UNIVERSITY OF STIRLING

INTERIM DEVELOPMENT PLAN

1994

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Consultants

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Contents

Summary of conclusions and recommendations

1 An overall provision of non-residential floorspace of 59,000 sq. m. (net usable area), giving an average space standard of 8.43 sq. m./FTE, is assumed for physical planning in the Interim Development Plan. (5.9)

2 Provision should be made in the plan for further expansion of the Management Centre. (5.12.1 and 8.16)

3 Provision should be made in the plan for the Dementia Centre. (5.12.2 and 8.16)

4 Provision of sites and parking for further free-standing and privately-resourced institutes is unlikely before the 7000 FTE stage, but should be feasible if required before that time. (5.12.3 and 8.16)

5 It is understood that the needs of the 7000 FTE University for sports facilities will be met by the provision of more storage, a small multi-purpose hall, and some more pitches. (5.12.4 and 8.17)

6 Provision should be made in the plan for the 7000 FTE University for further shops and commercial facilities. (5.12.5)

7 Total residential provision on the campus will be limited by the capacity of the site to the east of the loch to carry further development, if a sense of overcrowding is to be avoided, and if concerns which have been expressed by Historic Scotland on the impact of new residences on the setting of Airthrey castle are to be satisfied. (6.4)

8 The capacity for total residential provision on the campus is estimated to be some 3569 bedspaces. (6.5)

9 The disadvantages of creating additonal teaching space by the adaptation of residential buildings appear to outweigh the advantages. There appear to be no cost advantages.

10 The options of expanding teaching and research accommodation by the addition of free-standing buildings, for example to the rear of the Cottrell Buildings, and of adapting and extending the Cottrell Building, have both been considered. The ideal is for the development plan to make both kinds of expansion - free-standing and interconnected - possible, at least in the longer term. (7.3)

11 Continued expansion of some departments in Pathfoot should be achieved by decanting departments needing less specialised space to the centre of the campus. (7.4)

13 It is recommended that the broad design strategy of exploiting and emphasising the natural formation of the site is sustained. (7.5)

14 It is recommended that the detailed advice on landscaping in the appraisal appraisal prepared by Ian White Associates (Appendix A) be implemented. (7.6)

15 Land use and the form of developments east of the loch should be treated with special care, in view, especially, of concerns which have been expressed by Historic Scotland. Development principles and trial layouts for this area have been informally

agreed, although it may not be possible to obtain confirmation of this agreement until planning applications are submitted and approved. (7.7)

16 It is proposed that the broad development principles of the 1968 Plan and its 1973 Review should continue to be followed up to the 7000 FTE stage. (7.8)

17 It is proposed that, for the 7000 FTE stage, requirements for additional accommodation for academic departments are met by a combination of:

(a) occupying the accommodation at present occupied by by the University administration, at the north western end of the Cottrell Building, and

(b) building an extension at the eastern end of the Cottrell Building. It is proposed that the extension would complement the form of the present Cottrell Building as regards roof height, floor-to-floor heights, circulation corridors and depth of plan, but would not necessarily match exactly the structure or facade. (8.1)

18 A new free standing 300 seat lecture theatre is proposed at the south of the Cottrell Building, near to the Logie lecture theatre. (8.2)

19 The levels, pedestrian routes, and hard and soft landscaping outside the Cottrell south entrance should be re-designed and re-shaped to reflect the future importance of this precinct, and the forms and materials of adjacent new structures should be carefully related to it. (8.3)

20 The University Library would best be extended westwards. (8.5)

21 New study areas are proposed on the promontory east of the existing central area buildings, adjacent to new social facilities, some commercial services, student services and administration accommodation. (8.6)

22 One more main meal restaurant is proposed on the eastward extension of the central area buildings, associated with common rooms, and, if required, a staff club. (8.7)

23 This accommodation would be combined with the new study areas and new administration and student services in a group of buildings following the line of the contours, one or two storeys high in section, stepping down the slope, with pitched roofs. (8.8)

24 A new large multi-purpose hall is proposed to provide space for examinations, conferences, exhibitions, graduation ceremonies, concerts and other social events. Its setting and design should be distinctive and attractive. It might need to be operated in conjunction with the MacRobert Centre. (8.10)

25 A site overlooking the south-eastern corner of the loch is proposed for the large hall. (8.12)

26 It is strongly recommended that, to ease constraints on the design of the large hall, the present prohibition on building on the strip of ground 30 m. wide adjacent to the west boundary of the Tandem site be discussed, and if possible a waiver agreed, with the new owners of the Tandem site. (8.12)

27 It is proposed that the University administration, together with the Court Room suite and meeting rooms, and student services, be relocated in new buildings on the central promontory. (8.13)

28 New purpose-built central stores in a secure precinct are proposed, located near to the maintenance area. (8.14)

29 A suitable site for a group of further shops and other commercial units would be to the north-east of the present shops. The presently unsightly view of the rear of the present shops should be screened by the new shops, with service access to them concealed from view. (8.18)

30 The following approach is recommended for the location and form of residences east of the loch:

(a) Clear views of the castle, undisturbed by views of closely adjacent modern buildings, should be possible from key viewpoints;

(b) Views out of the main rooms of the castle of its immediate surroundings should be of open space, designed so far as possible to reflect the original parkland landscape. Distant views of the Carse of Stirling and the Wallace Monument should be retained, and the roofline of the Tandem Building should be screened by low planting. (8.19)

31 Two other residential developments have been planned on the campus at Alexander Court and in the Nursery Garden area. These could be implemented fairly quickly. (8.23)

32 It is recommended that previous condition surveys of Airthrey Castle be updated and repairs needed to bring the castle into good condition be undertaken. The Nurse's Home, if it can not be dispensed with, should be hidden by trees or creeper. The condition of the East Lodge should be surveyed and a viable plan for its repair and occupation be prepared. (8.25)

33 A study of the Airthrey Road junction should now be undertaken to determine whether traffic improvements will be required shortly. Such a study, together with a Traffic Impact Analysis, may be required as a condition of planning consent for future developments on the campus. (9.3)

34 Forward visibility on parts of the existing primary road near to the Cottrell west car park is below the standard for a 20 mph speed limit, and it is recommended as a short term measure that the limit on this section is reduced to 15 mph. (9.4)

35 Restrictions on parking on the road between the boilerhouse and Queen's Court should continue to be enforced pending longer term traffic measures. (9.5)

36 Queen's Court should not continue to be used as a bus terminal. Two options should be considered:

(a) Buses would only use Queen's Court as a set-down and pick-up point, or

(b) Buses would stop at a new bus station at the north end of the west car park, and buses would not enter Queen's Court.

Option (a) might be experimented with at little cost before a final choice is made. (9.6)

37 Improved advertising of public transport should be facilitated to encourage modal change. (9.7)

38 Parking enforcement should be improved. (9.9)

39 The parking permit system needs to be extended to include day visitors, and visitor spaces should be identified. (9.10)

40 It is recommended that roads within the campus, other than the Innovation Park, are not adopted. (9.11)

41 CRC's "All Change!" traffic policies should be welcomed, and, so far as practicable, supported by the University to reduce the impacts of its development on the infrastructure. (9.12)

42 A provision of 2050 parking spaces is recommended for the 7000 FTE University. (9.13)

43 Academic staff and visitor parking should be provided adjacent to academic buildings. Administrative staff and visitor parking should be provided adjacent to administration buildings. Limited parking should be adjacent to social and sports buildings. The intermittent large parking demands of the proposed large hall should be met by academic staff parking areas within a short walking distance. Student parking for resident students should be adjacent to residences. It is unrealistic to expect non-resident students to park adjacent to residences such as Alexander Court remote from the central area, and the parking provision of these more remote residences should be scaled instead to the needs of the residents who occupy them. (9.14)

44 All parking provision should include a reasonable allowance for disabled drivers. (9.15)

45 A primary road link should be built at the rear of the Cottrell Building to connect the Airthrey Road and Hillfoots Road accesses. (9.16)

46 Queen's Court should be designated as a pedestrian priority area, and its paved surfaces and landscaping redesigned to suit this new function. Through traffic should not be permitted. (9.17)

47 The secondary road network serving the present residences should be extended around the east of the loch as far as anew junction with the Innovation Park road, to create a campus loop road system. (9.18)

48 A designated surface pedestrian crossing of the proposed primary link road, close to the Management Centre, is proposed, together with traffic calming measures in the form of chicanes, and bus lay-bys. (9.19)

49 A roundabout is recommended at the junction of the link, the Innovation Park road, the road between Cottrell and the loch, and the proposed residences loop road. (9.20)

50 Enhancement of forward visibility on the primary road near to the Cottrell west car park should be undertaken simulatneously with the construction of the proposed primary link road. (9.21)

51 The University should encourage the use of cycles. Further studies are needed on the routing of cycle tracks. (9.23)

52 Shortcomings which have been identified in footpath provision should be made good, and a major new footpath will be needed to connect the residences east of the loch with the central area. A new footbridge is proposed. An improved footpath link between the MacRobert and the proposed large hall will be needed. (9.24)

54 Room for more development on the campus in the long term than is propsed for the 7000 FTE University is severely limited in the areas north and east of the loch, on the central promontory, and south of the loch in the vicinity of the Cottrell Building, if a sense of overcrowding is to be avoided.

55 A substantial site for development in the longer term is available on the rising ground to the south of the Management Centre. It is recommended that this is safeguarded for the provision of free-standing buildings for teaching and research. (10.6)

56 The only potential for expansion greater than this on the campus lies in the area to the west of the main development, ie on the playing fields, on the land adjacent to Fairview, on the Spittal Hill chalets site, and on the slopes of the hill to its south east. (10.7)

57 Expansion into this area would depend on a willingness to make strategic changes to the pattern of development adopted to date. The main playing fields would need to be relocated off the campus, and a new road would need to be built. (10.8)

58 Combined with additions in the central area, and in the area to the south of the Management Centre, this western part of the campus could provide additional teaching and research space for a University with a total population of 12,000 FTEs at the space standards proposed for Phase 3.

59 It is recommended that the University investigates the costs and benefits of separating its sports facilities from the main campus in the long term, the likely availability of land near to the campus for sports facilities, and the likely acceptability to the planning authorities of such developments on sites outwith the campus. (10.14)

60 If the University is satisfied that expansion on this scale on the campus is desirable and feasible, it should take account of the possibility in its physical planning by safeguarding sites for buildings, roads, parking and structure planting so that development can proceed in an orderly way. (10.15)

61 Figure 6 illustrates the proposed layout of notional building forms, roads, parking footpaths and main landscape features for development up to the 7000 FTE stage, and Figure 7 illustrates the proposed building zones and main road routes for possible development to 12000 FTEs.

1 Introduction

1.1 The University's 1968 Development Plan reflected widespread agreement on development policies. It was based on discussions between the University and its planning architects, and subsequently, after the publication of the Interim Development Plan in December 1966, with officers of the University Grants Committee, local authorities, and other organisations, when the draft proposals were examined, confirmed, corrected and amplified. Educational, social and architectural ideas were developed side by side.

1.2 The format of the 1968 Development Plan report was itself an expression of the working method which had been adopted in drawing up the plan: a statement of the problem, followed by proposals for solving the problem. The design problem was set out, to a large extent, in statistical and financial terms. The design solution to it was expressed (a) as a plan for physical development of the site and its buildings, (b) as a detailed building programme showing (in terms of floor areas) the phased provision of the various types of accommodation which would be needed, and (c) as a financial programme showing the estimated costs of this provision related to a timescale over an eight-year period from 1967 to 1974, intended to take the University to a population of 3000 FTE (Full Time Equivalent) students. The physical plan for the campus was drawn up to leave room for development for a population of 6000 undergraduates.

1.3 Development of the University over the period to 1973 followed very closely this physical plan, building programme, and financial programme. A special study of the campus's capacity for student residences in 1972 reported on the capacity of the land to the east of the loch for future residences and the most suitable form such a development might take. In 1973 the University reviewed its Development Plan to obtain agreement on future site development projects and to put these in the context of long-term growth to the completion of Phase 3, the planned capacity state of 6000 FTE students. At that time it was thought that a population target of 3400 students would be reached by 1976/77, but that development beyond 4000 students would be piecemeal and fairly slow.

1.4 Since 1973 there have been significant alterations in the capacity of the unbuilt parts of the campus to meet the objectives of the 1968 plan, and of the 1973 review. The sale of part of the campus to Wang (subsequently re-sold to Compaq and Tandem), the lease of another large part of the campus to the Innovation Park company, and a substantial development to the south of the Cottrell Building for the Management Centre, have taken up part of the land that was originally intended for expansion. Other developments, such as the residences at Alexander Court, were not shown in the original plan.

1.5 Despite the passage of time and these changes to the campus the 1968 Development Plan and the 1973 review have continued to provide useful guidance on the future development of the campus. There has, however, been no comprehensive review of development objectives on the site, nor of the site's capacity for further development, since 1973. It became clear two years ago that the University should consider its development intentions on the campus comprehensively, and update its master plan, at least in outline. Unless it did so, applications for planning consents for any significant further developments might not receive approval.

1.6 The District Council's present Local Plan is under review to bring it to an adoptable standard, and the Council's planning officials have said they wish it to reflect the University's outline plan. A particular anxiety has been that Historic Scotland, who

have powers of objection to the Local Plan, might raise an objection out of concern about the capacity of the Airthrey estate for further development, especially in the vicinity of Airthrey Castle. Historic garden landscapes are the subject of a new General Development Order (March 1992) which covers appraisal and ranking. The Airthrey Estate has been designated as a historic garden landscape.

1.7 A revised physical plan for development of the campus can not be prepared, at least for the present, by using the working methods of the 1968 plan. A fundamental uncertainty is the extent, and rate of growth, of floorspace to be provided to meet the University's requirements over any given planning period. SHEFC has asked for the preparation of an Estate Strategy to cover the next ten years. The Estate Strategy will set out the University's strategic objectives, will give data on the existing estate (including space schedules and evaluations of space utilisation, fitness for purpose and maintenance requirements of the University's buildings), and will provide a review of opportunities, growth projections, space requirements, and an evaluation of options, including the University's assessment of its ability to fund future development, and make proposals for implementation. The Estate Strategy is currently being prepared. Until it is approved, firm estimates of space provision, overall and classified by categories of use, can not be built into the physical planning process.

1.8 It is appropriate, however, to present an Interim Development Plan, pending a full review, which offers:

(a) a review of development principles;

(b) a plan for safeguarding development sites on the campus, based on reasoned assumptions about floor area provision, for a medium term target population figure;

(c) a more general framework for safeguarding development sites on the campus in the long term, based on the capacity of the site to accommodate development consistently with the conservation of its amenity;

(d) A traffic assessment, including proposals for development standards and policies, and proposals for the layout of roads and parking areas, pedestrian circulation, and public transport provision;

(e) A landscape assessment, including an appraisal of the existing landscape character set in its historical context, and proposals for landscape development and management, both in the short term and long term.

1.9 This Interim Development Plan is intended to serve a number of purposes. It will provide:

(a) a structured background to applications for planning consent for individual projects;

(b) a basis for estimating the costs of buildings, roads, parking, drainage and other infrastructure projects, for incorporation into the University's Estate Strategy;

(c) a framework, which can be adjusted as the Estate Strategy becomes clearer, for preparing a master Development Plan, for periodic updates of the plan as developments take place, and for detailed development briefs for individual projects.

