs are approximate due to the bespoke nature of the canopies.
  - Removal of existing canopy at £20 per m2
  - Glass canopy unit rate £300 per m2
  - Fabric canopy unit rate £200 per m2
  - Polycarbonate canopy rate £80 per m2

July 2005
7.0 Implementation Schemes

7.1 The proposals constitute a large quantity of work in renewing the external fabric and consisting of a variety of hard and soft landscape works. It is important that a realistic subdivision of the masterplan is made, generating a range of projects which can be implemented as stand-alone schemes. In this way rapid progress can be made on lower cost items, financial allowance planned for larger projects, and a sense of progress engendered as schemes are completed. This part of the report deals with each of these proposed implementation schemes.

Where a scheme cost is given this includes unit rates, 15% for Contractor’s preliminaries/general-conditions/contingency and 8% design costs. Where the scheme consists of several sites likely to be implemented separately (e.g. service yard areas) and is therefore not fully defined, a guide to cost is given. Guide cost ranges are Low (up to £100,000), Medium (£100,000 - £250,000) and High (> £250,000).

7.2 Design Review Committee
Cost: Nil

A committee consisting of Estate Management, Building Management, Landscape working group and grounds maintenance staff, constituted to review and approve the design of all proposed developments which might impact upon the landscape masterplan. By acting as a hub for design information the committee will be able to ensure proper integration of all new developments with the campus masterplan, and require appropriate standard of new external works. This is especially important when construction projects are delivered by the Design & Build route, and the mechanism for design review should be written into Contract documents for future projects.

It is recommended that the Design Review Committee be established at the earliest opportunity and meetings be held as required dependent on construction activity.

7.3 Woodland Management
Cost: Annual budget of £10,000

A woodland management plan is included in the appendix of this report. It aims to improve woodland structure, biodiversity and long-term health through a programme of selective felling and re-planting. Control of rhododendron will improve woodland regeneration and visual access (important for personal security). It is recommended that the woodland management work be put in hand; it can progress at a low intensity on a perennial basis.
7.4 Woodland Creation
Cost: £34,000 preparation and planting
(£6,200 available as grant)
£13,000 fencing

New woodland planting is proposed to thicken planting along the A6, to cover the slopes above the southern sports fields, and reinforce the northern and southern boundaries. Total area of new woodland creation is approximately 2.70 hectares (6.7 acres); it would replace existing mown and unmown grassland, thereby reducing mowing requirements. Preparation of the ground by ripping and ploughing is necessary, and enclosure of woodland blocks with timber post and wire fence. Woodland planting must be undertaken during the winter season November to March. Funding assistance would be possible through the Forestry Commission which offers Woodland Creation Grant to the value of £2,300 per hectare where public access is encouraged.

7.5 Campus Landscape Maintenance Plan
Cost: Saving

Drawing up a new maintenance regime will throw light on where resources are currently spent, allowing review of cost/benefit for each maintenance operation. It is important that landscape management on such a complex site is formalised as a written document complete with clear plan drawings; this ensures consistency even when key staff are absent or move on. High frequency of grass mowing is very costly, and it is proposed that much larger areas of grass in the parkland area be left un-mown during early summer (until mid-July); this is beneficial to wildlife and provides an attractive seasonal show of flowers.

7.6 Sports Field Remedials
Cost: £48,000 per pitch

Undertake investigation of field drainage under each pitch to determine extent of siltation and whether system requires replacement. If defunct, a new network of lateral field drains at 8m centres will be required. Mole ploughing should be undertaken to connect into laterals. A new cut-off drain is proposed running along the toe of the slopes above the pitches, to intercept seepage from groundwater before it enters the pitches. This will need to be deep and can function as the collector drain for pitch lateral drains.

Where pitches have deteriorated badly or are disrupted by drainage works, the surface should be renewed. Apply herbicide to sward, plough soil, spread and incorporate medium/coarse sand, harrow and re-seed with a site-specific seed mix (to STRI design).

