



THE UNIVERSITY OF WESTERN AUSTRALIA

# **Report of the Teaching Infrastructure Implementation Committee**

(<http://www.acs.uwa.edu.au/reg/sec/infrastructure/implement.htm>)

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## **1. Committee Membership**

Colin MacLeod (Convener)  
 Terry Coe (Audio Visual Unit)  
 Kristy Duckham (Student Guild)  
 Rosemary Lancaster (Teaching and Learning Committee Representative)  
 Rick McFeat (Teaching and Learning Committee Representative)  
 Barry Madsen (Accommodation Committee Representative)  
 Mike Partis (Syllabus Plus Coordinator)  
 Joan Rodrigues (Executive Officer)  
 Karina Yip (Assistant to Executive Officer)

## **2. Background**

This Implementation Committee was established in July 1999 by the Chair of the Teaching and Learning Committee, Professor Alan Robson. The Committee's role has been to appraise the Report of the Teaching and Learning Infrastructure Review Working Party and, in the light of this appraisal, to develop a practical implementation strategy designed to enhance teaching and learning infrastructure within the University of Western Australia. As can be seen from the above summary of its membership, the Implementation Committee has been structured to include representatives from the Teaching and Learning Committee, the Accommodation Committee, the Audio Visual Unit, the Student Guild, and the Syllabus Plus Project.

The Teaching and Learning Infrastructure Review Working Party (TLIRWP), which was chaired by Professor Bruce Elliot, submitted its comprehensive report to the Teaching and Learning Committee in late April of this year. This report contained 20 recommendations, which are listed in Appendix A. These recommendations concern a range of matters, some of which involve administrative structures and teaching practices, but they focus most closely upon the characteristics of our teaching venues and the equipment provided therein. The rationale for each of the 20 recommendations can be obtained from the original TLIRWP report, which can be accessed on the web at <http://www.acs.uwa.edu.au/reg/internal/sec/Tlinfra.rtf>. The present report should be read in conjunction with that original document.

Members of the Implementation Committee were impressed by the scope of the TLIRWP report, and commend members of that working party for not only having identified a number of important challenges, but also for having developed creative ideas that might contribute towards the University's capacity to overcome these challenges. We do recognise, though, that this earlier working party formulated its recommendations without reference to financial constraints, and hence had no need to prioritize the various (sometimes costly) options set out in its report. Furthermore, we note that developments within the University subsequent to the formulation of these TLIRWP recommendations, most particularly the maturation of the Syllabus Plus project, bear upon both the practicality and the desirability of some recommendations put forward by the working party. Our own task has been to examine each of the 20 recommendations, in a manner that is informed not only by issues of principle but also by a consideration of budgetary implications, technical matters, and related teaching developments, in order to formulate a practical implementation strategy.

Rather than addressing each of the TLIRWP recommendation in their original sequential order, we have grouped them, within this present report, into five main categories. Within most of these categories, there are some TLIRWP recommendations that we endorse wholeheartedly, and suggest should be implemented without delay. However, for some other recommendations we document various reservations that lead us to identify them as being of lower priority, or of more questionable practicality or value. In a few of these cases, we have suggested amendments to the original recommendations, which we believe may result in more economically viable, or more pragmatic, solutions to the problems identified by the original working party. It is our hope that our proposed implementation strategy captures much of the spirit behind the TLIRWP recommendations, despite these occasional amendments.

### **3. Administrative Matters**

In its Recommendation 18, the TLIRWP recommended that the Venues Booking and A-V Services units be combined to form a new Office of Teaching Services, administered by the recently appointed Manager of AV Services (renamed Manager, Office of Teaching Services). The Manager would be answerable to the Executive Director, Finance and Resources, from a line-management perspective. The Implementation Committee strongly endorses this recommendation, and is of the view that this step should be taken without further delay. We agree with the TLIRWP proposal that this new Office of Teaching Services should be centrally managed and financed, and we have only two suggestions to add to the original recommendation. First, we propose that it would be appropriate to assess the possibility of incorporating, into the portfolio of this Office of Teaching Services, the ongoing responsibilities that will be associated with the annual Syllabus Plus exercise. Second, while we support the suggestion that the new Office should receive policy input from representatives of the Teaching and Learning Committee, we also think it important that it should sustain a productive link with the Accommodation Committee, which will remain responsible for providing various facilities essential to the fulfilment of teaching needs. These considerations lead us to suggest that the organisational chart, presented with the original recommendation, should be slightly amended. Specifically, it is our opinion that the Office of Teaching Services should interface with the University committee structure via a new subcommittee, that includes one representative from each of the Teaching and Learning Committee and the Accommodation Committee.