1.10 In the report which follows, development sites with an indication of possible building forms, and layouts for roads, parking areas and pedestrian circulation, are proposed for a notional medium term population figure of 7000 FTEs. It has been assumed that this will be the University's student population in the year 2002/3, although the date is not critical to the physical plan proposed, and may vary as a result of the University's Estate Strategy and the investment decisions which flow from it. A more general planning framework is also proposed for safeguarding sites and circulation routes in the long term, based on the ultimate capacity of the site to accommodate development, consistently with the preservation of high standards of amenity.

2 Previous development plans

The 1968 Development Plan

2.1 It was recognised from the outset that the principles which would be followed in drawing up the Development Plan would establish the new University's individuality. It is difficult, for example, to abandon a collegiate structure, once established, or to convert a university started with a compact and continuous teaching environment for most of its departments to one with scattered "departmental" buildings. It was expected that two-thirds of the students would be resident on the site.

2.2 The University's approach to social organisation was that students should be as free as possible to form their own groupings and loyalties. A flexible approach was called for, rather than one which preconceived tightly knit organisations. It was thought that the plan should convey a pattern of contrasting environments for different activities. Some separation of personal life from academic life was thought to be positively desirable. For these reasons, the concept of "colleges" was rejected: it would be too difficult to reconcile with the social and academic patterns envisaged, and with the practical need for the grouping of specialised teaching spaces.

2.3 It was intended to plan the teaching and research buildings to make it possible for subjects to be studied in unconventionally related groups. It was the believed that specialisation should not be forced, especially in the early years of a student's study, and that staff, postgraduates and undergraduates would benefit from the possibility of interdisciplinary contact. For these reasons, and also to give flexibility to the boundaries of departments and to allow for flexible growth, the plan envisaged a compact and physically interconnected teaching environment for most departments, rather than a series of widely spaced and separate departmental buildings.

2.4 These principles were carried through into policies for laying out the accommodation on the site. The various activities of a university have different, and sometimes conflicting, requirements: student residences need privacy, quiet, sunlight, a pleasant outlook, and access to the landscape, and they are not inconvenienced by separation from other residences; while teaching space needs compactness, intercommunication, flexibility, and heavy servicing in some disciplines. These conditions would best be met by arranging accommodation in zones, each with a predominant use. The University would be small enough for distances between the zones to be short. There would be some non-departmental functions (such as the Library, the Arts Centre, shops, restaurants and social space) which might be appropriate in the centre of the plan, at the crossing of routes, and others which would be appropriate in all the areas.

2.5 Another advantage of a policy of zoning would be that it would also allow the rapid growth of the University in its early years to take place simultaneously, and at different speeds, in different areas.

2.6 The arrival of the University in Stirling and the prospect of a rise of population in the area had led to a re-appraisal of of the local road network. One of the recommendations which followed was that an upgrading of the road system to the east of the site would be needed, and that an eastern access road into the site should be provided so as to direct traffic entering or leaving the site from or to the east to do so by way of the A91, and to discourage it from using the Hillfoots Road – Logie Road as a route to and from the Causewayhead roundabout. Theoretical predictions of traffic flows indicated that amost equal volumes of traffic would approach the site from the east and the west.

The best location for an eastern access to the site was judged to be at approximately the position of the present Tandem entrance.

2.7 The site was outstandingly attractive in landscape terms. It extended to some 300 acres (some 120 ha) of mature parkland and a further 63 acres (25 ha) of adjacent woodland. Airthrey Castle had been built in 1791 to a design by Robert Adam, and the estate had been landscaped early in the 19th century. The grounds contained a large artifical loch curving around two small hills in the centre, carefully arranged ground slopes, shelter belts and clusters of trees. When the Castle was extended at the end of the last century, groups of conifers were added to the original classical landscape. The loch with its islands was central to the landscape within the estate's walls. The greater part of the site rose from the shores of the loch in an irregular bowl. From the upper part of these slopes there were clear views across the loch to the opposite shores and the backdrop of the surrounding hills. Elsewhere the detailed ground forms and planting had been arranged with subtlety to give views of varying openness.

2.8 The Development Plan proposed that the University should develop around the loch. The loch was the most important element in the natural formation of the site; its influence on ground form, views, vegetation and natural drainage would be felt over almost the entire estate.

2.9 An important exception was the Phase 1 building (Pathfoot) which was located and designed before the the Development Plan was prepared, and was built before the rest of the University. Pathfoot was intended to accommodate students and staff from the first three years of student intakes, and to serve as a microcosm of the University, including a Library, Court Room, restaurant, and suite of administrative offices. Pathfoot was sited in the north west corner of the estate so as not to constrain the layout of the main buildings, or to interfere with their construction. It was designed to be a highly adaptable building, because it was known that its function would change over the years. It was thought that there were a number of possibilities for its long-term future: an independent research institute, or teaching and research in one specialised field of study or a closely related group of subjects. It was thought it might act as a "nursery" for the growth of new disciplines. It was not at that time thought that Pathfoot should be expanded to such a size that it might compete significantly as a centre of teaching activity with the teaching buildings being planned in the centre of the site: ie as one pole of a bi-polar university campus.

2.10 The Development Plan proposed that the main teaching and research areas would be planned as a compact and interconnected group on an area of moderate slope to the south of the loch. The buildings would be connected under cover with the library area and pedestrian routes on the promontory. Student residences would be grouped on the sunnier, south and west facing slopes to the north and east of the loch. The residences buildings would step down the contours to allow a fairly high density without the need for lifts, and to open up most of the rooms to sunshine and views, usually over water, to the buildings on the opposite shore. The residences would be seen as light buildings against a dark backdrop of trees. The library, study centres, arts centre, social buildings and shops, and (it was thought at that time) a central administration building would be grouped together on the two promontories jutting into the loch. The ground form on this part of the site was particularly varied, and it was recognised that sites of individual character could be found close together, offering interesting architectural possibilities. The main routes from the residential areas to the teaching areas would cross this central precinct, giving it significance as the focus of community life. Subsequently these routes were planned, like the main routes within the teaching buildings, to run at a single

constant level, bridging across the valleys, and allowing covered connections between all the main activities.

2.11 The flatter areas of the site were reserved for playing fields, to minimise earth moving. Buildings were to be on moderate slopes to which they could accommodate themselves relatively easily. Long buildings, such as the teaching buildings, were planned to run along contours. The residences were planned to step down across contours. The steepest slopes were avoided.

2.12 The numbers of storeys of buildings within each of the building zones, and their footprint areas in the Development Plan, were designed to allow convenient expansion to 6000 students. The teaching buildings were planned in the form of a "ladder", to give:

(a) simultaneous expansion of populations in each of the various fields of study to be reflected in the simultaneous growth of buildings by yearly increments to accommodate growing departments without altering relationships between them. The first phase of development would be the northernmost leg of the ladder; the next phase would be the addition of rungs, and the third phase would be the addition of the southernmost leg of the ladder;

(b) a continuous spectrum of disciplines, encouraging interdisciplinary contact, zoned to correspond to conventional academic interrelationships: arts, social sciences, psychology, biology, chemistry, physics. The westernmost end of the ladder (the present administration building) was originally intended for departments in the arts subject group.

Further expansion of teaching accommodation (it was thought at that time) would be by building further departmental rungs and legs to the rear, and an eastwards extension of the original ladder.

The density of the residences was calculated to provide sufficient residential accommodation for the 3000 FTE population (2000 students in residence) along the north shore of the loch, with further provision to the 6000 FTE stage on sites to the east of the loch.

The library was planned to extend westwards, and the social and administrative buildings north–eastwards onto the promontory.

2.13 The road plan proposed a loop road, encircling the loch, with some spurs inwards and some outwards. The road serving the residences was originally planned to follow the shores of the loch. This layout was modified shortly after the Development Plan was published to a more economical and convenient layout of a road serving the north side of the residences, allowing parking areas to be screened from views across the loch, and (with the exception of J K Geddes Hall) traffic free pedestrian circulation between the residences and the centre of the campus, and between one residential building and another. An eastern entrance was proposed in the position of the present Tandem entrance. A road around the rear of the teaching buildings, serving extensive parking areas to the south of the extended teaching ladder, and connecting the eastern and western entrances, was intended to be built to serve the 6000 FTE stage University, but not the original 3000 FTE stage. The intention was to complete the internal loop road, connecting both entrances, before the 6000 FTE stage was reached, by extending the road serving the residences around the east side of the loch. The completion of this circuit, together with the provision of an eastern entrance, would ensure that traffic arriving from the east would be able to reach all destinations without the need to congest the Causewayhead roundabout and the western entrance, or alternatively to pass through the

central area (now Queen's Court). Almost as many cars were expected to enter and leave the site by the eastern entrance as by the western entrance, thereby relieving pressure on the western entrance, once the internal traffic system was complete and residences had been built on the east of the site. It was estimated that 1692 car parking spaces would need to be provided at the 3000 FTE stage and 3382 parking spaces at the 6000 FTE stage, but plans for the layout of parking areas were not put forward explicitly, beyond a proposal that "commuter car parks should be as close as possible to the teaching areas in the centre of the site, some beneath the buildings, some immediately adjoining. The economics of this require further exploration."

2.14 Figure 1 is a reproduction of the 1968 Development Plan.

The 1973 Phase 3 Development Plan

2.15 A review of the original Development Plan was prepared in 1973 in anticipation of UGC funding for expansion to 3400 students, to obtain agreement in both physical and financial terms to the site development projects to be carried out in the years up to 1976/77, and to set these projects in the context of plans for major facilities for the completion of Phase 3 (ie for 6000 FTEs).

2.16 Four modifications to the 1968 plan were proposed relating to land use, roads and parking:

(a) the zone allocated for expansion of teaching and research was expanded, to take account of guidance from the Development Committee;

(b) new residential areas were proposed east of Airthrey Castle on land originally designated for playing fields, and residences to the south of Airthrey Castle, reached via an east bridge over the loch, were replanned to take advantage of southerly slopes, and to take account of an improved line for the residences road and the conclusions of an earlier report by the architects on residential density;

(c) the area of playing fields in the north east part of the site had been reduced by the provision of all-weather pitches, as a result of discussions with the Playing Fields sub-Committee; and

(d) the numbers of parking spaces was slightly reduced to 1550 for Phase 2 in the light of experience of demand. The County Planning Officer had required slightly more in residential areas than originally proposed, with a consequent reduction in teaching areas. It was thought that the Phase 3 parking requirement would be approximately double the Phase 2 provision.

2.17 Figure 2 illustrates the land use, roads, and parking proposals in the 1973 Plan.

2.18 The 1973 Plan noted that the area zoned for residential development within the University grounds could accommodate two thirds of the student population only if the density achieved in the residences built up to that time could be maintained, and proposed that the form and density of new residential provision should be similar to that which had already been established. Studies had shown that, although low rise housing type development would cost less in building superstructure cost terms, the advantage gained would be largely nullified when additional site costs were taken into account. It had been agreed that consideration should be given to the possibility of housing some students off campus, not least to encourage closer links with neighbouring burghs.

2.19 The Plan noted that the popularity of self-catering in the flats had reduced the need for main meal restaurants, which, it was recommended, the University should not over-provide. Only one more main meal restaurant was proposed for the 6000 FTE stage, in the eastward extension of the staff/student association building on the promontory. A site was proposed for a further social building at the east end of the footbridge over the loch, for letting to commercial operators willing to provide meals offering greater variety than available to date. Three snack restaurants were proposed, one near the sports pavilion on the eastern playing fields site, one east of Airthrey Castle, and one in the Phase 3 teaching buildings. A greater provision of communal space dispersed in departmental teaching areas was recommended.

2.20 Plans for the expansion of teaching and research accommodation to the south of the Cottrell Building were based on a series of discussions within the University. The architects had been asked to work on the assumptions (a) that development beyond 4000 students would be piecemeal and fairly slow; (b) that intra-departmental cohesion would be more important than inter-departmental communications; (c) that movement between teaching and central facilities, including restaurants, would need to be taken into account; and (d) that movement from departmental areas to reading and study areas should be convenient. Forecasts of space provision were based on the UGC's room area "norms" which had been the basis for provision for Phase 2. With a doubling of population, approximately double the space provision was assumed. The recommended design option was a series of four storey buildings at right angles to a new circulation concourse with a covered connection to the Phase 2 buildings. Between the new concourse and the existing buildings a space would be reserved for single storey specialised workshops and laboratories. It was assumed that the Phase 3 buildings would need to include further science accommodation, and the plan showed the Cottrell Building extended to the east to give this provision. New parking areas would lie to the south of the new teaching buildings, fed from a new loop road.

2.30 In addition to proposals for land use, roads and parking, residential development, social and catering accommodation, sports facilities, and for expansion of the teaching buildings, the 1973 Plan contained costed plans for the extension of site services. These proposals were shelved later in 1973, when the University's plans for significant expansion were postponed because of funding difficulties.