Implement a written maintenance plan for sports pitches, to include vermiculite, sand top-dress, feeding and selective herbicide. Develop a strategy for future growth of sports provision, including all-weather pitches and removal of redundant facilities such as the bowling green to allow new uses.
7.7 Sculpture Park and Thomas Mawson Garden
Cost: Low

Development of the proposed new gallery and sculpture park is focussed on Lake Carter and the Byre. In landscape terms it is intended to create a series of attractive settings for external sculptures, with flowing footpaths and a parkland aesthetic. Bailrigg House has a garden designed by Thomas Mawson, and offers the opportunity for sculptures within an intimate garden setting. Renewal of the garden would restore lost features and planting style appropriate to the original design.

7.8 Lake Carter
Cost: £52,000

Excavation to enlarge and deepen Lake Carter towards the east, doubling the water area. Depth increased to 1.80m max. Marginal planting to new edge. Topsoil stripped from area to be excavated and from deposition site for subsoil; subsoil excavated and deposited in parkland as carefully sculpted landform. Topsoil spread and grass seed.

Appropriate forms of sculptures:
- Extra large (landscape scale): 7
- Large: 9-12, 17-19, 22, 24
- Garden scale: 1-6, 20, 21
- Classical forms: 23
- Kinetic sculpture: 12, 18, 24
7.8 Chaplaincy
Cost: £33,000
Removal of car parking to the frontage, extension of pedestrian paving and creation of a crossing table over the road, removal of existing tree group and thinning of retained trees, hedge and fence to surround rear gardens, new footpaths, new seating and planting of garden space. This work will provide an appropriate setting to the landmark building of Lancaster University. It will involve re-organisation of visitor car parking facilities; staff car parking will need to be relocated elsewhere as required. As part of this local redesign of visitor entry to the University, the pedestrian entrance to Alexandra Square should be opened up and generous pedestrian pavement provided to link to the Chaplaincy. As a whole, this scheme is small scale, discreet and relatively easy to implement.

7.9 Perimeter Road
Cost: High
Typically this will involve creation of new/widened pedestrian footways (asphalt surface minimum 2.0m width), lines of semi-mature trees in grass verge, beech hedging parallel to paths, and reinforcement of junction corners with cube paving into which signs etc are placed. Where vulnerable services are near, root barriers should be included to avoid conflict. A condition survey of existing trees will guide removal and retention, many of the trees appearing in poor long-term health. Thinning of retained trees should be undertaken to double the spacing. For the perimeter road itself a one-way circulation should be considered; this would operate as 2 clockwise one-way cells, to north and south of the underpass road, thereby reducing vehicle conflict on the narrow roads.
7.10 Service Areas
Cost: Medium

As with the perimeter road, this will involve creation of new/widened pedestrian footways (asphalt surface minimum 2.0m width), lines of semi-mature trees in grass verge, beech hedging parallel to paths, and reinforcement of junction corners with cube paving into which signs etc are placed. Where vulnerable services are near, root barriers should be included to avoid conflict. A condition survey of existing trees will guide removal and retention, many of the trees appearing in poor long-term health. Thinning of retained trees should be undertaken to double the spacing. Other works proposed are re-grading of verges to reduce slopes, planting of groundcover shrubs to clothe slopes and provision of an adequate gravel/paved margin to buildings to assist maintenance of planting and grass.
7.11 Pedestrian Spine Paving
Cost: £352,000

Replacement of paving along the main pedestrian route through the University core. Total area of work for the primary route with limited connecting spurs is 6,500 m². Smooth ground concrete slabs generally, with small unit blocks to drain channels, door ingoes and awkward corners.

Careful phasing of works will be necessary due to the heavy pedestrian traffic and limited scope for diversions; key sections should be undertaken during vacation periods.

7.12 Covered Walkway Canopies
Cost: £250,000 - £600,000 (depending on material)

Removal of existing canopies and columns along the length of the primary pedestrian spine (excluding more recent canopies at Grizedale and Pendle), replacing with patent glazed canopy and modern steel frame. Total length 600m at average 4m width.

This work should accompany renewal of the paving to have maximum impact and minimal disruption.
7.13 Alexandra Square
Cost: £228,000

Replacement of paving throughout the main public space on campus. Paving is generally in reasonable condition and therefore this is less a priority than other paving works. Total area of work is 3700 m². Smooth ground concrete slabs generally, using a strong pattern of contrasting silver-grey and charcoal-grey slabs in the manner of the existing diagonal grid, orthogonal banding around the peripheral covered arcade. Small unit blocks to be used along the line of arcade columns at the transition between the two grids.