We suggest that this subcommittee might also serve the function identified in the main section of TLIRWP Recommendation 19, if extended to include one representative from the Office of Facilities Management and one from each of two appropriate Faculty instructional technology groups. The Implementation Committee supports this recommendation also, and suggests that the Manager, Office of Teaching Services, should nominate to the Teaching and Learning Committee suitable candidates colleagues from these two additional groups to sit on this subcommittee. It is our view that this subcommittee should be established at the earliest practical date, and should be called the Teaching Infrastructure Subcommittee.

#### **4. Budgetary Matters**

The TLIRWP correctly recognise that a number of its recommendations will be costly to implement and, in consequence, recommend that substantial additional funds should be secured for these purposes from the Planning and Budget Committee. Specifically, in Recommendation 2, the TLIRWP urges the Teaching and Learning Committee to approach the Planning and Budget Committee with a request for “large injections of funds for the restructure, remodelling and maintenance of lecture theatres and upgrading of the general learning environment”. In a similar vein, the latter part of Recommendation 19 contains the suggestion that additional funds should be directed towards the building, refurbishment and maintenance of lecture theatres. While members of the Implementation Committee are sympathetic to the sentiment behind these recommendations, we also recognise the need to balance these possible classes of expenditure against a great many competing demands on our limited budget. Given that there is simply no prospect of the Planning and Budget Committee being able to redirect sufficient funds to permit all of the TLIRWP recommendations to be implemented in the near future, the Implementation Committee consider it essential to prioritise the various proposals identified within these recommendations.

As will be elaborated upon below, our appraisal of the needs revealed by the Syllabus Plus exercise leads us to believe that the building of new lecture theatres should be assigned a relatively low priority. Though refurbishment of some lecture theatres might be attractive, and the maintenance of these buildings clearly is a necessity, we consider that teaching quality will be most economically enhanced, in the immediate future, by investment in appropriately upgraded teaching equipment, including but not restricted to audiovisual technology. In a later section of this report, we cost out what we argue to be the most efficient way of meeting future audiovisual and related teaching equipment needs, and we suspect that funding this highest priority initiative, alone, may prove to be a sufficient budgetary challenge for the time-being. The associated costs will extend beyond the initial purchase of the necessary equipment, to also include the maintenance (and ultimate replacement) of this equipment, and this in turn may require some on-going training of staff within the Office of Teaching Services. In view of this, the Implementation Committee is particularly supportive of TLIRWP Recommendation 15, which proposes that the Teaching and Learning Committee should take steps to facilitate the development of an effective budget model which ensures that adequate funds are provided to support staff lecturing in large teaching venues, to maintain these venues and their AV equipment, and to provide and retraining required to enable AV staff to deal effectively with changes in technology. Within section 6iv of this present report, we estimate the scale of funding that such a budget model might be required to provide in order to adequately support the provision of appropriate equipment. We suggest that the initial capital investment in this equipment, across the coming three years, might best be covered initially by funds redirected from the Hot Spots program, supplemented by a contribution from the Office of Facilities Management, and with significant support coming also from the University Strategy Fund. Beyond this period of capital investment, however, it will be necessary to support the maintenance and depreciation/replacement of this equipment from recurring funds provided to the Office of Teaching Services, and this ongoing cost will need to be accommodated within the budget model that operates from 2002 onwards.