2.31 Figure 3 is a photograph of a model of the 1973 Phase 3 proposals.

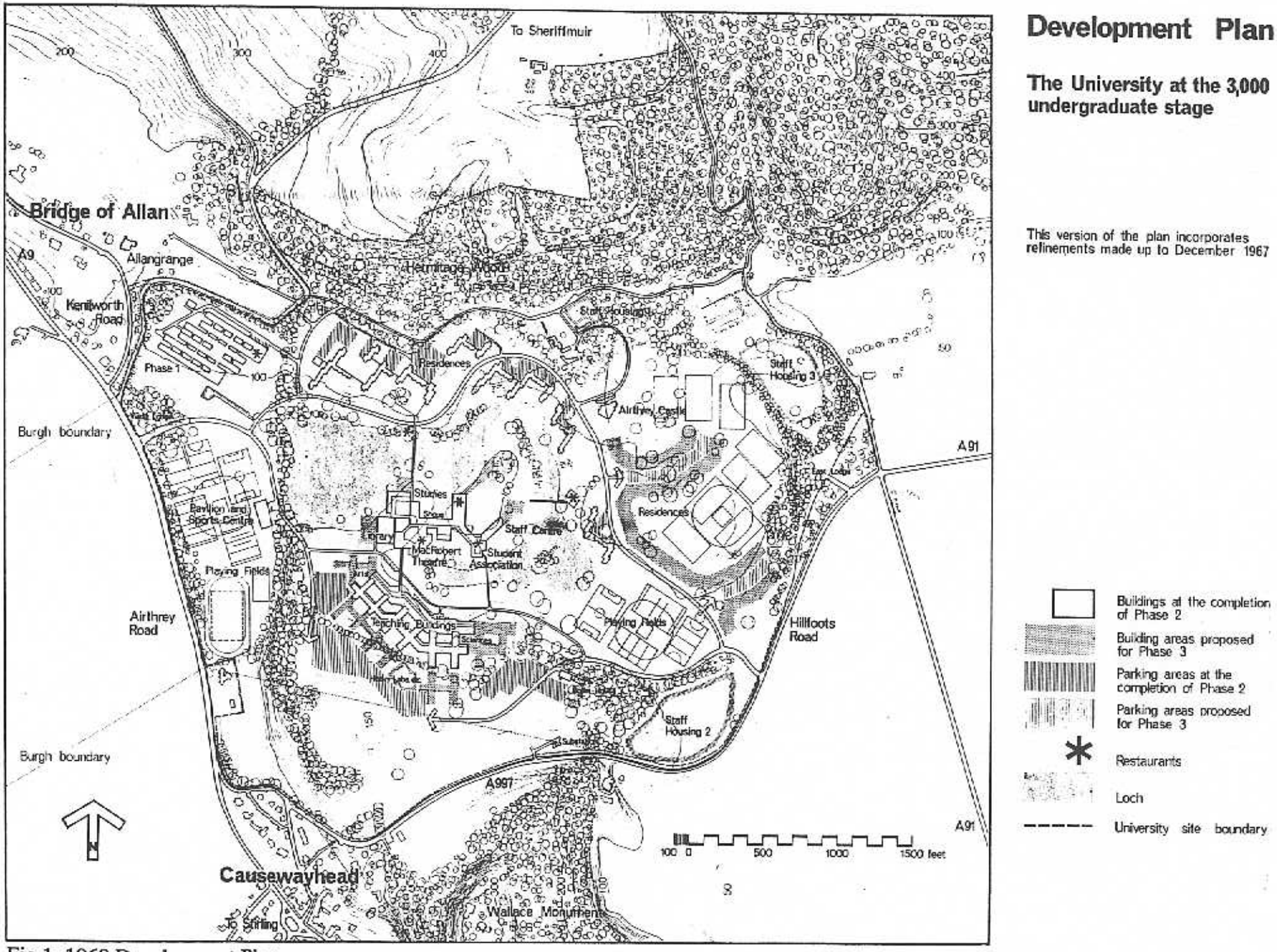

Fig.1 1968 Development Plan

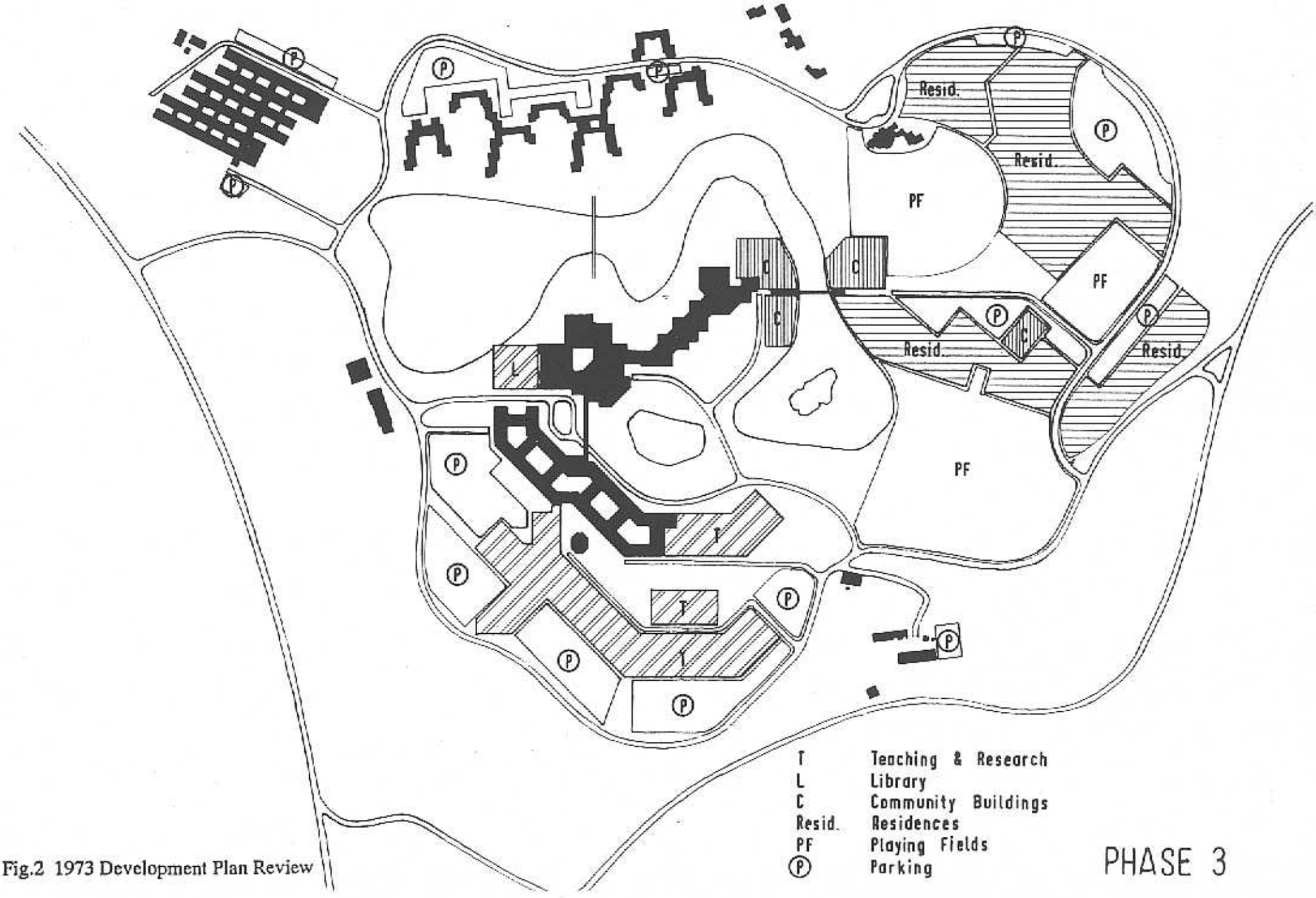

Fig.2 1973 Development Plan Review

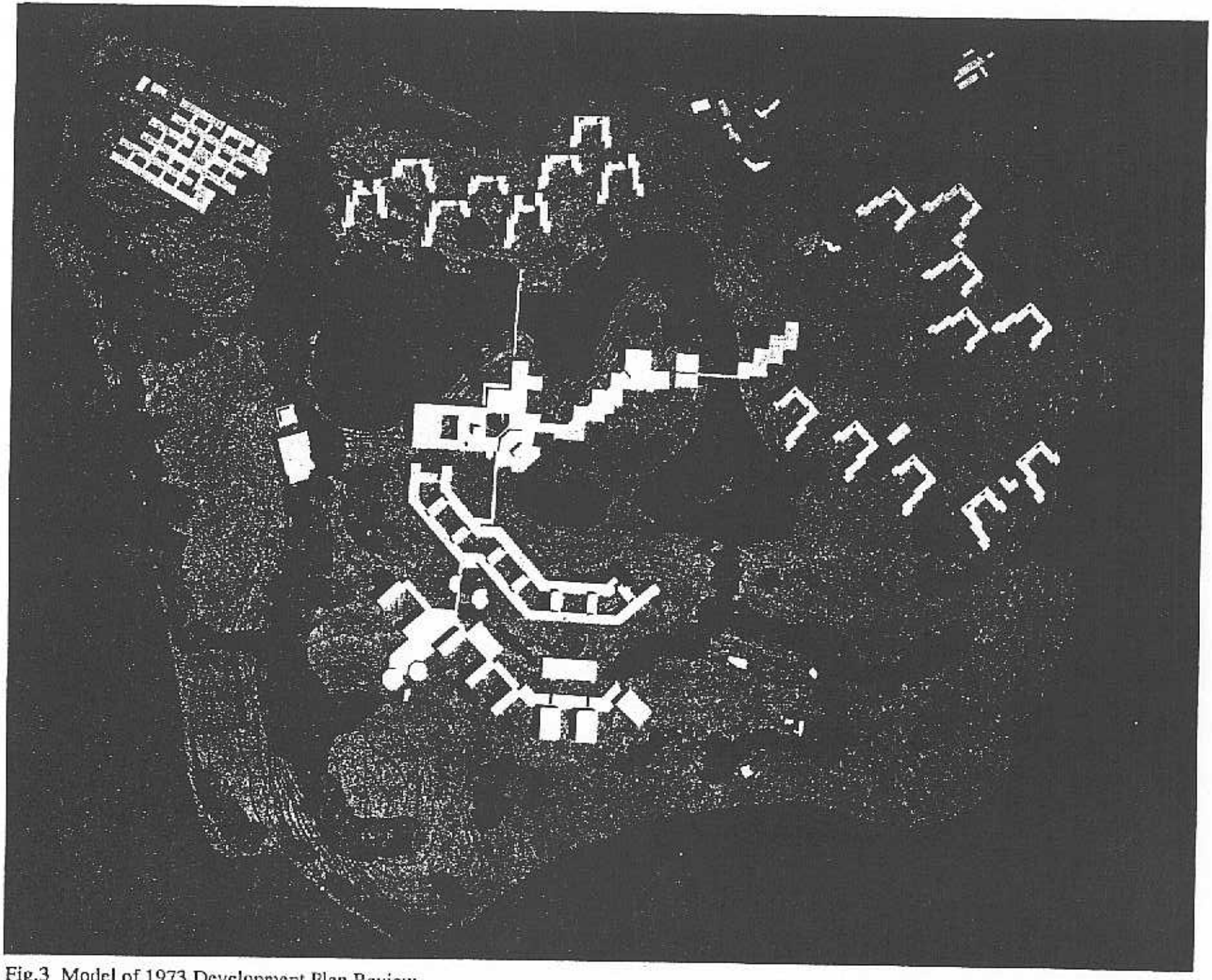

Fig.3 Model of 1973 Development Plan Review

3 Development to date

3.1 The main building developments on the campus between 1966 and 1973 were:

Project	Year occupied
Pathfoot building (Phase 1)	1967
Teaching and administration (Cottrell stage 1)	1970
Residences (Andrew Stewart Hall, H H Donnelly House, Fraser of Allender House)	1970
Greenhouses 1	1970
Principal's House	1970
Staff housing	1970
Gannochy sports pavilion	1970
Boathouse	1970
Boilerhouse and plant, substation	1970
Library, MacRobert Centre, Shops	1971
Teaching (Cottrell stage 2)	1971
Residences (Polworth House, Murray Hall, Muirhead House)	1971
Teaching (Cottrell stage 3)	1972
Pathfoot conversions 1 and 2	1972
Greenhouses 2	1972
Residences (A K Davidson Hall)	1972
Social buildings	1972
Logie lecture theatre	1973
Residences (Geddes Court)	1973
Studies	1973
Shops extension	1973

3.2 Since 1973, the main building developments have been:

Project		Year occupied
Pathfoot extensions	(Tropical Hatchery)	1979
	(Virology Unit)	1987
	(New Kitchen)	1990
	(E Corridor)	1990
	(A Corridor)	1993
	(Miscellaneous projects)	1979–1990
Central Area	(Robbins centre)	1986
	(Chaplaincy Centre)	1986
Gannochy complex	(Swimming pool and Squash Courts)	1973
	(Sports hall)	1980
	(Offices and entrance)	1985
	(Tennis Hall)	1991
Management Centre		1988

Residences	(Pendreich Way)	1981
	(Spittal Hill Chalets)	1990
	(Alexander Court)	1992

3.3 It can be seen from these tables that the main period of the University's development was between 1967 and 1973. During this period some 80% of the present usable floorspace (87.5% of the usable non-residential floorspace) was provided. Most of the buildings on the campus are now more than 20 years old.

3.4 This report does not set out to make an appraisal of the condition of the University's properties or to assess their fitness for the purposes for which they are being used. An internal assessment of the need for backlog maintenance was prepared in 1991, and a condition survey was carried out by consultants in 1992. It is understood that these assessments will be analysed in the Estate Strategy. It is already apparent however that substantial backlog maintenance and refurbishment will be needed in some properties to bring them back to good repair and to maintain their plant and services.

3.5 The disposition of academic departments and other University functions has largely followed the intentions set out in the Development Plans. An outline of the existing provision, in terms of usable floorspace for main categories of accommodation, is given in later sections of this report. The main departures from the intentions of the 1968 Development Plan have been:

(a) The westernmost wing of the Cottrell Building, which was expected (at the time the 1968 plan was prepared) to be occupied by Arts departments, has been occupied instead by the University's administrative offices and Court Room suite.

(b) The easternmost rung of the Cottrell Building as planned in 1968, originally intended for Physics, has not been built.

(c) Pathfoot has expanded. Its use has changed, as intended, over the years. The present users are the School of Natural Sciences (mainly Aquaculture), the School of Arts, and the School of Human Sciences (Education).

3.6 Since 1973, the main land disposals have been:

(a) The lease in 1981 of a large area on the southern part of the site to a company, of which the University is partner, to form an Innovation Park.

(b) The sale in 1983 of 31.42 acres (12.72 ha) on the eastern part of the site to Wang (UK) Ltd. The frontage of this site occupies the location originally proposed for an access road into the University from Hillfoots Road.

(c) The land occupied by the Management Centre. The building itself is owned by Stirling District Council on a lease/lease back arrangement, and will revert to University ownership at the end of the lease in about 15 years time. Land immediately surrounding the Management Centre and its recent extension will be precluded from building development to secure its amenity.

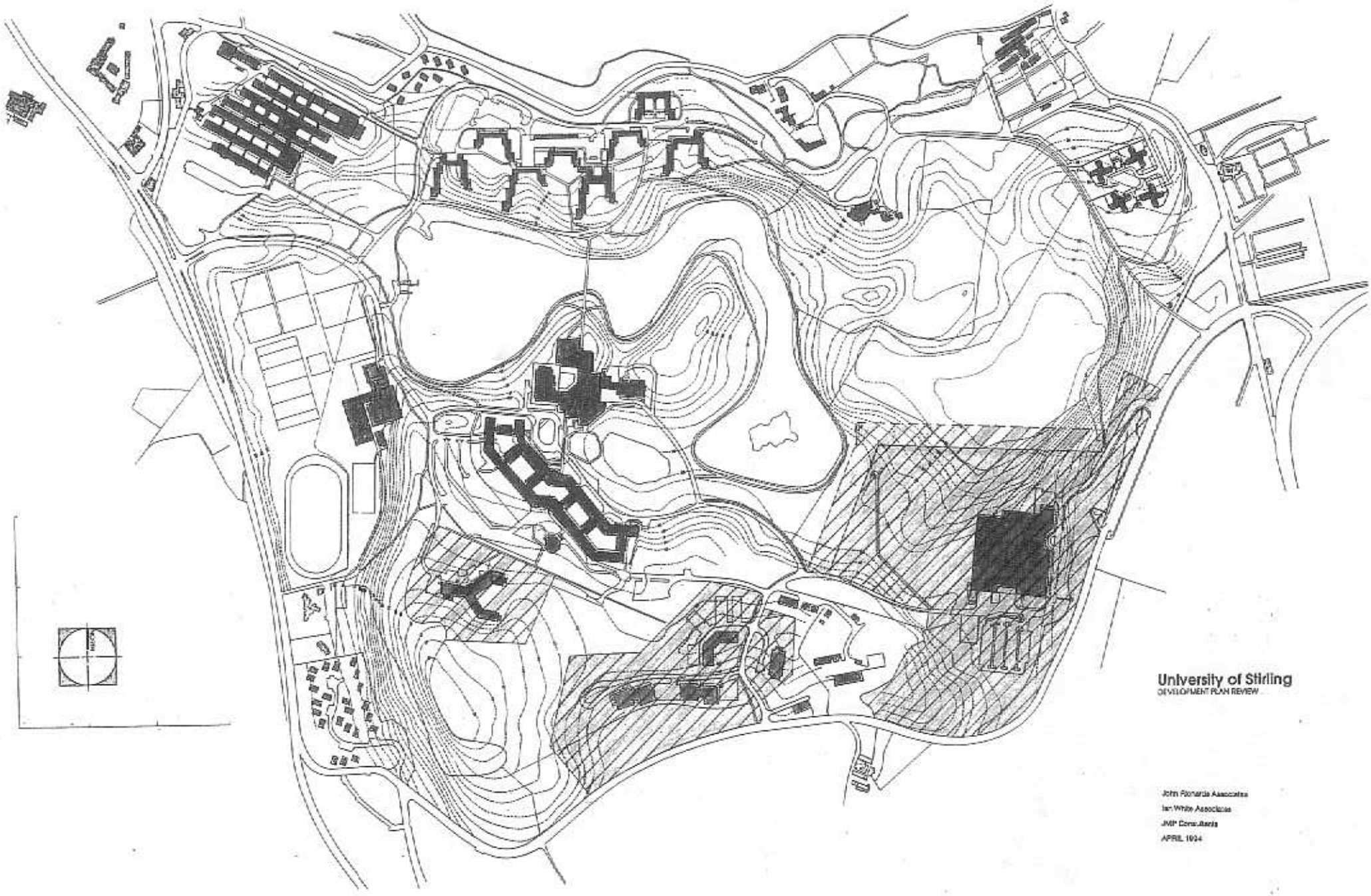

Fig.4 Development and land disposals to date

(d) The site of Alexander Court. The funders would have to give approval to any development.