Existing trees to be retained, but paving beneath to be removed due to root heave damage. Construct new surface of porous bound gravel to allow healthy root growth with a kerb upstand edge.

Existing disabled ramp and wing walls to be removed: replace with a light-weight steel ramp extending into the square as a feature, at a more shallow gradient (1:20 ideally, however 1:15 may be more reasonable due to space constraints.

7.14 College Quadrangles
Cost: Low

Lonsdale, Bowland, Furness and Fylde Colleges contain very austere quadrangles. Each can be dealt with as a separate project, as funds allow.

Lonsdale and Bowland each have 2 quads of identical proportions, one hard and one soft. Introducing planting and lawns to the paved quads, and replacing paving with more distinctive slabs or brick paviers, will distinguish these spaces and exploit their attractive scale.

Furness and Fylde courtyards are bleak and hard. Renewal of paving with quality slabs to introduce strong pattern, introduction of small planting beds with shrubs and climbers, and the use of better lighting and paint finishes will all help. The fountain in Furness courtyard should be repaired. Forming comfortable connections to the new buildings beyond will be key to making these courtyards attractive.
7.15 New Crescent ‘Street’
Cost: Medium/High

A secondary pedestrian route which links through the new college developments and provides a bypass to the main spine route.

Paving should be capable of taking occasional vehicles; a block paving such as Marshalls Tegula 240 x 160 x 60mm for the main path, with smooth ground slabs for the gathering spaces along the route and at building entrances. Semi-mature avenue trees reinforce the crescent form, with orthogonal groups at the nodes where paving expands.

7.16 Furniture and Bicycle Storage
Cost: £75,000 for seats and bins (30) £13,000 per cycle store location (40 bicycles)

Provision of seating and litter bins throughout the core external spaces, of a complimentary design.

Bicycle storage requires shelter, lighting and good surveillance. New facilities are proposed at key entry points to the core area and at college courtyards. These locations are at The Great Hall, Chaplaincy, Grizedale Avenue, Library Avenue, Sports Centre, County Avenue, Physici Avenue and Tower Avenue; replacement and additional cycle stands are proposed beneath existing canopies/buildings at Bowland, Lonsdale, Furness and Fylde. Numbers of stands should be calculated pro-rata on the number of students in each college; secure enclosures should be considered where nocturnal surveillance is inadequate.

A simple ‘Sheffield’ hoop stand or toast-rack multiple stand of stainless steel is recommended for most areas. Where no existing canopy or building offers shelter, an off-the-shelf canopy should be specified. Cycle lockers are recommended.
8.0 Priorities

8.1 With such a range of projects proposed it is vital that the University decides on where priorities lie. Some proposals are simple to implement and involve minimal cost, whilst others are complex, requiring extensive planning and causing great disruption and considerable cost. Availability of funding will to some extent drive the order in which projects are undertaken, but it is helpful to define a list in order of priority that has a balance of low and high cost schemes at various stages.

8.2 The University will wish to see rapid progress on the ground as a sign of action and encouragement. This is best suited to projects requiring limited preparation time and budget, whereby existing funds can be rapidly allocated. Complex projects will take time to prepare and gain funding allocations, and so are suited to longer term delivery.

8.3 Several of the schemes proposed depend upon piecemeal implementation as new building developments are constructed (e.g. service areas and perimeter road improvements to the south-east of the core area). This is where Design Review becomes key; with good planning these developments should include completion of the landscape improvement scheme.

8.4 The table below provides a prioritised list of the various proposals, with indication of relative cost, and forms the Action Plan for implementation of the Landscape Masterplan.