In Recommendation 20, the TLIRWP again focuses upon financial matters, this time proposing that funds should be made available to ensure the appropriate training of staff within the Office of Teaching Services, and suggesting that the Teaching and Learning Committee identify ways to deliver “in-service” training for inexperienced lecturers with their home Departments. The Implementation Committee believes that such training is indeed likely to be of value, but recommends that it should be delivered through the Centre for Staff Development, when appropriate in conjunction with the Centre for the Flexible Delivery of Teaching. These facilities have been established for the purpose of developing new skills among staff members of this University, and so are well positioned to respond to these staff development needs.

## **5. Construction of New Lecture Theatres**

The Implementation Committee strongly endorses TLIRWP Recommendation 1. This proposes that the new Manager, Office of Teaching Services, together with an educational technologist, and representatives of the Teaching and Learning Committee, should be involved with the design team that plans future lecture space developments, and suggests that a mechanism should be devised for taking account of academics’ and students’ input. We believe that this recommendation should be implemented as soon as the proposed Office of Teaching Services is established. It seems likely that the most appropriate group to liaise with the design team, in this way, would be the Teaching Infrastructure Subcommittee. The Implementation Committee would suggest that, if possible, the Teaching Infrastructure Subcommittee, when established, should have some involvement with the design team handling the planning of any teaching facility associated with the new University House development.

The Implementation Committee also strongly endorsed the first of the four components contained within TLIRWP Recommendation 5, which is that no new teaching venue should have a capacity in excess of 350. The Syllabus Plus exercise has revealed little evidence of any need to construct additional large lecture theatres on campus. Indeed, our present large lecture venues appear to be under-utilised. During this most recent academic semester, for example, there have been few hours of the week when all 17 of our existing large lecture theatres have been in use. There have been many hours when less than half have been in use, and a few hours when only 1 or 2 were in use and the rest stood empty. In contrast, the Syllabus Plus exercise has revealed difficulty meeting the need for small teaching venues. Therefore we concur with the TLIRWP that no lecture theatres with capacity over 350 should be constructed in the foreseeable future.

The same observations that lead us to support this first component of Recommendation 5, however, cause us to question the fourth component of Recommendation 5, which is that a new 250 seat lecture theatre should be constructed in the Southern Campus. Given our knowledge that we presently have a surfeit of large lecture venues on campus, the only justification for providing such a new facility would be to save some students a short walk. The Implementation Committee was of the view that the substantial funds required to remove this minor inconvenience (which would likely approximate \$6 million or so), would be better

invested in the improvement of existing facilities, if these funds were to become available. Furthermore, it is perhaps worth noting that the largest existing lecture theatre presently located in the Southern Campus, which is a 140 seat venue located within Human Movement, receives less than 50% usage during semesters. This suggests that present demand for large lecture facilities, even in the Southern, are being met. Before leaving this issue, however, it perhaps is worth noting that the situation would change somewhat if the Octagon were removed from the range of available teaching venues, and this point is discussed in 6i below.

## **6. Use of Existing Teaching Facilities**

Many of the TLIRWP recommendations concern modifications to the use of existing teaching facilities. The issues addressed in these recommendations range from the specification of maximum class size, through suggested methods of categorising teaching venues, to the ways in which they should be configured, equipped and booked. Recommendations pertinent to each of these issues will be considered in turn.

### **i. Maximum Class Size**

In Recommendation 3, the TLIRWP expresses the view that lecturing is only appropriate when the class size is small enough to permit interaction, and so this working party proposes that the maximum lecture size should not exceed 350. Effectively, this recommendation would eliminate the use of the Octagon for undergraduate lecturing purposes, though, in the second component of Recommendation 5, the TLIRWP proposes that the Octagon should continue to be used as our preferred venue for the occasional public lecture, when an audience of more than 350 is anticipated.

While the Implementation Committee certainly endorses the TLIRWP recommendation to continue employing the Octagon for such public lectures, we find it difficult to support the discontinuation of the Octagon as a venue for all undergraduate classes. While entirely sympathetic to the view that it is attractive to have class sizes small enough to permit interaction, we were unable to accept that the opportunity for such interaction is significantly greater in classes of 250 or 300, than in classes of 400 or 450. It was our opinion that the likelihood of meaningful interaction begins to approach zero once class sizes move beyond 60 or 70 students, and we would not consider it viable to restrict maximum class sizes to this level.