Figure 4 shows development on the campus to date, and the effect of these disposals on the land available for further development.

3.7 The sale of the Wang site (now owned by Tandem), and the detailed conditions attached to the sale, restrict development by the University on the east of the campus. Figure 5 shows the boundaries of this site. The site itself occupies land originally planned for some residences and for part of the loop road system, including the proposed eastern access. Only a narrow strip of ground remains available between the loch and the site for a road connecting any residences planned to the east of the loch with the remainder of the development. Under the terms of the disposition of sale the University is prohibited from building on the strip of ground lying adjacent to the north boundary. The University is also prohibited from erecting a building on the area of ground 100 feet (30 m.)wide adjacent to the west boundary, between the site and the loch. It is understood that this prohibition does not rule out the construction of a road on this strip.

3.8 The access road into the Innovation Park from Hillfoots Road has recently been adopted by Central Regional Council, as far as its junction with the boilerhouse access road.

4 Existing traffic appraisal

4.1 The notes which follow in Sections 4 and 9 are drawn from a report prepared by JMP Consultants Ltd, which was presented in July 1993. The population figures on which the appraisal was based were those current in 1992: the University provided full time education for 4,500 students (FTEs). 2,300 of these were resident on the campus. 1,230 academic, administrative and other operational staff were employed .

Traffic conditions

4.2 The main access routes to the University Campus are from Airthrey Road and Hillfoots Road. Airthrey Road is a dual carriageway adjacent to the University access. The road has a 40 mph speed limit and is well lit at the junction. Hillfoots Road is a single carriageway adjacent to the Innovation Park access. The speed limit on Hillfoots Road at this point is unrestricted (60 mph). The access junction has been improved recently and takes traffic to the Innovation Park and through to the University campus beyond.

4.3 All day traffic volumes accessing the campus via the Airthrey Road junction are some 4,800 vehicle trips (2–way). The peak hour traffic volumes using this entrance are some 700 vehicle trips (2–way) during both the AM and PM peaks. This can be compared to a road capacity of some 2,000 vehicles per hour (2–way).

4.4 During the AM peak period queueing occurs on Airthrey Road (northbound). Drivers attempt to avoid the stationary queue by driving beyond the access and performing a U–turn at Kenilworth Road. This maneouvre, although not illegal, carries safety risks and makes conditions worse for drivers waiting at the University access by increasing the volume of on–coming traffic.

4.5 During the evening peak traffic period, the queueing problem is transferred to the University access road, making exit difficult. Maximum vehicle queues stretch back some 300 – 400 m. towards the Gannochy pavilion.

4.6 Central Regional Council (CRC) Roads Department made in 1992 a study of the operation of the Airthrey Road/University access junction. Their recommendation, based on the limited duration of access difficulties and recent accident statistics, was that no improvement is needed at the junction at present. They considered that the promotion of car pooling or staggered working hours could result in a reduction of peak hour traffic movements which could alleviate any current difficulties.

4.7 JMP's analysis of conditions in 1993 confirmed CRC's view. Measures to inform drivers of the concentrated peak hour difficulties could alleviate the current difficulties.

4.8 All day traffic volumes accessing the campus through the Hillfoots Road junction are some 1,600 vehicle trips (2–way). The peak hour traffic volumes at this entrance are in the region of 270 trips (2–way) during the AM and PM peaks. This can be compared with a capacity for some 2,000 vehicles per hour 2–way.

CRC Transportation Policy and Action Programme

4.9 The CRC Transportation Policy Group have recently published the Council's consultation document on transport issues and actions to the year 2005. The documents, entitled "All Change! – The Transport Challenge for Central region" and "All Change! – Action Programme" propose limiting traffic growth by increasing the public's awareness of alternative transport modes such as walking, cycling and public transport (bus and rail). Public expenditure will be increased on these alternatives, at the expense of road improvements.

4.10 The Action Plan for the Stirling Northern Area envisages:

(a) Improved bus travel with priority measures through the north of Stirling;

(b) Cycle routes between Bridge of Allan and Stirling;

(c) In the longer term, a possible rail station at Causewayhead.

Figure 5 illustrates these proposals.

"All Change!" and the University.

4.11 The "All Change!" proposals represent a 15–year programme. In the short term (0 – 5 years) there are no infrastructure improvements planned which would directly affect the University. Indirectly, the improvement of bus services and the introduction of bus priority measures, including park and ride, will encourage a greater number of travellers by bus from the south and west. The extension of a safe cycling network throughout the region will encourage cycling as a transport mode.

4.12 In the medium term (5 – 15 years) the "All Change!" Action Programme would have indirect effects, including the proposed bus priority measures at Causewayhead Roundabout which would enhance travel by bus. The completion of a safe cycling network between Stirling, Bridge of Allan and the University would encourage cycling, and there is the possibility of a new rail station at Causewayhead.

4.13 The mid to long term proposals are not yet reflected in an expenditure programme.

The existing road network on the campus

4.14 The main access points from Airthrey Road and from Hillfoots Road are connected via Queen's Court. The roads providing this connection represent at present a primary route through the campus. They serve the Cottrell Building, MacRobert Centre and the Innovation Park. Despite the speed limit and traffic calming speed humps, there is a background movement of through non–university traffic using the campus roads to travel between Airthrey Road and Hillfoots Road. This amounts to some 100 vehicle trips (2–way) through each access junction during the AM and PM peak periods. It is probable that this "rat–run" is only attractive during peak periods when the public highway network is congested.

4.15 The campus access from Airthrey Road is 7.3m. wide from the main road to the Management Centre. The forward visibility along the road is restricted on the section adjacent to the loch to below 60m. This is inadequate for the speed limit of 20 mph.

4.16 The access road from Hillfoots Road is 7.3m. wide between Hillfoots Road and the boilerhouse. However between the boilerhouse and Queen's Court, the road width reduces to 5.5m., even though it is used by buses and Heavy Goods Vehicles (HGVs).

4.17 The Pathfoot building and the residential areas of the campus are accessed from minor roads which connect to the primary route. These secondary routes at present form cul-de-sac layouts serving each of these elements. These routes have a road width of 5.5m.

4.18 The access roads through the Innovation Park have been adopted by CRC Roads. All other roads within the campus are privately owned and maintained. A speed limit of 20 mph is applied, and there are speed humps at strategic locations. The junctions within the campus are generally of a low standard and present difficulties for bus and HGV manoeuvres.

Public Transport

4.19 Bus services pick up and drop off passengers at Airthrey Road and Hillfoots Road, with some services accessing or passing through the campus.

4.20 Some twelve different bus services access the campus although some are off-peak and weekend-only services. Nine services access the campus through the Airthrey road junction, two services access through Hillfoots, and one service passes through the campus. Eight buses access the campus during the morning travel period (7.30 – 9.30 AM) and 15 services are scheduled during the evening travel period (16.30 – 1830 PM). The origins and destinations of these services include most of the larger towns near the University. A survey of passenger demands has not been carried out, but the impression is that the University is well served by bus services for the current level of demand.

4.21 Queen's Court is presently a bus terminus for services which stop on the campus. Buses park in front of the Cottrell Building, and the fumes and noise cause environmental pollution which the users of this building find unacceptable.

Car Parking

4.22 There are presently some 1,360 designated parking spaces throughout the campus, including 60 recently built at Pathfoot. These are generally located beside the main educational buildings such as the Cottrell Building (575 spaces) and Pathfoot Building (211 spaces), and close to student residences (450 spaces).

4.23 A parking permit system has been introduced. The goals of the system are to direct staff permit holders to parking spaces close to academic facilities. Student permit holders and non-permit holders are directed to the parking areas at the student residences. Day visitors are not included in the permit scheme, and are directed to designated visitor parking areas by road signing. Campus staff have a remit to identify persistent offenders and to inform the owners by attaching a notice to the car.

4.24 JMP Consultants examined the 1992 level of parking demand by staff, visitors and students. To serve the 1,230 staff and 4,500 students (2,300 resident and 2,200 non-resident) on campus, the normal parking demand was 830 staff cars, 520 student cars and approximately 40 visitor cars at any one time. The total parking demand was for 1,390 parking spaces. This exceeded the parking provison by 30 spaces.

4.25 The greatest demand for parking, by both staff and students, is in the area close to the academic buildings. While the areas around these buildings are heavily parked, and an unacceptable use is made of access roads, verges and the Queen's Court area, the resident parking areas to the north of the loch are under-used.

4.26 A comparison of parking demand and supply for each user group is:

User Group	Location	No. of spaces provided	Parking ratio (provision/users)
Staff (1,230)	Cottrell, Pathfoot Airhrey, MacRobert	850	0.69
Students (4,400)	Residences	470	0.11
Visitors	Cottrell, Pathfoot	40	0.03

Cyclists

4.27 There are no special routes for cyclists within the campus.

Pedestrians

4.28 Footpaths are provided between the main areas of the campus generating pedestrian traffic. The location and routes of these footpaths appear to serve most of the requirements of staff and students.

4.29 Although the footpath network is extensive, some gaps and unsatisfactory standards have been identified. These include deficiencies:

(a) between the Cottrell Building and the Management Centre;

(b) between the Gannochy Pavilion and both Pathfoot and the Cottrell Building;

(c) at Airthrey castle and the Robbins centre;

(d) between Queen's Court and the Hillfoots Road entrance.

5 Estimates of non–residential space needs for 7000 FTE University

5.1 Documents reviewed

Five documents have been reviewed:

5.1.1 FC(92)49 *Outline Estate Strategy* with:

- Appendix A Progress report
- Appendix B Academic accommodation
- Appendix C Additional accommodation for expansion to 5000 students
- Appendix D Residences planning to 1996

5.1.2 FC(92)62 Item 3–9 *Academic Accommodation Needs* with:

- Appendix I Centrally timetabled teaching accommodation
- Appendix II Academic departments accommodation
- Appendix III Draft timetable for moves and alterations

5.1.3 *Non–Academic Space for the 5000/7000 FTE University.* (Paper by R G Bomont and P Fairweather 20 November 1992)

5.1.4 Letter from UGC to Buildings Officers 31 March 1989 headed NOCAG 1987: Academic Areas, together with an extract (Part XI) from UFC handbook on notional unit areas.

5.1.5 PRC(93)24 *Academic Plan 1993/4 – 2002/3*

5.2 FC(92)49 *Outline Estate Strategy*

5.2.1 Appendix B of this paper provides schedules of existing areas with estimates of areas required for, respectively, 4200, 4700, 5000 and 7000 FTEs. These tables cover the space needs of academic departments, lecture theatres, seminar rooms, etc, academic services, and social/dining/kitchen areas. The areas scheduled as existing exclude 802 sq m. net usable now available at Pathfoot.

5.2.2 The schedules are accompanied by a statement of assumptions made in arriving at the figures. The forecasts are made on the basis of norms derived from UGC advice (with some modifications) with the note that these might be too generous. Judgemental decisions have been taken on the capacity of certain parts of the University to be used more intensively. In summary, the schedules give the following net areas:

	Existing	4200 FTE	4700FTE	5000FTE	7000FTE
Academic departments	20,001	20,823	21,887	22,338	27,893
Lecture, seminar etc.	3,628	4,345	4,948	5,190	6,650
Academic services	7,193	6,780	7,735	7,777	10,525
Social/dining kitchens	7,190	6,438	7,144	7,614	10,512
Admin.	5,355	5,137	5,375*	5,536*	6,520*
	43,367	43,523	46,729*	48,455*	62,100*

5.2.3 The figures marked * include 1,058 sq m. for Airthrey Castle, assumed in the table above to continue to be used for SASA and Continuing Education.

5.2.4 The crude area/student space norms which emerge from these estimates are:

Existing	4200 FTE	4700 FTE	5000 FTE	7000 FTE
10.33	10.36	9.94	9.69	8.87

The FTE figures in this table have to be used with caution. SHEFC is likely to use for planning purposes as its unit of measurement the SFTE (Space Full Time Equivalent), in which only full time and sandwich enrolled students count as one unit: lower values are given to part-time, block release etc students.

5.3 FC(92)62 *Academic Accommodation Needs*

5.3.1 In this paper the working group breaks down the 3,628 sq. m. of existing lecture/seminar accommodation previously reported into 3,045 sq. m. of centrally timetabled accommodation and 583 sq. m. available in departments. It undertakes a detailed study of this accommodation based not on norms but on actual and projected class numbers and sizes. It makes a forecast of projected needs for centrally timetabled accommodation based on current usage patters, at 4,200, 4,700, 5,000 and 7,000 students. The schedules show that at 4,700 students most teaching needs can be met from within the centrally timetabled accommodation providing the shortage of accommodation for groups between 80 and 110 is met by using larger capacity lecture theatres. At 5,000 students most teaching needs can be met from within existing accommodation, though there is increased pressure on the medium sized lecture theatres. At 7,000 students there is a shortage of small teaching rooms and there is too little accommodation in medium-sized lecture theatres. The pressure is such that the class range 80-110 can no longer be met by moving into larger lecture theatres. The working group suggests a number of ways in which these problems might be dealt with by better management of the use of space. Forecasts of additional lecture/seminar areas needed are not made.

5.3.2 The working group also looks at the likely needs of academic departments, not on the basis of norms, but on the basis of marginal requirements. Schedules of accommodation for academic departments are presented with forecasts of requirements for 4,700 FTEs and 5,000 FTEs. Detailed forecasts for 7,000 FTEs are not attempted because such calculations would depend on the subject mix which had not (at that time) been discussed, although the impact of 7,000 students is discussed and a tentative estimate is made that overall 2,650 sq. m. more than the space forecast for 5,000 FTEs would be needed. The calculations assume that the University would maintain its present policy of allocating a separate tutorial room to all members of teaching staff, and that up to a 5,000 student population no further accommodation for secretarial or research staff is needed.

In summary the schedules give the following areas for academic departments:

	Existing (4255 FTE)	4700 FTE	5000 FTE	7000 FTE
Academic departments	20,133	20,390	20,499	23,149

These forecasts are substantially lower than the estimates in table 5.2.2 above.

5.4 *Non-Academic Space for the 5000/7000 FTE University*

5.4.1 Forecasts are made in this paper of the needs for:

- Information services (libraries, studies areas, media services, computer services)
- Communal/social/dining space, kitchens
- Administration (general admin space, careers advisory and student counselling services, cleaning, portering, telephones, mail, entrance halls, Court Room suite, garden maintenance areas, maintenance depot, BBC studio)

5.4.2 Area forecasts are worked out for 5000 FTEs and 7000 FTEs using three methods:

(a) Using UGC norms

(b) A best estimate provided by section heads

(c) A percentage increase pro-rata to increases in students and staff.

5.4.3 In summary the schedules give the the following forecasts:

	Current	5000 FTE (a) Norm	(b) Est	(c) %	7000 FTE (a) Norm	(b) Est	(c) %
Information services	7,325	7,325	9,046	7,911	10,115	12,089	11,062
Communal/ social/dining/ kitchens	5,183	7,530	8,101	6,278	10,440	8,551	8,778
Admin..	4,264	4,460	4,623	4,518	5,460	4,576	6,181

The early provision of a large hall is identified and included in the estimates for communal/social/dining/kitchens. Such a hall might be privately funded. Its uses could include conferences, graduations, examinations and concerts. Its area has been estimated at 1500 sq. m.