<table>
<thead>
<tr>
<th>Project</th>
<th>Priority</th>
<th>Cost</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Review Process</td>
<td>1</td>
<td>nil</td>
<td>Management procedure change</td>
</tr>
<tr>
<td>Woodland Management</td>
<td>1</td>
<td>Low</td>
<td>Low intensity ongoing work</td>
</tr>
<tr>
<td>Woodland Creation</td>
<td>1</td>
<td>Low</td>
<td>Low complexity; grant aided</td>
</tr>
<tr>
<td>Grass Maintenance</td>
<td>1</td>
<td>nil</td>
<td>Management procedures</td>
</tr>
<tr>
<td>Sports Field Renewal</td>
<td>1</td>
<td>Medium</td>
<td>Coupled with expansion of all-weather pitch capacity</td>
</tr>
<tr>
<td>Lake Carter</td>
<td>2</td>
<td>Low</td>
<td>Links to Sculpture Park project</td>
</tr>
<tr>
<td>Chaplaincy</td>
<td>2</td>
<td>Low</td>
<td>Potential early ‘headline’ project</td>
</tr>
<tr>
<td>Perimeter Road</td>
<td>2</td>
<td>High</td>
<td>Incremental and linked to new build -ing developments</td>
</tr>
<tr>
<td>Service Areas</td>
<td>2</td>
<td>Medium</td>
<td>Incremental and linked to new build -ing developments</td>
</tr>
<tr>
<td>Pedestrian Spine</td>
<td>3</td>
<td>High</td>
<td>Careful phasing required</td>
</tr>
<tr>
<td>Covered Walkway Canopies</td>
<td>3</td>
<td>High</td>
<td>Phased with paving works</td>
</tr>
<tr>
<td>Alexandra Square</td>
<td>4</td>
<td>High</td>
<td>Disabled ramp a higher priority</td>
</tr>
<tr>
<td>College quadrangles</td>
<td>3</td>
<td>Low</td>
<td>Incremental</td>
</tr>
<tr>
<td>New pedestrian crescent</td>
<td>3</td>
<td>Medium</td>
<td>To form part of new developments</td>
</tr>
<tr>
<td>Furniture &amp; Bicycle Storage</td>
<td>2</td>
<td>Low</td>
<td>Renewal and additional</td>
</tr>
</tbody>
</table>

Costs: Low = <£100k  Med = £100k - 250k  High = >£250k

Priority: 1 = urgent  2 = short term (1–3 years)  3 = medium term (3–5 years)  4 = long term (>5 years)

9.0 Conclusion

9.1 The new Landscape Masterplan provides a template for renewal of the external spaces of Lancaster University campus. It will allow for improved functioning of spaces, quality of experience and life-cycle costs. Developing a new coherence to the external face of the site will present a positive image of the University and better reflect the qualities on offer within its walls.

9.2 The Action Plan can be used as the basis for incremental planning and implementation of the Landscape Masterplan. It will be a long term process likely to last ten years or more; therefore achievement of interim targets is very important to maintain impetus and interest. The Action Plan allows long term financial planning for the improvement works.

9.3 The University should promote the landscape masterplan as a design brief for further developments in order that new buildings and highway works respect its aims and include for completion of a coherent landscape of high quality on new development sites. Design review by the University is vital in achieving the aims of the landscape masterplan.

9.4 The University should ensure that landscape maintenance resources are kept at a level which allows proper maintenance of the new landscape masterplan. The effects of relatively small reductions in budget can be disproportionately large in landscape management, due to the high visibility of external works and the capacity for planting to change with management processes.
ANNUAL LANDSCAPE MAINTENANCE SPECIFICATION

Specification to apply to all new works for the first 3 years of establishment

Woodland Planting
- 8 weed visits
- 2 firm ups
- 1 fertiliser application

Native Hedgerows
- 8 weed visits
- 2 firm ups
- 1 fertiliser application
- 1 trim to top and sides

Beech & Yew Hedgerows
- 8 weed visits
- 2 firm ups
- 1 fertiliser application
- 1 trim to top and sides
- 1 bark mulch top-up

Parkland, Specimen & Avenue Trees
- 8 checks to guying/ties
- 8 weed visits
- 1 fertiliser application
- 1 pruning to shape
- 2 visits for fork aeration of soil surface
- 1 bark mulch top-up
- 6 visits to water thoroughly

Sports Field Grass
- 18 cuts to grass (35mm summer, 75mm winter)
- 2 fertiliser applications
- 1 liquid organic fertiliser application
- 8 spike aeration to 150mm depth at 150mm centres
- 1 verti-drain to 150mm depth at 150mm centres
- 8 light chain harrows or scarifier
- 1 selective herbicide
- Seasonal marking set out from permanent bench marks

Lawn and Amenity Grass
- 16 cuts and trim to edges
- 2 slow release fertiliser applications
- 1 organic fertiliser application
- 1 spike aeration to 150mm depth at 150mm centres
- 1 verti-drain to 150mm depth at 150mm centres
- 1 edging with iron
- 1 selective herbicide only if required