A less abstract basis for concern over this recommendation comes from our consideration of the data yielded by the Syllabus Plus exercise. This reveals, quite clearly, that if those first year classes with enrolments above 350 were prevented from using the Octagon, and the units coordinators instead were required to mount (sometimes 2 or more) repeat lectures, then this extra teaching simply could not be accommodated within existing teaching venues. Indeed, to cope with the multiplicity of new classes this change of policy would produce, it would be necessary to construct a minimum of 2 new large lecture theatres, at a likely cost of \$12 million or so. Once again, the Implementation Committee found itself weighing up the relative benefits to the quality of teaching that could result from alternative ways of investing \$12 million (in the unlikely event of the Planning and Budget Committee finding

itself in the position to supply such funds). We did not believe that the reduction of class sizes to 350 would represent the most significant improvement to students' learning experiences that could be realised from such a substantial investment of our limited funds.

Because the restriction of maximum class size to 350 becomes feasible only with the construction of additional large lecture theatres, the Implementation Committee suggests that this recommendation to restrict maximum class size should be assigned a low priority for the moment.

In contrast, the Implementation Committee was in principle supportive of the general idea expressed within TLIRWP Recommendation 4, which is that lecturers should be encouraged to develop appropriate strategies for handling the education of large classes. We would not disagree with the suggestion that lecturers with class sizes in excess of 600 should split students and offer repeat lectures, and we believe this approach already is commonplace. We also find it easy to endorse the suggestion that academics should endeavour to make constructive use of the web to distribute information, and should explore alternative instructional technologies. Of course, some of these approaches do have drawbacks as well as advantages, and these limitations need to be appreciated. Furthermore, the potential advantages that can be obtained through the use of these approaches need not be restricted to situations involving large classes. Nevertheless, enhancing awareness of these options would seem to be a positive step. Perhaps the most direct way of implementing this recommendation would be to suggest that the Centre for Staff Development should be asked to mount one or two annual sessions that deal with techniques for effectively teaching large classes

## **ii. Classification of Teaching Venues**

Within Recommendation 6, the TLIRWP introduce a venue classification system, which then serves as the basis of subsequent recommendations concerning appropriate environmental standards and the provision of equipment within each category of venue. While in part defining venues by their size, this classification system depends heavily upon notions of Departmental "ownership" that have since been overtaken, largely as a consequence of the new approach to venue booking introduced by Syllabus Plus. In order to enable Syllabus Plus to function effectively, it has been necessary to actively promote the view that (with the possible exception of one small tutorial room in each Department) all teaching space is centrally owned, and all teaching space is allocated through Syllabus Plus. However, the principal notion reflected within Recommendation 6, is that some venues should be centrally assigned, other venues should be more readily accessed by certain high priority Departments, and a number of venues should be directly booked by "host" Departments. While this approach may have seemed viable when TLIRWP formulated its recommendations, it is antithetical to the University's current practice.

The Implementation Committee endorses the present UWA policy, of construing all teaching space as a University resource to be allocated centrally, and for this reason, we do not believe that it would appropriate to implement TLIRWP Recommendation 6.



It would be possible to develop an alternative venue classification system that does not implicate differing degree of Departmental ownership among its categorical criteria. For example, classification could be carried out on the basis of venue size alone. However, the main reason for carrying out such a classification exercise would be to permit the formulation of differential equipment specification for each category of venue, along the lines suggested by the TLIRWP in Recommendation 8. In fact, as will be seen in 6iv below, when confronted with the need to cost this exercise, the Implementation Committee came to the conclusion that the goals which motivated the formulation of Recommendation 8 can be met in a more cost effective manner, without any need to assign venues to a limited set of predetermined categories. Consequently, we do not consider that such a classification exercise should be carried out.