5.5 *Academic Plan 1993/94 – 2002/3*

The key points affecting the Interim Development Plan are:

(a) The aim of extending the range of subject provision, particularly though not exclusively in the sciences;

(b) The aim of further developing existing academic areas, with further growth in a number of existing departments, further development in Nutrition in the Institute of Aquaculture, further development in Business Law and Taxation, the establishment of Mathematics as a separate department, doubling of undergraduates in Film and Media, expansion of Computational Neuroscience, and a significant increase in research students;

(c) An undergraduate degree structure that offers maximum flexibility consistent with academic integrity;

(d) 7,000 campus based students by 2002/3 plus up to a further 3,000 students in associated colleges and on different modes of study;

(e) 1995/6 is a break point in the development of the University offering an opportunity for major re–appraisal at that time.

5.6 **Comparisons**

5.6.1 The forecasts in the three documents reviewed in the foregoing paragraphs show quite wide variances in all categories of accommodation. To compare the forecasts for 7000 FTEs, they are:

	7000 FTE minimum estimate	7000 FTE maximum estimate
Academic departments	23,149	27,893
Lecture, seminar etc	3,628 +	6,650
Academic services	10,115	12,089
Social/dining kitchens	8,551	10,512
Admin.	4,576	6,520
	50,019	63,664

The variances in the area/student space norms are:

7000 FTE minimum estimate	7000 FTE maximum estimate
7.15	9.09

Space needs estimates for the 7000 FTE University for the Interim Plan

5.7 The University may need to aim to achieve substantial efficiency gains in its use of total accommodation. Higher education institutions are being exhorted to improve the quality of both teaching and research while the unit of resource is falling. When the University was founded some 25 years ago staffing was planned on a ratio of one member of lecturing staff to every 7.7 students. The average ratio is now more than double that, at over 1:15 and even higher in some subjects. Efficency gains mean that the ratio may increase further in the future. The University has always prided itself on its small group teaching, and it is important that this should continue to be a feature of provision, but a review of the way it is organised and targeted will be needed.

5.8 The estimates in paper FC(92)49 lie towards the upper end of the range of estimates which have been prepared, but even these, which are made on the basis of norms derived from UGC advice, result in a significant reduction in the overall space standards enjoyed by the University to date (a reduction of the overall area/student standard from 10.33 sq m./FTE to 8.87 sq m./FTE) and of course a much greater reduction in the standard to be applied to the provision of additional space to arrive at this overall result.

5.9 Discussions within the Estates and Buildings office, and with the Management Group, have led to the proposal that a small reduction in the standards proposed in FC(92)49 should be used for **physical planning purposes in the Interim Development Plan**. An overall provision of 59,000 sq. m., giving a space standard of 8.43 sq m./FTE is proposed. This is a reduction of 5% from the estimate of the total space needs for 7000 FTEs in FC(92)49. Greater efficiency gains than these may be both necessary and acceptable, but it would be unwise to assume that they will be achievable in the layout of buildings and parking areas, roads and services, if the plan is to ensure that the site has adequate capacity for unforseeable developments.

5.10 The floor area assumptions for SHEFC-assisted non-residential accommodation which have been made in the Interim Plan campus layout for 7000 FTEs (estimated as net usable floorspace in sq. m.) are:

Accomm'n category	Existing (1992) areas (based on FC(92)49)		Planned additional areas		Planned 7000 FTE areas
Academic departments (excl Man. Centre and possible later independent Institutes)	Pathfoot [1]	5805	Academic departments	5695	
	Cottrell	14196			
		20001			
			1992 additions to Pathfoot	802	
				6497	26498 [2]
Lecture, seminar etc rooms	Pathfoot	1045	New 300 seat lecture theatre	350	
	Cottrell	2226			
	Logie	357			
		3628	Other lecture, seminar etc rooms	1675	
				2025	5653 [3]
Academic services	Pathfoot	554			
	Cottrell	927	Library extension	2278	
	Libraries				
	– main	4687	Additional computer services	113	
	– seminar	56			
	– Pathfoot	270			

1 The existing areas exclude 802 m2 recently built at Pathfoot

2 5% less than total proposed in FC(92)49

3 15% less than total proposed in FC(92)49 to reflect improved space utilisation.

	– studies	699	Additional studies	644	
		7193		3035	10228 [4]
Social/dining + kitchens (excluding support activities)	Pathfoot	843	New social space for general use	916	
	Cottrell	671			
	Snake lounge	167			
	Red lounge	110			
	Studies	18	Residences social space	400	
	MacRobert restaurant	530			
	MacRobert theatre bar	315	New concert/ conference graduation/ examination hall incl. coffee bars	1500	
	Robbins	1140			
	St. Annes	306			
	Chaplaincy	159			
	MacRobert theatre	2175			
	Kitchens	756	Kitchens	434	
		7190		3250	10440 [5]
Administration					
	Pathfoot	21	New admin and student services		
	Cottrell				
	– general	2039			
	– bulk stores	443			
	– foyers	206			
	Maintenance	850			
	Gardens	150			
	Terrapins	271			
	Studies area	214			
	Studies vacant	64			
	SASA	112			
	Cont. ed'n	947			
	Health service	102			
		5355		826	6181 [6]
Totals excluding independent institutes and support activities		43367		15520	59000
Average space standards (sq m./FTE)		10.33			8.43

4 Norm for 7000 FTE from "Non–academic space for the 5000/7000 FTE University" plus additional computer services

5 Norm for 7000 FTE from "Non–academic space for the 5000/7000 FTE University"

6 Percentage increase pro–rata to student/staff from "Non–academic space for the 5000/7000 FTE University"

5.11 In the foregoing floor area assumptions, provision in academic departments lies towards the upper end of the range of estimates in the papers reviewed. Provision in lecture and seminar rooms assumes efficiency gains from timetabling. The total space provision for academic services (library space, media services, computer services and studies areas) is the norm plus a small additional increase in computer services. Provision in social and dining space is the norm and should be sufficient to provide, if required, a staff club. The provision for administration is pro-rata to the increase in numbers and assumes some new bulk stores.

Independent Institutes and Support Activities

5.12 Some non-residential, predominantly privately-funded, accommodation, existing and proposed, is not included in the immediately foregoing tables. Provision should be made in the plan for:

5.12.1 The Management Centre. The gross internal area built to date is 3250 sq. m. and an extension of 1066 sq m. is currently under construction. Further expansion is likely during the period of growth to 7000 students.

5.12.2 The Dementia Centre. Plans for this project are being drawn up for a location immediately to the east of the Logie Lecture Theatre.

5.12.3 Possible further privately resourced teaching-related or research-related insitutes. It may be a requirement that these are free standing buildings, each with a distinctive identity. Provision of sites and parking for them is unlikely before the completion of the 7000 FTE stage, but should be feasible if required before that time.

5.12.4 The Gannochy Pavilion, swimming pool and squash courts, sports hall and tennis hall. It is understood that the space occupied for indoor sports is well in excess of UFC norms, and that the needs of the 7000 FTE stage will be met by the provision of storage and a small multi-purpose hall, and some more pitches.

5.12.5 Further shops and commercial facilities.

6 Estimates of residential space needs for 7000 FTE University

6.1 Documents reviewed

6.1.1 FC(92)49 *Outline Estate Strategy*: Appendix D *Residences Planning* takes a detailed but short term view to 1996. It anticipates that the established pattern of use of on-campus residences will continue with the new residences east of Airthrey. The paper notes that the demand from the leisure and conference market is for twin-bedded rooms with en-suite shower rooms/WCs. Objections have been raised from within the University, however, regarding differential rent levels and elitism. The drift towards flatted accommodation is creating demand for more social space associated with residences. Catering outlets within residential developments are seen to be desirable, as proposed in the original development plan and its review. Facilities for the conference trade are also seen as desirable, although the level of conference business will depend on future policy on the academic year. 250 places are forecast in this paper to be needed by September 1994, and it is assumed that a further 1000 places will be needed on the campus in the long term.

6.1.2 *Non-Academic Space for the 5000/7000 FTE University* (November 1992) notes that "with the completion of the Union Street development by September 1993 there will be sufficient residence places for the 5000 FTE University, but growth to 7000 FTE will create the need for an additional 1400 places, preferably on campus." Regarding the type of space to be built, the paper notes that there is a balance to be struck between vacation letting, summer academy use, and general University use of residential space. It notes the need for refurbishment of the existing residences so that they comply with modern legislation and to make them more attractive not only for students but also for summer letting.

6.2 Existing provision on the campus is 2215 bedspaces, as follows:

Andrew Stewart Hall	)	
HH Donnelly House	)	
Fraser of Allender House	)	
Polworth House	)	
Murray Hall	)	
Muirhead House	)	
A K Davidson Hall	)	
Geddes Court	)	1720
Alexander Court		330
Pendreich Way		50
Spittal Hill		115
		2215

6.3 Plans have been prepared for further provision in two areas to the east of Airthrey Castle to provide a further 250 bedspaces as follows:

Alexander Court extension	82
Nursery Gardens cottages	168
	250

These plans could be implemented at short notice.

6.4 Recent studies by the Development Plan team have shown that the total residential provision on the campus will be limited by the capacity of the site to the east of the loch to carry further development (which has been reduced by the disposal of the Tandem site) if a sense of overcrowding is to be avoided, and if concerns which have recently been expressed by Historic Scotland on the impact of new residences on the setting of Airthrey Castle are to be satisfied. These constraints are discussed more fully in Section 8 and Section 9 of this report.

6.5 The capacity for total residential provision on the campus is estimated to be some 3569 bedspaces. This provision is less than the 4000 bedspace provision of the 1968 Development Plan, which established the basis for the density of the residences to the north of the loch. The additional provision (extra to the 1993 provision on the campus) would, however, be 1354 bedspaces, a figure which corresponds fairly closely to previous estimates (such as that noted in para 7.1.2) of additional provision needed for the 7000 student University.

6.6 The University's existing and proposed provision of student accommodation off campus does not come within the scope of this report, other than as a material factor affecting pressure to build accommodation on the site. At present the University owns and organises on long leases 601 places off-campus. There is a potential for some 1000 lodgings in the locality.

7 Development Principles for the 7000 FTE University

7.1 The development principles of the 1968 Plan and the 1973 Review are well understood, and appear to have served the University well. Should they continue to be followed up to the completion of the 7000 FTE stage?

7.2 Other options have been considered. For example, the creation of additional teaching space by the adaptation of some residences buildings has been considered. The disadvantages of such a scheme appear to outweigh the advantages. At a detailed level, the residences are designed with load–bearing walls, and are inherently inflexible. The rooms are provided with washbasins which would not be needed, whereas other services needed for teaching would need to be installed. At a more strategic level, the dispersal of teaching accommodation throughout the campus would be inconvenient for timetabling, would rule out covered circulation between teaching buildings, and would reduce the scope for flexible boundaries between departments. These disadvantages would be less important if the isolated "departmental" buildings contained relatively independent departments or groups of departments. Expansion of teaching space by small increments would be difficult if not impossible. The insertion of teaching into the residences zone would dilute the character of this zone.

There appear to be no cost advantages in this option. The cost of adapting the residences buildings to teaching would not be as high as the cost of building new teaching buildings, but would be considerable. The cost of providing (either on the campus or off it) residences to replace those displaced would have to be added to the cost of conversion, to arrive at the total cost of the new academic provision.

7.3 The option of expanding teaching and research accommodation by the addition of free–standing departmental buildings, for example to the rear of the Cottrell Building, has also been considered. Although it is recognised that teaching and research accommodation is increasingly likely to be privately funded, and that where this funding comes from an individual donor the distinctive identity of the building may sometimes be important, convenient circulation between departments in a subject group and between subject groups has also to be considered. The density of land use on the campus is another factor. There is some scope in the plan for an eastwards extension of the Cottrell Building. This would allow the original aim of providing a compact and interconnected teaching and research environment to be met. Although it may be desirable for the overall height and plan geometry of the present building to be respected, it does not follow that an eastwards extension needs to match the existing building in its detail design, either externally or internally.

The ideal is for the development plan to make both kinds of expansion – free–standing and interconnected – possible, at least in the longer term.

7.4 Pathfoot has already been extended several times. Its adaptability and easy expansion have been useful characteristics. The space left on its site for further extension is now very limited, if the character of the building is not be spoilt. Pathfoot provides some specialised facilities, especially for the Institute of Aquaculture, which would be difficult to move. Continued expansion of some departments in Pathfoot should be achieved by decanting departments needing less specialised space to the centre of the campus.

7.5 An important ingredient in the planning of the University has been respect for the natural character of the site. The particular character of the site derives from its

comparatively intimate scale in contrast with the vastly greater scale of the natural landscape which surrounds it: the Ochil Hills, rising steeply above the site to the north and east; the broad flat carse to the west; Abbey Craig and Stirling, with the castle on its rock clearly visible, to the south; the widening of the river plain and the Firth of Forth, to the south-east. The 1968 Plan accepted the loch, major land forms and wooded areas as components in the design, with a useful role to play in shaping the changing environment. "The overall form proposed exploits and emphasises the natural formation of the site. The buildings rise in a shallow bowl in response to the ground form, and face each other across the loch. From many parts of the scheme the entire University will be visible at any time. Within this broad amphitheatre every element will stand revealed in its relationship to the whole". It is recommended that this broad strategy is sustained.

7.6 Respect for the site's natural features in the layout of the University's buildings has extended to careful attention to landscape design and maintenance. New woodland planting was intended by the University's planners in the late 1960s to be used to reinforce tree belts, and to adjust the shape of old woodland to suit the new spaces created by buildings and the new uses which were to be developed within the site. Large species were used to form strong lines and to define open spaces – either by enclosure (acting as "walls" to open air "rooms") or by contrast with lawns and distant buildings (acting as "furnishings"). The species of trees used was directly related to their distance from the buildings. At a distance from buildings, larger heavier species were used. Adjacent to buildings, lighter, smaller species were used. With the passage of time, some short-term shrub and tree planting which was carried out initially has now matured and needs to be modified and replaced. The introduction of small-scaled decorative trees into previously open spaces in recent years has attracted criticism. It is likely that they will compromise the clarity of the original plan when they grow to maturity. Historic Scotland have expressed the view that there is an urgent need for a detailed landscape appraisal, and that the appraisal and proposals for the future management of the landscape should be incorporated into the development plan for the campus. An appraisal has been prepared by Ian White Associates, the landscape consultants retained by the University for the Development Plan Review, and is appended to this Interim Plan. It is recommended that the advice in it be implemented.

7.7 The concerns which have been expressed to the University by Historic Scotland about the capacity of the estate for further development, especially in the main remaining undeveloped area in the vicinity of Airthrey Castle (see para 1.6) mean that proposals for land use, and the form of developments, on the east of the loch have to be treated with special care. Since the 1968 plan and was prepared and discussed with the planning authorities, public awareness of the importance of landscape conservation has increased and has been reflected in statutory recognition. In 1992 the campus was designated a Historic Garden Landscape under the terms of a new General Development Order. Historic Scotland, who were consulted on the planning application for Alexander Court, indicated at that time that a strong case would need to be made for development to the south of Airthrey Castle if their objections were to be avoided. Subsequent meetings of the University and its consultants, with representatives of the planning authority, Historic Scotland and Scottish Natural Heritage, have kept these bodies advised of the issues arising from the Development Planning process, with the aim of reaching agreement in principle on appropriate scales and forms of development. Preliminary zoning and trial layouts for two areas south of Airthrey Castle have been discussed at site meetings, and have been developed to reduce their impact on the castle, in terms both of views of the castle, and of views from the castle. Historic Scotland have welcomed these efforts and the development of the proposals, and have now accepted that the opportunity for avoiding the impact of development in front of the castle is extremely limited. The modified layouts have been informally agreed in principle, although it may not be

possible to obtain confirmation of this agreement until planning applications are submitted and approved. These informal agreements are broadly consistent with the intentions of the 1968 Plan and its 1973 review.