Meadow Grass
- 1 cut in Autumn, removing arisings
- 1 spot weed treatment to remove pernicious weeds

Wet Meadow within swales and at pond edges
- 1 final/year cut in late winter, removing arisings
- 1 spot weed treatment to remove pernicious weeds

Aquatic Marginal & Reeddbed Planting
- 2 visits to firm plants
- 1 visit to regulate and top-up grit margin to 50mm depth

Groundcover Planting
- 8 weed visits
- 1 prune (seasonal) for compactness
- 1 fertiliser application
- 1 fork aeration of soil
- 1 bark mulch top-up

WOODLAND MANAGEMENT PLAN

All woodland management works to be undertaken in the appropriate season and in accordance with BS 3998 Recommendations For Tree Work. Works shall be undertaken by personnel with certified training in techniques and machinery required for the tasks.

Woodland management is a continuous gradual process; care should be taken to avoid excessive felling works which may cause unsightly disturbance and increase vulnerability to windthrow.

Mature Woodland (1850) of mixed native broad-leaves and Austrian Pine

Aim to maintain habitat value and long-term retention:

- Selective removal of self-sown Sycamore and poor specimens to make gaps
- Interplanting of native broadleaved trees and shrubs (Oak, Ash, Beech, Holly and Hazel), with Austrian Pine in selected areas
- Coppice tall shrubs along woodland edges and interplant with Hawthorn and Hazle
- Clear and herbicide treat Rhododendron from woodland edges and through accessed areas;
- Chip arisings for use developing campus running paths
- Thinning to remove pioneer species Poplar, Alder and Willow

Younger plantations (1965) consisting of Beech, Alder, Sycamore & Norway Maple

Aim to enhance habitat value and replace pioneer species with native forest tree species:

- Selective thinning to favour retention of Beech, Oak and Norway Maple, removing 33-50% over a five year period
- Interplanting with Oak, Beech and Cherry in new gaps
- Underplanting with native woodland shrubs Holly, Hazel and Lonicera
- Chip arisings for use developing campus running paths

Younger plantations (1965) consisting chiefly of White Poplar, Beech and Sycamore

Aim to enhance habitat value and replace pioneer species with native forest tree species:

- Selective thinning to favour retention of Beech, Oak and Norway Maple, removing 33-50% over a five year period especially Poplar, Willow and Alder
- Interplanting with Oak, Beech and Cherry in new gaps
- Underplanting with native woodland shrubs Holly, Hazel and Lonicera
- Chip arisings for use developing campus running paths
- Thinning to remove pioneer species Poplar, Alder and Willow
### Implementation Schemes : Budget Costs