### **iii. Environmental Standards within Teaching Venues**

The TLIRWP identifies, within Recommendation 8, a set of environmental standards that it suggests should be met within our teaching venues. The Implementation Committee endorses the desirability of meeting these various standards, and considers that our progress towards this goal might best be furthered by distinguishing their relative priorities. This Committee is not of the view that we should fully improve individual venues in sequence, developing each to a level where it meets all of these standards before then turning to the improvement of the next venue. Rather, we would consider it more appropriate to first ensure that all of our teaching venues meet the highest priority standards, before then bringing all our venues up to the medium priority standards, and only after this devoting attention to the low priority standards.

The Implementation Committee suggests that the following priority classifications should apply to the various environmental standards identified by the TLIRWP:

#### **High Priority Environmental Standards**

(All venues should be brought up to this standard as soon as is practical)

Sound Seating (not necessarily padded)  
Full Control over Ambient and Wall Lighting

#### **Medium Priority Environmental Standards**

Set Desks (as opposed to tablet arm chairs)  
Air-conditioning  
Carpets

#### **Low Priority Environmental Standards**

Tiered, curved layout  
Acoustic Design

The Implementation Committee was of the view that providing facilities designed to meet the needs of disabled students (including wheelchair access) also should be considered to be of the highest priority. However, rather than equip every lecture

venue with the capacity to meet the needs associated with every conceivable disability, members thought it more appropriate to ensure that across our range of teaching venues all disabilities are catered for. We recommend that special needs associated with disabilities should be identified in the Syllabus Plus submissions, to ensure that lectures can be scheduled in appropriate settings. When needs are identified that cannot be accommodated within existing teaching facilities, then the Office of Teaching Services should access the funds required to make the necessary provision through submission to the Committee for Disabilities.

Members of the Implementation Committee considered that planning should be designed to bring all teaching venues up the specified high priority standards as soon as is possible. Nevertheless, we do recognise that, in the interests of practicality and economy, it sometimes may be advisable to include some of the improvements we have specified as medium or low priority, when upgrading a venue to meet those high priority standards.

Before leaving this discussion of environmental standards, it perhaps is appropriate to note the third component of TLIRWP Recommendation 5, which is that the interior and equipment of the Social Sciences Lecture Theatre should be completely refurbished to modern standards, with a capacity of approximately 350. The TLIRWP report does not offer an explicit justification for this proposal. Without such a rationale the Implementation Committee feels unable to assign this recommendation a high priority, especially in view of the fact that a recent report prepared for the Office of Facilities Management does not report serious problems with this venue. Nevertheless, we would point out that the strategy proposed above should serve, in time, to address any environmental standards problems within this venue, while our proposed approach to the upgrading of our teaching equipment, which is described in 6iv below, should eliminate any equipment problems within the Social Sciences Lecture Theatre.

#### **iv. Provision of Equipment within Teaching Venues**

The TLIRWP draws attention quite appropriately to the advantages that can result from adopting standard equipment specifications, in order to produce cross-campus consistency. The Implementation Committee fully endorses TLIRWP Recommendation 10, which would require the Manager, Office of Teaching Services, to develop a specification for a standard control system for all lecture theatres, which could then form the basis of a program of replacement and refurbishment. We consider that this goal should be set as a high priority, and believe that the Manager should endeavour to meet it without delay.

In contrast, while we appreciate the intention behind TLIRWP Recommendation 11, which would require the Manager, Office of Teaching Services, to develop a specification for a standard LCD<sup>1</sup> projection system, we do not believe it would be appropriate to implement this proposal. Having examined the relevant technical issues, it has become clear to us that the most appropriate LCD standards will vary from venue to venue (partly, but not entirely, as a function of venue size). It also is

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<sup>1</sup> The term LCD is used in this present report to refer to *all* video projection systems, now and in the future, not only those systems that employ the currently popular liquid crystal technology.

quite evident that the rapid development of this technology is leading to significant annual progression of standards. To capitalise upon the benefits of these advances, and to permit the best match between projection system and venue, we do not consider that it would be desirable to bind the University to a single standard LCD specification at this point in time. However, to capture what we believe to be the rationale behind Recommendation 11, we would propose that all LCD projection systems should be linked to the same standard control system that emerges from the implementation of Recommendation 10. In this way, it will be possible to ensure that the *operation* of all LCD projection systems conforms to a specified standard, and is consistent across all venues, though the LCD systems themselves will differ in ways that maximise their suitability for the various venues in which they are situated.