7.8 It is proposed, subject to planning agreement to the approach discussed in paragraph 7.7, that the broad development principles of the 1968 Plan and its 1973 Review should continue to be followed up to the 7000 FTE stage.

8 Land use and built form for the 7000 FTE University

Academic departments

8.1 It is proposed that the requirement for additional accommodation for academic departments is met by a combination of:

(a) Occupying the accommodation at present occupied by the University administration, at the north western end of the Cottrell Building (This would provide an additional 2039 sq m. net usable floor area of academic departmental accommodation similar in character to the non-science areas of the Cottrell Building. The conversion costs would be small if these areas were occupied by non-science departments),

and,

(b) Building an extension at the eastern end of the Cottrell Building. If this took the plan form of the building proposed in the 1968 plan and the 1973 review, and was built to the roof height of the remaining Cottrell Building, it would provide 3656 sq m. net usable floor area for this purpose. This estimate allows for a change in ground level which would rule out an extension eastwards of the present ground floor level. Some or all of this area could be purpose-designed for expansion of existing science departments or for new subjects. It is proposed that the extension would complement the form of the present Cottrell Building as regards roof height, floor-to-floor heights, circulation corridors and depth of plan, but would not necessarily match exactly the structure or facade of the present building building.

Lecture and seminar rooms

8.2 A new free-standing 300 seat lecture theatre is proposed at the south of the Cottrell building near to the Logie lecture theatre.

8.3 The southern entrance of the Cottrell Building will grow in importance as buildings to the south of Cottrell are expanded and built, and as parking in this area is extended. It is proposed that the levels, pedestrian routes, and hard and soft landscaping outside the south entrance are re-designed and re-shaped to reflect the future importance of this precinct, and that the forms and materials of new structures (such as the new lecture theatre and the Dementia Centre) are carefully related to it.

8.4 The eastward extension of the Cottrell building would provide (in addition to academic departmental space) a further 1675 sq m. of lecture and seminar room space.

Academic services

8.5 The University library building would best be extended westwards. It is envisaged that the extension would complement the present library building by matching its overall form and materials. Together with some expansion into the existing studies area, an additional supervised library space of 2278 sq m. net usable area is proposed, an expansion of some 50%.

8.6 It is proposed that new study areas are located on the promontory to the east of the existing Central Area buildings, adjacent to new social facilities, some commercial services, student services, and administration accommodation. It is envisaged that private

study areas will in future increasingly provide computer workstations, and that they will need to be close to university or commercial computer-related facilities. The total net usable area of study facilities on the promontory, including replacement of the studies displaced by the library extension, would be 1456 sq m.

Social and dining areas, and kitchens

8.7 One more main meal restaurant is proposed in the eastward extension of the central area buildings on the promontory, associated with common rooms and, if required, a staff club. The net area including kitchens would be some 1150 sq. m.

8.8 The south-east facing slopes of the promontory would provide an attractive site for social use. The rooms would face onto lawns sweeping down to the water and overlook the island at this corner of the loch. A new building or group of buildings is proposed combining this accommodation with the study areas referred to in paragraph 8.6 and also the new administration and student services referred to in paragraph 8.13. The building forms would follow the line of the contours, and in section they would have a mixture of one and two storeys, stepping down the slope, with pitched roofs.

8.9 Some social space is allowed for in the new residences areas.

8.10 A need has been identified for a new large multi-purpose hall on the campus, to serve the 7000 FTE University. The hall would provide space for examinations, conferences, exhibitions, graduation ceremonies, concerts, and social events. The main hall would be provided with coffee bars and other support accommodation. It is possible that such a hall would attract an earmarked donation, and for this reason, as well as for other good reasons, its location on the campus, setting and design should be distinctive and attractive. The building might need to be operated in conjunction with the MacRobert Centre.

8.11 The prime requirements for such a hall are:

(a) A distinctive and attractive setting.

(b) Proximity to large areas of parking. These could be the parking areas to the rear of the Cottrell Building, because evening use by the hall would not interfere with daytime use by users of the Cottrell Building.

(c) Proximity to the MacRobert centre, with, preferably, an attractive pedestrian route between the two.

8.12 A site overlooking the south-eastern corner of the loch, and its island, is proposed. Figure 6 shows a large hall in this position in the context of present constraints on development in this part of the site. Paragraph 3.7 above reports on the prohibition, under the terms of the disposition of the Wang site, of any building on a strip of ground 30 m. wide adjacent to its west boundary. Figures 4, 5 and 6 show how severely this prohibition limits the use of ground in this important area of the campus. Studies have shown that if this prohibition could possibly be removed by negotiation, the site would be much more suitable. Its area would be considerably larger, and the plan and orientation of the building to suit its setting could be improved. The building could have a longer frontage to the loch and be orientated to face directly the island and social buildings on the promontory. It is strongly recommended that this prohibition on building in such a

critical part of the University's layout be discussed, and if possible a waiver agreed, with the new owners of the Tandem site.

Administration and student services

8.13 It is proposed that the University administration, together with the Court Room suite and meeting rooms, together with student services, be relocated in a new building or group of buildings on the central promontory. It would share this site with study areas and social space, including, possibly, a staff club. The internal route through the present central area buildings would need to be considerably upgraded. An access road and parking scaled to the needs of these buildings would be provided on their northern side, screened from the lochside view.

8.14 New purpose-built central stores in a secure precinct are proposed, located near to the maintenance area, and served by road an access road designed for heavy goods vehicles.

8.15 Airthrey Castle is currently occupied by Continuing Education. It is assumed that it will continue to provide this type of accommodation.

Independent Institutes and Support Activities

8.16 It is proposed that the plan for 7000 FTEs makes allowance for substantial further expansion of the Management Centre and the development of a Dementia Centre. Provision of sites and parking for further free-standing teaching-related or research-related buildings is considered unlikely before the 7000 stage is reached, but should be feasible if required before that time. It is proposed that land and road routes should be safeguarded to the south of the Management Centre for this purpose.

8.17 Some all-weather pitches and a small multi-purpose hall, with changing rooms, are proposed on the level ground to the east of the loch.

8.18 A suitable site for a group of further shops and other commercial units would be to the northeast of the present shops, beside the existing footbridge. The view of the rear of the present shops is unsightly: an access balcony, refuse bins and a loading dock are at present exposed to view from the residences side of the loch and from the footbridge. This view should be screened by new shops, with service access to them concealed from view.

Student Residences

8.19 The location and form of student residences on the east of the loch is constrained by the need to ensure that the parkland character of the setting to Airthrey Castle is not overwhelmed. The following approach is recommended:

(a) Clear views of the castle, undisturbed by views of closely adjacent modern buildings, should be possible from the following key viewpoints:

- the footpath between the existing residences and the loch. This is one of the original approach driveways to the castle.

- the Cottrell Building and the surroundings of the small loch in front of the MacRobert Centre.

- the approach road to the University from the south–east, from which a distant glimpse of Airthrey Castle is possible.

- the road from the East Lodge, from a point near to that at which it climbs up to the surrounding field level. This was also an original approach driveway to the castle.

(b) Views out from the main rooms of the castle of its immediate surroundings should be of open space, designed so far as possible to reflect the original parkland landscape. Distant views of the Carse of Stirling and the Wallace Monument should be retained, and the view of the horizontal roofline of the Tandem building broken up by shrub planting at the Tandem boundary.

8.20 Figure 5 illustrates a trial layout for the residences east of the loch. Two building zones are proposed.

(a) Area 6 (as it has come to be known) is an area of relatively level ground set against a background of existing mature woodland at the eastern edge of the site. Its northern limit avoids building too close to the castle and opens up views from the drive. Its south–western limit is set by the limit of the woodland and the need to preserve views of the Carse from the castle.

(b) Area 7 is a development zone set against the south–west slopes at the south–western corner of the site. The northern limit of Area 7 allows the bulk of the development to be screened from the castle, by using both the landform and trees. The southern limit of Area 7 is determined by the loop road connecting the eastern residences to the rest of the internal road system, and by the Tandem site boundary and a strip of ground adjacent to it. The road can not be within the Tandem boundary, unless a wayleave can be obtained or an alteration to the boundary negotiated. The disposition of the Tandem site to Wang Ltd in 1984 included provisions that the University would not build on a strip of ground 100 feet wide lying adjacent to the northern and western boundaries of the site. Buildings on Area 7 may not be within this strip unless a wayleave or disposal can be negotiated. The useful area of this site, and the number of students accommodated, could be increased if these limitations on site area could be eased. It is strongly recommended that this possibility be discussed with the owners of the Tandem site. The transfer of a 40 m wide strip of ground along the west boundary of the Tandem site, as indicated in Figure 5, would allow the road to follow an easier alignment, the area available for residences to be increased, and structure planting to be introduced.

8.21 The trial layout indicates that 1104 bedspaces can be provided in Area 6, assuming that the buildings are generally 4 storeys high, dropping to 3 storeys at the western end of each leg. The notional plan is based on a feasibility study prepared for this site by TEAM Management (Scotland) Ltd in 1992, with some adjustments in block spacings and orientation to allow greater penetration of sunlight and improve privacy.

8.22 The trial layout shows that 324 bedspaces can be provided in Area 7, assuming that the building at the top of the slope is no more than 2 storeys high, and that the other buildings are 3 storeys, increasing to 4 storeys at the bottom of the slope. The notional plan is based on RMJM's plans for the residences on the north of the loch.

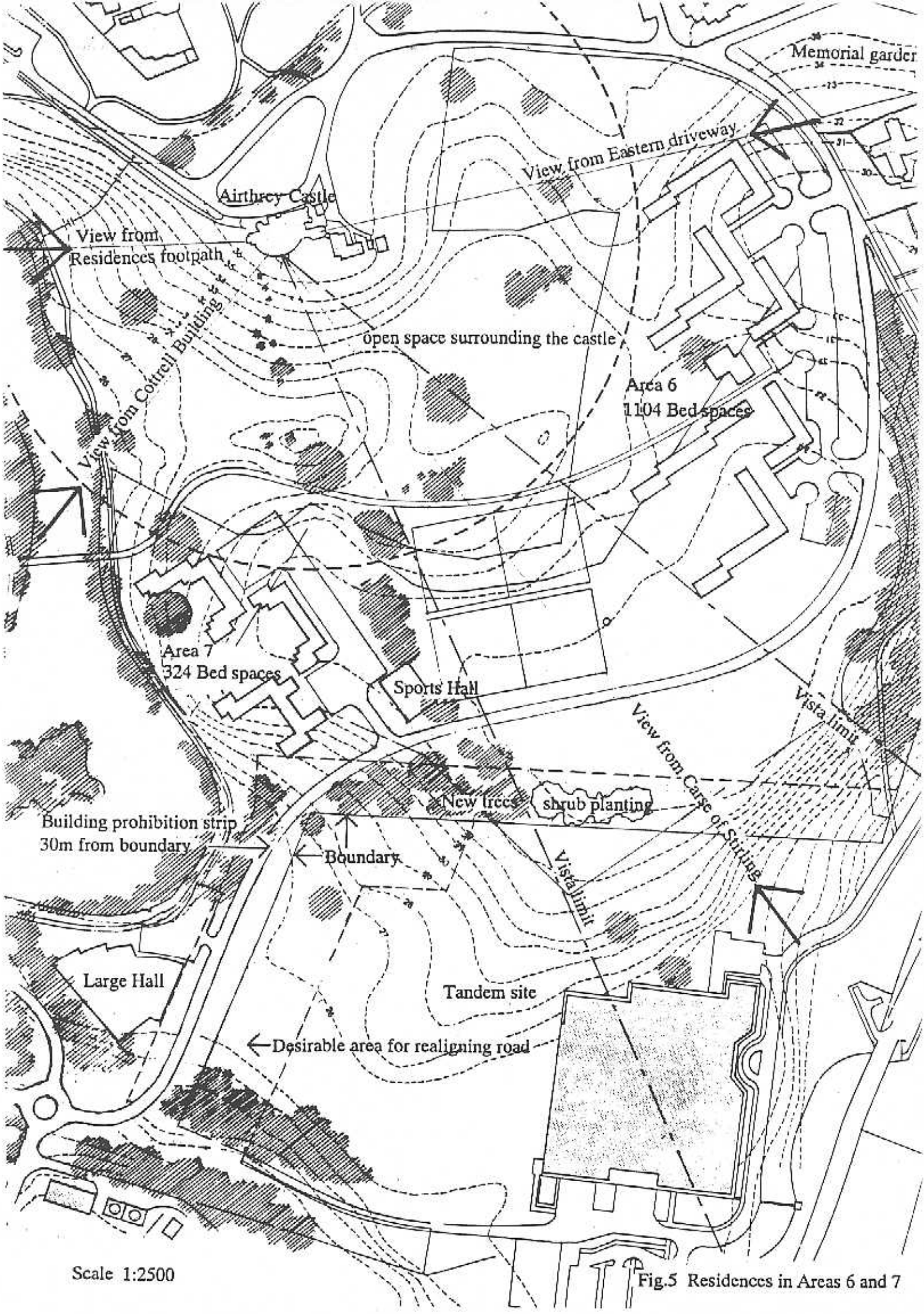

Fig.5 Residences in Areas 6 and 7

8.23 Figure 5 shows these proposals, together with outline roads, parking, and landscape proposals, in the context of the likely constraints on development in this part of the site.

8.24 Two other residential developments have been planned on the campus:

(a) An extension to Alexander Court has been designed. It would provide 82 bedspaces if built.

(b) A cottage-type development of student flats has been designed for the southern part of the Nursery Garden area. Plans have been taken to the stage at which planning consent and a tender for detailed design and construction could be obtained at short notice. The scheme would provide 168 student bedspaces (with a maximum of 224 for holiday lettings)

Historic buildings

8.25 Airthrey Castle is listed (Category B) as a building of historical and architectural interest, as is its East Lodge (Category C upgraded to B). The castle has been occupied since the University moved to Airthrey. Although repairs have been undertaken, its condition has always given concern. It is recommended that previous condition surveys be updated, and repairs necessary to bring the castle into good condition undertaken. The Nurses' Home addition, built in a period of post-war austerity, is out of character and detracts from the main building. If it can not be dispensed with, it should at least be hidden by trees or creeper. The East Lodge is unoccupied and ruinous. Its condition should be surveyed and a viable plan for its repair and occupation be prepared. Alternatively it should be marketed.

9 Traffic and parking proposals

9.1 The population assumptions, made in 1992, on which the report by JMP Consultants Ltd was based were as follows:

User group	Year 1992	Year 1994	Year 2002
Non-resident students	2,200	2,500	3,300
Resident students	2,300	2,500	3,700
Staff	1,230	1,460	1,830

The 1994/5 population figures may differ from these assumptions, and the capacity for residential development on the site in 2002 will be slightly less than assumed in the consultants traffic report. The differences are not sufficient to alter materially the consultants' recommendations which follow.