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
<th>Rate</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sports Pitch Drainage</strong> (Cost per Pitch)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150mm collector drain (extra depth for slope drainage)</td>
<td>120</td>
<td>m</td>
<td>£30.00</td>
<td>£3,600</td>
</tr>
<tr>
<td>100mm linear drain</td>
<td>770</td>
<td>m</td>
<td>£7.50</td>
<td>£5,775</td>
</tr>
<tr>
<td>Branches</td>
<td>11</td>
<td>Nr</td>
<td>£12.00</td>
<td>£132</td>
</tr>
<tr>
<td>Perforate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipe connection to Suds</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mole ploughing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herbicide, culminate to levels</td>
<td>6,000</td>
<td>m2</td>
<td>£0.30</td>
<td>£1,800</td>
</tr>
<tr>
<td>Sand topdress (equivalent 40mm overall)</td>
<td>6,000</td>
<td>m2</td>
<td>£1.70</td>
<td>£10,200</td>
</tr>
<tr>
<td>Raking off fertiliser &amp; seeding</td>
<td>6,000</td>
<td>m2</td>
<td>£0.90</td>
<td>£5,400</td>
</tr>
<tr>
<td>Verdrain on establishment</td>
<td>6,000</td>
<td>m2</td>
<td>£0.20</td>
<td>£1,200</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>£37,907</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£37,907</td>
</tr>
<tr>
<td>Contractors prelim, general conditions &amp; contingencies (15%)</td>
<td></td>
<td></td>
<td></td>
<td>£3,506</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£41,403</td>
</tr>
<tr>
<td>Design and contract administration fees (9%)</td>
<td></td>
<td></td>
<td></td>
<td>£3,923</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>£47,316</td>
</tr>
<tr>
<td><strong>Lake Carter Enforcement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove topsoil to 150mm depth over new area</td>
<td>790</td>
<td>m3</td>
<td>£4.00</td>
<td>£3,160</td>
</tr>
<tr>
<td>Remove topsoil to 150mm depth over deposit area</td>
<td>400</td>
<td>m3</td>
<td>£4.00</td>
<td>£2,400</td>
</tr>
<tr>
<td>Excavate subsoil from new area (average 1.5m depth)</td>
<td>5,250</td>
<td>m3</td>
<td>£3.00</td>
<td>£15,750</td>
</tr>
<tr>
<td>Deposit and shape subsoil locally</td>
<td>5,350</td>
<td>m3</td>
<td>£2.00</td>
<td>£10,700</td>
</tr>
<tr>
<td>Spread stockpiled topsoil over subsoil area, 150mm depth</td>
<td>4,500</td>
<td>m2</td>
<td>£0.75</td>
<td>£3,375</td>
</tr>
<tr>
<td>Cultivation, borrow and seeding to grass</td>
<td>4,500</td>
<td>m2</td>
<td>£1.00</td>
<td>£4,500</td>
</tr>
<tr>
<td>Water marginal planting</td>
<td>120</td>
<td>m2</td>
<td>£10.00</td>
<td>£1,200</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>£3,530</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£3,530</td>
</tr>
<tr>
<td>Contractors prelim, general conditions &amp; contingencies (15%)</td>
<td></td>
<td></td>
<td></td>
<td>£1,153</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£4,683</td>
</tr>
<tr>
<td>Design and contract administration fees (9%)</td>
<td></td>
<td></td>
<td></td>
<td>£443</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>£51,249</td>
</tr>
<tr>
<td><strong>Chaplaincy Building Landscape Improvements</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Break out and remove tarmac car parking and kerbs</td>
<td>230</td>
<td>m2</td>
<td>£7.50</td>
<td>£1,725</td>
</tr>
<tr>
<td>Remove existing trees</td>
<td></td>
<td></td>
<td></td>
<td>£2,000</td>
</tr>
<tr>
<td>Lay new road kerb on foundation with haunches</td>
<td>45</td>
<td>m</td>
<td>£15.00</td>
<td>£675</td>
</tr>
<tr>
<td>Construct road crossing table</td>
<td></td>
<td></td>
<td></td>
<td>£4,000</td>
</tr>
<tr>
<td>New footpath through garden, 1.2m width</td>
<td>120</td>
<td>m2</td>
<td>£40.00</td>
<td>£4,800</td>
</tr>
<tr>
<td>Metal post and rail fence</td>
<td>140</td>
<td>m</td>
<td>£45.00</td>
<td>£6,300</td>
</tr>
<tr>
<td>Beech hedge</td>
<td>140</td>
<td>m</td>
<td>£21.00</td>
<td>£2,940</td>
</tr>
<tr>
<td>Gravel trim to building, 400mm width</td>
<td>25</td>
<td>m</td>
<td>£6.00</td>
<td>£150</td>
</tr>
<tr>
<td>150mm depth topsoil</td>
<td>250</td>
<td>m2</td>
<td>£3.50</td>
<td>£875</td>
</tr>
<tr>
<td>Cultivate and grass seed</td>
<td>250</td>
<td>m2</td>
<td>£1.50</td>
<td>£375</td>
</tr>
<tr>
<td>Groundcover planting to garden</td>
<td>50</td>
<td>m2</td>
<td>£16.00</td>
<td>£800</td>
</tr>
<tr>
<td>Plant 18-20cm girth trees in prepared pits</td>
<td>6</td>
<td>Nr</td>
<td>£235.00</td>
<td>£1,350</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>£26,400</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£26,400</td>
</tr>
<tr>
<td>Contractors prelim, general conditions &amp; contingencies (15%)</td>
<td></td>
<td></td>
<td></td>
<td>£1,996</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>£28,396</td>
</tr>
<tr>
<td>Design and contract administration fees (9%)</td>
<td></td>
<td></td>
<td></td>
<td>£2,646</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td>£33,143</td>
</tr>
</tbody>
</table>