9.2 The predicted levels of students and staff (unadjusted for reductions resulting from car pooling and future transfers from car to bus and cycle modes) will cause traffic volumes through both access junctions to increase from the 1992 levels of approximately 760 vehicle trips (2-way) during the peak periods to approximately 1,100 vehicle trips (2-way) in 2002. Car pooling to reduce occupancy in staff cars, and the modal changes resulting from CDC's "All Change!" strategies might reduce total traffic by 13%, and parking demand by 270 spaces, in 2002. The recommendations for roads and parking which follow do not assume these reductions.

Short term infrastructure requirements

9.3 The current access difficulties at the Airthrey Road junction occur at peak periods. Central Region considered, at the time of JMP's 1992 studies, that car pooling and staggered working hours would improve the operation of the junction without expenditure on infrastructure. The University's traffic consultants did not recommend traffic improvements at the junction at that time. The increase in traffic since 1992 has put additional pressure on both campus access junctions and the main routes through the campus. It is recommended that a study of the Airthrey Road access now be undertaken to determine whether junction improvements will be necessary shortly. Such a study, together with a Traffic Impact Analysis, may be required as a condition of consent for future developments on the campus. A preliminary assessment of the likely effects of traffic in 1994 shows that the design criteria for the junction will be exceeded, and that traffic signals may be required.

9.4 Forward visibility on parts of the existing primary road near to the Cottrell Building west car park, is below the standard for a 20 mph speed limit, and it is recommended as a short term measure that the limit on this section is reduced to 15 mph.

9.5 The existing road between the boilerhouse and Queen's Court is 5.5.m. wide. Parking is not permitted on this section to maintain a clearway for buses and HGVs. This restriction should continue to be enforced.

9.6 Queen's Court should not continue to be used as a bus terminal. Two options should be considered:

(a) Buses might only use Queen's Court as a set-down and pick-up point. Under this option buses would wait until required at a lay-by at a point on the north side of the access road to Queen's Court (near to its junction with the west car park). Buses would stop briefly to set down and pick up on the east side of Queen's Court, where a waiting shelter could be provided – possibly as part of the MacRobert expansion plans. The main advantage of this option would be its convenience for passengers, who could wait for buses in the shelter and security of the lounge overlooking Queen's Court. A secondary benefit would be that buses, which presently stop near to the Cottrell Building, would cause slightly less disturbance.

(b) Buses might stop at a new bus station at the north end of the west car park. Under this option buses would not enter Queen's Court. The bus station would be equipped with bus shelters. The advantage of this option would be the removal of bus traffic, with its attendant noise, pollution, and danger, from Queen's Court. This option would combine best with proposals which follow for converting Queen's Court into a pedestrian-priority area. The north end of the west car park is reasonably close to the main centre of use and need not be easily visible from other parts of the campus, but the parking displaced would have to be provided elsewhere.

Option (a) might be experimented with at little cost before a final choice between these two options is made.

9.7 Improved advertising of public transport services should be promoted to encourage modal change.

9.8 Currently there is a parking shortfall of approximately 30 spaces. Provision of these additional spaces and improved enforcement of the parking permit system would create sufficient parking adjacent to academic buildings for staff, in the short term. As a temporary measure the Pathfoot Building rear (upper) car park might be identified for use by students, to increase the total number of student spaces to a suitable level.

9.9 Parking enforcement should be improved. Currently the amount of inconvenience suffered by parking offenders does not appear to outweigh the benefits of illegal parking. An enforcement regime is required which is consistently and constantly applied, and which deters illegal parking.

9.10 The permit parking system needs to be extended to include day visitors. This may call for the provision of information booths near the entrances to the campus. Visitor spaces should be identified within the existing Cottrell car park (30 spaces) and the Pathfoot car park (10 spaces).

9.11 It is recommended that the roads within the campus, other than the Innovation Park, are not adopted. Control of the campus roads should remain with the University so that it can determine the level of access and vehicle penetration suitable for the University's development.

Future infrastructure requirements for the 7000 FTE University

9.12 No infrastructure improvements in the vicinity of the campus are currently included in CRC's roads programme. CRC's future policy will change the emphasis of the Region's capital expenditure in favour of public transport and other alternatives to private car travel. If significant road improvements were to be required as a result of traffic impacts on the road network caused by the future development of the University, a contribution towards costs might be sought by the Region. It is recommended that CRC's "All Change!" policies should be welcomed and, so far as is practicable, supported by the University to reduce these impacts.

9.13 The traffic consultants recommend the following levels of parking provision for each user group:

User group	Projected population	Desirable standard	Desirable provision
Staff (academic, administrative, operational)	1830	0.67 av. spaces/person	1226
Day visitors		0.03 spaces/staff	54
Resident students	3700	0.11 spaces/student	407
Non-resident students	3300	0.11 spaces/student	363
			2050

9.14 Academic staff and visitor parking should be provided adjacent to academic buildings. Administrative staff and visitor parking should be adjacent to administrative buildings. Limited parking should be adjacent to social and sports buildings. The intermittent large parking demands of visitors to the proposed large hall (which will usually occur in the evenings and vacations) should be met by academic staff parking areas, within a short walking distance at the rear of the Cottrell Building. Student parking for resident students should be adjacent to residential areas. Although until recently non-resident students were expected to park adjacent to residences, it is now realised that it is unrealistic to expect non-resident students to park adjacent to the residences such as Alexander Court remote from the central area. The parking provision for these more remote residences should be scaled instead to the needs of the residents occupying them.

9.15 The following distribution of parking provision for the 7000 FTE University, based on the traffic consultants' standards, is proposed:

Pathfoot	220
Rear of Cottrell	900
Management Centre	100
MacRobert	30
Central area (Admin, social, studies)	80
Large Hall	50
Gannochy	20

Residences on north side of loch	420
Airthrey Castle	40
Alexander Court residences	45
Nursery Gardens residences	20
Residences Area 6	86
Residences Area 7	39
	2050

All parking proposals should include a reasonable allowance for disabled drivers.

9.16 A primary road link should be constructed at the rear of the Cottrell Building to connect the Aithrey Road and Hillfoots Road accesses, for three inter-related reasons:

(a) to allow the access through Queen's Court to be closed to private vehicles and buses.

(b) to relieve pressure on the Airthrey junction and the Causewayhead road system, by encouraging traffic between the west of the campus and the public road network east of the University to make use of the Hillfoots Road junction.

(c) to serve the extensive car parking areas proposed at the rear of Cottrell. Car users will seek parking spaces close to several entrances to the Cottrell building, and the road giving access to this parking will need to serve traffic arriving from, or departing to, origins and destinations east and west of the University;

9.17 Queen's Court should be designated as a pedestrian priority area, and its paved surfaces and landscaping should be redesigned to suit this new function. Depending on the choice made between the options described in para 9.6, buses might only use Queen's Court as a set-down and pick-up point, or not use it at all. In either event, through traffic should not be permitted, for environmental and safety reasons. Service access to the MacRobert Centre may need to be permitted. Depending on which option is adopted, the road closure should be either on the west approach road to Queen's Court, or at its south eastern corner.

9.18 The secondary road network serving the present residences should be extended around the east of the loch as far as a new junction with the Innovation Park road, to create a campus loop road system, for three inter-related reasons:

(a) to serve the residences in Areas 6 and 7, and to give access to their associated parking;

(b) to relieve pressure on the Aithrey junction and the Causewayhead road system, by allowing traffic between the residences and the public road network east of the University to make use of the Hillfoots Road junction;

(c) to facilitate service vehicle movements generally within the campus, and to avoid the long cul-de-sac that would otherwise be created by extending the residences road to the south-eastern corner of the loch. A cul-de-sac of such length might be unacceptable to emergency services.

9.19 Engineering drawings of the plan and profile of the proposed road at the rear of the Cottrell Building have been prepared. A carriageway width of 7.3 m is provided (as for the present road access from the Airthrey junction) and 3 m. each side for verges and footways. The road alignment has relatively small radii so that speeds will be controlled. Traffic calming features in the form of chicanes have been incorporated to ensure speed reduction. Provision has been made for bus lay-bys near to the main pedestrian route on the approach to the Cottrell south entrance, but not so near as to cause disturbance to the Management Centre. With the relatively low volumes of traffic expected, and with the provision of these traffic calming measures it is estimated that traffic movements will not be such as to cause disturbance to adjacent building users or significant hazards to pedestrians. A designated surface pedestrian crossing close to the Management Centre is proposed. A bridge or underpass may possibly be justified by pedestrian movements later in the University's development beyond the 7000 FTE stage but is not considered necessary at this stage.

9.20 Several design options have been prepared and compared for the junction of the primary link road at the rear of Cottrell with the Innovation Park Road, the road between Cottrell and the loch (serving the MacRobert, the buildings on the promontory, and, at present, Queen's Court), and the proposed residences loop road. On the basis of engineering layouts and costings, a roundabout has been recommended as the preferred junction: it is conceptually clear and appropriate, and consumes slightly less land, involves roads with lower gradients, and requires less tree felling, by comparison with other options.

9.21 Enhancement of forward visibility on the primary road near to the Cottrell west car park should be undertaken simultaneously with the construction of the proposed primary link to the rear of Cottrell.

9.22 If future parking demands increase to the point at which they outstrip an acceptable level of supply, the University may need to consider controlling vehicle access to the campus. Control could be achieved by barriers across approach routes, controlled manually or by "smart cards". These forms of control could only be introduced effectively if accompanied by the provision of overspill parking areas where non-permit holders could leave their cars and continue their journey into the campus on foot, by public transport, or by shuttle bus. It is unlikely that these measures will be needed before the completion of the 7000 FTE stage, after which the provision of additional parking may possibly be restricted by development density.

9.23 CRC intend that cycle routes between Stirling, Bridge of Allan and the University campus are improved. The University should encourage the use of cycles, not least because the reduced speed network within the campus is already well suited to this mode of travel. Measures might include traffic calming measures on campus roads, separate cycle paths, and the provision of secure cycle parking racks. Further studies are needed on the routing of cycle paths within the campus.

9.24 The shortcomings in the footpath network identified in para 4.29 should be made good. A new major footpath will be needed to connect the new buildings on the promontory with the residences east of the loch. A new footbridge is proposed, and a footpath connecting it to residences in Areas 7 and 6, and thence to Alexander Court and the Nursery Gardens cottages. An improved footpath link between the MacRobert Centre and the site of the proposed new large hall will be needed.

10 Long Term Development

10.1 A general planning framework for development on the campus in the long term, beyond the 7000 student stage, is proposed for two reasons:

(a) to give an indication of the ultimate capacity of the site for development, consistent with the conservation of its amenity;

(b) to ensure that sites for buildings, roads, parking and structure planting which may be needed in the long-term are safeguarded.

10.2 The physical plan proposed for development to suit a medium term population figure of 7000 FTEs , which for the sake of this report is called Phase 3, is illustrated in Figure 6. It can be seen that room for more development than this is severely limited in the areas north and east of the loch, on the central promontory, and south of the loch in the vicinity of the Cottrell Building, if a sense of overcrowding is to be avoided. The main constraints are these:

(a) Steep slopes prohibit an eastwards extension of the residences north of the loch, and there is virtually no scope for infill between the present residences in this area to increase their density without severely reducing their amenity. The problems of increasing residential provision east of the loch have been discussed in this report. It has been suggested by Historic Scotland that the Memorial Garden might be moved to a new site immediately east of the castle, to provide an opportunity for restoring the 19th century formal garden which lay in this position. Its present site could then be used for residences. The resulting residential provision would however only be small, and any proposal to disturb the Memorial Garden might be met with concern, requiring the agreement of those most closely involved in its creation and management. In this report it is assumed that there is no scope for developing buildings in this small area.

(b) There is some scope for expanding the buildings proposed for Stage 3 on the central promontory, together with their associated parking. Buildings on this promontory should not be more than two storeys high if they are not to be unduly obtrusive in relation to the castle, and if the overall form of the University, visible as a shallow bowl in response to ground form, is not to be compromised. An extension of some 2000 sq m. is achievable without compromising amenity.

(c) There is little scope for adding accommodation between the Cottrell Building and the Management Centre, beyond that proposed for Phase 3, and none for extending the Cottrell Building to the east or west.

10.6 A substantial development site is available on the rising ground to the south of the Management Centre. It is recommended that this site should be safeguarded for the provision of free-standing buildings for teaching or research. It could form an attractive precinct for independent institutes or other facilities with a distinctive identity. A half-circle of such buildings, enclosing a semi-private lawn, is proposed. As seen from the Cottrell Building or the Management Centre, the institutes would be framed by a belt of mature trees. Roads and parking would be concealed at their rear. Some 6000 sq. m. net floorspace could be provided in this way.

10.7 The only potential for expansion greater than this on the University campus lies in the area to the west of the main University development, ie on the playing fields, on the

land adjacent to Fairview, on the Spittal Hill Chalets site, and on the slopes of the hill to its south east.

10.8 Expansion into this area would depend on a decision to make two strategic changes to the pattern of development adopted to date:

(a) The main playing fields, and probably their associated sports accommodation, would need to be relocated off the campus. The capital cost implications of such a move would be significant. Apart from land purchase, it might be necessary to relocate the Gannochy pavilion, swimming pool, sports hall and tennis hall to keep their present close functional relationship with open air facilities. The large grants which have been received for these buildings would be a factor needing to be taken into account. A number of new locations might be considered. No sites have been assessed for their availability in the long term or for the compatability of their use as playing fields with the planning authority's policies.

(b) A new road would need to be built to serve the developments and their associated parking.

10.9 Figure 7 illustrates this general planning framework. Preliminary design studies show that it should be possible to provide a floor area of some 37,000 sq. m. (net usable) in the development areas indicated, given reasonable design assumptions. If combined with some 2,000 sq. m. net area addition to administration on the central area promontory, and some 3,000 sq. m. net area provision of mainstream academic accommodation in the "independent institutes" area to the south of the Management Centre, the development areas to the west of the campus should provide teaching and research space for 12,000 FTE students at the space standards proposed for Phase 3.

10.10 The slopes of the hill to the south east of the Spittal Hill chalets have limited development potential. It is estimated that two or three separate low buildings (2 or 3 storeys) aligned parallel with the contours and road would provide some 3,500 sq. m. net area.

10.11 It is assumed that the Spittal Hill chalets will have come to the end of their useful life by the commencement of Phase 4. It is estimated that their site would provide some 5,500 sq. m. net area in buildings 3 storeys high.

10.12 The playing fields site is suitable for development at a fairly high density. A series of buildings up to 6 storeys high, interconnected by general teaching space single storey buildings at ground level, could provide some 28,000 sq. m. net. of teaching and research accommodation. If the higher buildings were glimpsed over the trees lining Airthrey Road they would signal the presence of the University. Seen from inside the campus they would mark a separate and radically new stage of development.

10.13 A new primary road is proposed to serve this phase, connecting with the existing primary route near to the Airthrey access (at the point where it is joined by the residences loop) and with the proposed primary link road at the rear of the Cottrell Building (at the point where it gives access to the largest of the new car parks proposed). New structure planting is proposed between this route and the Innovation Park.

10.14 It is recommended that the University investigates:

(a) the costs and benefits of separating its sports facilities from the main campus in the long term;

(b) the likely availability of land conveniently near to the campus for sports facilities;

(c) the likely acceptability to the planning authority of provision of sports facilities on land adjacent to but outwith the campus, and of the visual impact of new buildings seen from Airthrey Road;

to determine the feasibility of the long term possibilties indicated.

10.15 If the University is satisfied that expansion on this scale on the campus is desirable and feasible, it should take account of the possibility in its physical planning by safeguarding sites for buildings, roads, parking and structure planting so that development can proceeed in an orderly way.

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31 March 1994

Fig.6 Development Phase 3 7000 FTEs

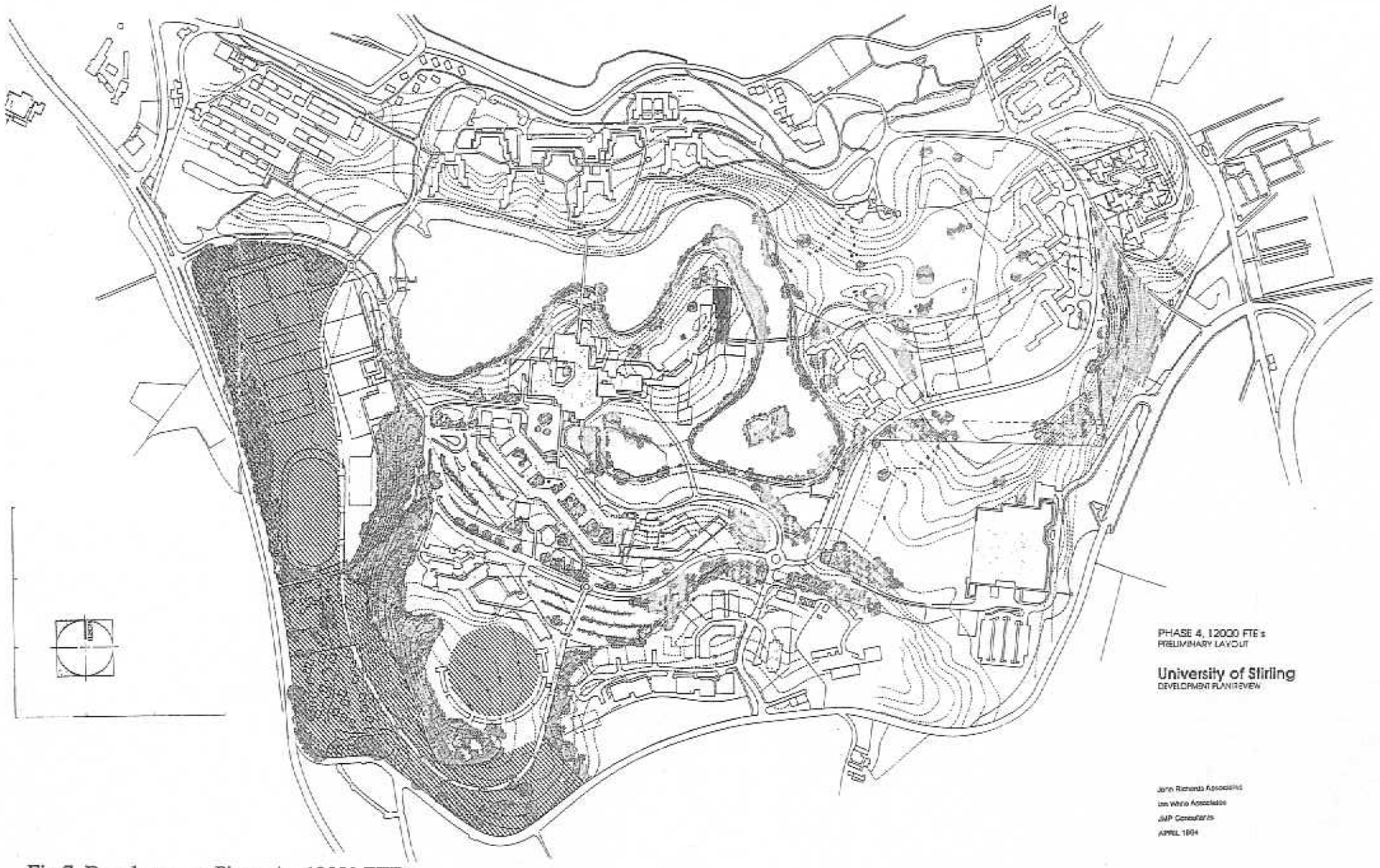

Fig.7 Development Phase 4 12000 FTEs

UNIVERSITY OF STIRLING
INTERIM DEVELOPMENT PLAN - LANDSCAPE **APPENDIX A**

1.0 INTRODUCTION

1.1 The quality of its setting and campus landscape is of considerable value to the University and an integral part of its appeal to students and visitors. Scottish Natural Heritage has confirmed this by designating Airthrey Estate a Designed Landscape of great value. The designation is based on the quality of the original Airthrey Estate which was designed in a classical 18th Century parkland style and also on the very high quality of site planning and architecture achieved by the University buildings. In both instances the quality of landscape created is due to a sympathetic relationship between buildings, landform, water and tree planting.

1.2 A basic aim of the Development Plan Review is to satisfy all of the requirements of an expanding University while maintaining the quality of its campus setting and as part of this process it is important to consider the essential characteristics of both the original estate layout and the principles of design on which the University campus is based.

2.0 AIRTHREY ESTATE

2.1 Airthrey Castle was built around 1792 for Robert Haldane, a retired naval officer, to the design of Robert Adam. Adam's romantic design for the Castle was influenced by his knowledge of classical Italian landscape as was the layout of the estate landscape completed by Thomas White from County Durham in 1798. White was a pupil of "Capability" Brown and with his son Thomas White Jun. completed over forty major commissions throughout Scotland during the period 1780-1819.

2.2 White employed a simple approach to design which was typified by a serpentine approach road, rising to a house on a hill and passing en route the maximum number of newly formed clumps of trees. The function of peripheral woodland was to hide the edges of the park and the hardwood plantings of the design were intended to have a life span of 200 years. In the Claudian tradition water is the link between foreground and background yet the Whites appear to have little interest in, or make great use of water and the artificial Airthrey Loch is thought to have been created by Robert Haldane. Although no contemporary records exist for the original layout White's explanation for his design at Scone Palace sums up his approach to design which was surely employed at Airthrey " *to raise up such plantations as well as shut out deformitys, heighten its beautys, and by breaking the distant scenery as you pass along, introduce the same objects in different lights, and points of view and thereby give you an agreeable change of Scene.*"

2.3 The O.S. edition of 1899 clearly shows the essential characteristics of the original layout. The Estate is dominated by Airthrey Castle located on rising ground against the wooded crags of Hermitage Wood to the north and with commanding views southwards towards Abbey Craig, the Carse of the River Forth, and over Airthrey Loch which forms a secondary focus within the western section of the Estate. Other buildings and productive functions such as the walled garden are carefully located within woodland and separated from the main house so as not to threaten the integrity of its setting. The main plantations within the Estate run in north/south strips, on steep slopes or along the ridges of high ground e.g. Spittal Hill to thus provide maximum shelter from prevailing winds combined with maximum southerly exposure. As well as concealing the edges of the parkland these woodland strips influence views from the house and heighten the appearance of the landform just as the loch increases the depth of the landscape. Individual specimens and numerous clumps of deciduous trees are planted throughout the open land within view of the main house and the movement of stock within this southerly zone was controlled by a ha-ha ditch which ran between Spittal Hill and Craigton. The entire three hundred acre estate was enclosed by a high stone wall and the principle points of entry for visitors were the east and west lodges where, upon entering visitors were treated to a sequence of views intended to impress and delight before the principal focus, the Castle, was revealed. In 1799 the Estate was sold to Sir Robert Abercromby who completed the 'improvements' by relocating Logie Kirk and Village.

2.4 In 1889 the Estate was sold to Donald Graham, a Glasgow Merchant who had spent a great deal of time in India. He enlarged the Castle and in accordance with Victorian fashion for plant collections introduced many exotic and non-indigenous species which contrasted with the plainer style of the classical estate planting of the previous century. Most of this planting was carried out in the woodland to the north and east of the Castle and at the water edge; it is of such an extent and quality as to selectively enrich the original woodland structure of the estate. Photographic illustrations in the 1968/69 University Prospectus suggest that the overall landscape structure did not change significantly until the University development commenced in 1967.

3.0 UNIVERSITY CAMPUS

3.1 The transformation of an estate landscape focused on a single building to a multi-centred University development has been achieved with great skill and owes much of its success to establishing a modern relationship between buildings and landscape which exemplifies the original layout. Teaching and residential buildings are focused around Airthrey Loch to create a direct relationship between buildings and water. Although the west lodge and drive no longer exist a pleasant avenue and view of fine buildings over water impresses visitors as they enter the University in much the style as the original layout two centuries before. The layout of residential blocks is designed to provide students with the same fine views and southerly aspect as might have been enjoyed by the inhabitants of Airthrey Castle. Functional elements such as the boiler house and maintenance buildings are hidden in woodland, and limited new woodland planting has been carried out mainly to adjust the shape of the old woodland to suit the new spaces and uses which were developing within the site. Other short-term ornamental planting of shrubs and decorative tree species has been carried out as part of building developments and the whole maintained to a very high standard by University ground staff.

3.2 Post 1973

Since the end of the initial phase of building in 1973 the main changes in the appearance of the landscape have been in the introduction of separate buildings outwith the core area such as the Gannochy complex, the Innovation Centre and the Management Centre. The different forms and functions of each of these buildings create separate zones of influence which will affect the appearance of the University campus and it is important to ensure that they are fully integrated within the woodland structure of the Estate. The growth in demand for car parking and the limited capacity of the original road system are having an important influence on the quality of external spaces surrounding buildings and the overall appearance of the campus where it is increasingly necessary to order and manage parking spaces in such a way as to prevent unnecessary intrusion into the central amenity of the campus. Short-term shrub and tree planting which was carried out as part of the initial building development has now matured and the University has commenced a programme of modification and replacement which will maintain a pleasant, ordered and safe environment. It will shortly be necessary to review and modify water edge planting in order to maintain a diversity of views to Airthrey Loch which is a fundamental characteristic of the campus landscape and in order to maintain succession of the now mature deciduous clump planting of the original estate it will be necessary to limit and modify the extent of decorative tree species which has been characteristic of campus planting in the last ten years. The management of the Hermitage Wood and peripheral woodland planting has been influenced by commercial factors and therefore has seen the introduction of stands of coniferous species, however it is likely that this trend will cease in favour of a return to a mixed woodland which in the long-term will be dominated by indigenous species. A comprehensive appraisal of all woodland and tree planting has been carried out and phased programme of management prescriptions is in the course of preparation.

4.0 LANDSCAPE APPRAISAL SUMMARY

4.1 The original landscape structure of the Airthrey Estate still substantially exists and provides a high quality setting for the University. It is necessary to conserve the basic structure of woodland planting, modifying and adjusting it as necessary to accommode developing uses and activities. Carefully and sensitively located buildings within the landscape can maintain the quality of the campus and consideration must be given to the layout design and management of car parks and connecting roads in order to prevent unnecessary intrusions to the essential amenity of the campus.

5.0 LANDSCAPE STRATEGY

5.1 As an integral part of the Development Plan Review the landscape strategy will maintain the quality of the campus setting by the following means:

- Conservation and management of existing woodland.
- Extension of existing woodland to provide settings for new buildings.
- Rationalisation of existing planting.
- New planting to integrate roads and car parks.
- Sensitive location of new development.

5.2 Conservation of Existing Woodland.
Previously Hermitage Wood and other major woodlands have been managed on a semi-commercial basis. Following an appraisal of the current management plan for Hermitage Wood it is intended to alter the management prescriptions in favour of the long-term creation of a semi-natural mainly deciduous woodland with a range of native tree species and age classes. Rhododendron is currently being reduced through the involvement of Scottish Conservation Projects. Separate management plans are being produced for each part of the campus, which take into account landscape character and the requirements of future development e.g. the management plan for woodland adjacent to Alexander Court (which has been approved by the Local Planning Authority) aims to maintain an effective visual screen to Logie Kirk and the Hillfoots, to maintain a wildlife habitat as well as to encourage species and age class diversification.

5.3 Extension of Existing Woodland for Development.
Where necessary as part of the development process and preferably in advance of building construction it is proposed to extend existing plantations to provide settings for new development, thus maintaining the general character of the original planting. This principle was established in the 1968 Development Plan and has most recently been applied to chalet development at Spittal Hill, Scion House at the Innovation Park, and the woodland edge adjacent to the new residences at Alexander Court.

5.4 Rationalisation of Existing Planting.
Much of the shrub planting carried out in initial period of development now requires modification because it has matured and outgrown its location. A programme of pruning, clearance and replacement has been initiated which will reduce overhanging and improve visibility along pedestrian routes. Work of this type has therefore been carried out at Pathfoot and Queens Court as well as in the Cottrell courtyards.

5.5 New Planting.
To maintain the clarity of the campus layout, to unify and contain the functional uses of roads and carparking and create a hierarchy of ordered external spaces a range of functional planting types has been introduced which incudes beech hedging and ground cover planting within which individual specimen shrubs and trees can be incorporated to provide specific points of seasonal interest. This approach to planting has been applied to the chalets at Spittal Hill, residences at Alexander Court, the Medical Centre and the extension to the Management Centre.

5.6 Location of New Development.
To maintain the qualities of estate and campus it is proposed that the location of new development should conform to one of the following categories:

- New development should be an extension to the existing teaching and social core as envisaged by the 1968 and 1973 Development Plans.

- New development should be located close to the edges of the Estate with a background setting of woodland.

- New development outwith these zones should be located so as to maintain views, to and across water, within and beyond the campus, and should not interrupt the main visual horizons or ridges within the site.

A convenient example of the application of these principles is in the location of new development in the eastern section of the Estate which, in spite of the Wang/Tandem building is still largely dominated by Airthrey Castle.

5.7 Development and Airthrey Castle.
In 1965 the Secretary of State for Scotland gifted Airthrey Estate to the University and since that time the University has developed a campus of a quality which merits equal recognition with the original Estate layout. The pattern and rate of development has been such that some people now believe that it was originally envisaged that the eastern part of the Estate around Airthrey Castle would remain undeveloped in spite of the fact that both the 1968 and 1973 Development Plans show residences and playing fields in that location.

As the University continues to grow it is clear that the location and form of development adjacent to Airthrey Castle requires careful consideration. Since neither of the extremes of excluding all development from the vicinity of Airthrey Castle or encircling the Castle with development is appropriate an approach to development which encompasses the following principles is proposed:

- Development is excluded from the immediate vicinity of Airthrey Castle sufficient to enable the building to be viewed as a separate element in the landscape from viewpoints to the south, east and west.
- New building is restricted to low ground all to the edges of existing woodland belts and does not significantly disrupt existing visual horizons.
- Views to Airthrey Loch from the Castle are kept open and uninterrupted as are views of Abbey Craig.
- A progressive sequence of views of Airthrey Castle is maintained from the East Lodge, and from the West via the George Forrest Walk.

These influences on building development are shown in Figure No.5 and by adopting this approach the Development Plan maintains the essential characteristics of Whites original plan i.e. selected and sequential views of the Castle from the main approaches and maintenance of woodland structure. The principle threat to the original plan lies in the fate of Whites clumps of trees which occupy the space between house and perimeter woodland. Ironically Whites designs were frequently criticised (especially by Loudon) as having clumps of trees which were too random and too numerous and this tendency has been compounded by the extensive planting of ornamental tree species in association with the pitch and putt course to the south of the Castle. This planting confuses the intentions of the original design and does not provide for adequate succession for the mature tree planting, or create a spatial structure which could relate to existing or future buildings. Given the 200 year life span of Whites original design of 1798 it is perhaps appropriate that a woodland management plan aimed at restoring the quality and simplicity of the original tree planting should be established to both benefit the setting of Robert Adam's building and for the future enjoyment of students of the University.

This approach is not proposed solely as a defence of a historic landscape or of a desire to recreate it, but rather to exploit the advantages and resources of the site to create and maintain a landscape setting of the highest order which satisfies the requirements and aspirations of a modern and expanding university.