**Alexandra Square**

- Lift and remove existing slabs paving and bedding: 3,700 m2, Cost: £5,500, Total: £18,500
- Replace existing slabs, adjust as necessary: 3,700 m2, Cost: £1,100, Total: £3,700
- Lay high quality ground concrete paving slabs on bedding with ground joint: 3,700 m2, Cost: £31,000, Total: £14,700
- Disabled ramp steel structure: £35,000
- Remove pavers, lay new kerbs and bound gravel surface around trees: £10,000
- Drainage allowances new gulley & channels: £10,000
- Subtotal: £181,900
- Contractors prelim, general conditions & contingencies (15%): £27,285
- Subtotal: £209,185
- Design and contract administration fees (9%): £18,827
- Total: £220,012

**Pedestrian Spine Route**

- Lift and remove existing slabs paving and bedding: 6,500 m2, Cost: £5,500, Total: £32,500
- Replace existing slabs, adjust as necessary: 6,500 m2, Cost: £1,100, Total: £6,500
- Lay high quality ground concrete paving slabs on bedding with ground joint: 6,500 m2, Cost: £31,000, Total: £201,500
- Remove pavers, lay new kerbs and bound gravel surface around trees: £10,000
- Drainage allowances new gulley & channels: £10,000
- Subtotal: £280,500
- Contractors prelim, general conditions & contingencies (15%): £42,075
- Subtotal: £322,575
- Design and contract administration fees (9%): £29,002
- Total: £351,647

**Cycle Storage (40 bikes per location)**

- Stainless Steel cycle hoops, ground mounted: 16 Nr, Cost: £160, Total: £2,560
- Galvanised steel lockers: 4 Nr, Cost: £650, Total: £2,600
- Shelving: 2 Nr, Cost: £5,000, Total: £6,000
- Subtotal: £11,160
- Contractors prelim, general conditions & contingencies (15%): £1,674
- Total: £12,834

**Furniture (Seats and litter bins)**

- Stainless Steel seats: 30 Nr, Cost: £1,900, Total: £57,000
- Stainless Steel double litter bins: 30 Nr, Cost: £1,900, Total: £57,000
- Subtotal: £60,000
- Contractors prelim, general conditions & contingencies (15%): £9,000
- Subtotal: £69,000
- Design and contract administration fees (9%): £5,320
- Total: £74,520

July 2005
Lancaster University Landscape Masterplan APPENDIX

July 2005

NUTRIENT ANALYSIS REPORT WITH GUIDELINE LEVEL AND RECOMMENDATIONS (recommendations given are for grass growth and are levels which are available to the plant).

Soil Sample ex Lancaster University

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Test Level</th>
<th>Guideline Level</th>
<th>Interpretation</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>7.5</td>
<td>6.0</td>
<td>High</td>
<td>Possible interference on availability of Mn, B, Ca, Zn, Fe</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>39 ppm</td>
<td>26 ppm</td>
<td>Normal</td>
<td>Apply 30 kg/ha P2O5 Maintenance</td>
</tr>
<tr>
<td>Potassium</td>
<td>62 ppm</td>
<td>241 ppm</td>
<td>Low</td>
<td>Apply 80 kg/ha K2O</td>
</tr>
<tr>
<td>Magnesium</td>
<td>59 ppm</td>
<td>50 ppm</td>
<td>Normal</td>
<td>Adequate level</td>
</tr>
</tbody>
</table>

SOIL TEXTURE ANALYSIS

(after removal of gravel)

<table>
<thead>
<tr>
<th>Sample</th>
<th>% Gravel</th>
<th>% Sand</th>
<th>% Silt</th>
<th>% Clay</th>
<th>Soil Texture Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil ex Lancaster University</td>
<td>1.1</td>
<td>79.3</td>
<td>15.3</td>
<td>5.4</td>
<td>Loamy Sand</td>
</tr>
</tbody>
</table>

The soil ex Lancaster University falls in the “loamy sand” soil texture classification.

Sand particles are present at a high level of 79.3%. The sand particles are predominantly in the medium/finely very fine sand fractions (60%).

Silt particles are present at 15.3%. This is a moderate to low level.

Clay particles are present at 5.3%. This is a low level.

The gravel content of the soil is low.