Despite these reservations about the main idea expressed in Recommendation 10, the Implementation Committee does fully endorse the subsidiary suggestion that a process should be developed whereby LCD units can be used efficiently to meet demand. Indeed, as is expanded upon later in this section, we are of the view that it would be desirable to develop a procedure that maximises the efficiency with which *all* equipment can be used to meet known demand. Because of this view, we propose that venues should be configured in a manner that meets actual, rather than anticipated, demand for equipment. Before turning to this proposal, however, we first will consider the two TLIRWP recommendations concerning the provision of computing facilities within teaching venues.

We found ourselves to be in complete accord with TLIRWP Recommendation 13, which proposes that all lecture venues and student computer laboratories should be wired into the campus backbone via a high speed (100 Base/T) line. We fully agree with the view that, as web-based learning resources continue to develop, so it will become progressively more desirable to be able to access the campus network from any lecture venue. We would consider the provision of this facility, and the development of technical guidelines for its use and maintenance, to be a high priority.

Clearly, the provision of such network access will be of value only if these lecture venues are designed in a manner that enables the lecturer to connect to this network via computer. Therefore, the Implementation Committee also fully supports the proposal, contained within TLIRWP Recommendation 12, that each venue should be equipped with a docking station, capable of being connected to either PC or Mac based laptops brought along by the lecturer. The Implementation Committee did not agree, however, with the additional proposal contained within this same recommendation, that venues should be permanently equipped with computers. Aside from the obvious difficulties associated with the inevitable disagreements over the most appropriate platform (the outcome of which, in the recommendation, would depend upon the outmoded notion of Department ownership of teaching space), the maintenance of such equipment, including the daily management of disk space and the provision of licences for all the possible software packages that lecturers may download onto the systems, is likely to prove problematic. In view of the declining cost of basic laptop computers, we thought it preferable that Departments/lecturers should provide and maintain their own. While we would not oppose the suggestion that the Office of Teaching Services might rent out laptops to Departments, we would question the viability of sustaining a dollar for dollar matching scheme through which this office would subsidise lecturers purchasing laptops for teaching purposes. Given

the impossibility of monitoring laptop usage following purchase, it would not seem impossible that the Office of Teaching Services might find itself funding half the cost of the majority of all laptop purchases made annually across the campus, which almost certainly would prove to be unsustainable.

The most detailed suggestions concerning the types of equipment that should be made available within our teaching venues are contained within Recommendation 7 of the TLIRWP report. This specifies a considerable variety of equipment, and identifies which of these items should be standard or optional within each of the three main categories of teaching venue that the report proposed to distinguish.<sup>2</sup> We already have indicated our view that the suggested categorisation of teaching venues is highly problematic. Nevertheless, the Implementation Committee considers this to be one of the most important recommendations contained within the TLIRWP report, as we believe that the provision and upgrading of the teaching facilities specified within this recommendation is likely to have a most immediate and salient impact upon the learning experience of our students. We concur with the TLIRWP view that it would be highly desirable to make available to our teachers and students each of the resources identified within the recommendation. However, we would argue against doing so by tying particular equipment to particular venues, which equipment will remain located regardless of the specific needs of the individual lecturers who use these venues each semester. Such an approach is likely to be cost inefficient, as it will involve purchasing equipment in expectation of possible demand, rather than in response to demonstrated demand. By the time the actual demand for some of this equipment develops, then it is not impossible that it may have become outdated technology.

While embracing the goal of providing this teaching equipment, the Implementation Committee was of the opinion that its acquisition should be guided by the demand revealed, on an annual basis, through the submission made by unit controllers to the Syllabus Plus coordinator. Teaching venues then can be configured each semester, by the Office of Teaching Services, to fulfil the submitted needs of those lecturers who will be taking classes during this period. Such an approach will ensure not only that the equipment is purchased in response to actual need, which should lead to budgetary efficiency, but also it will mean that each purchase will secure the very latest technology, which should maximise the value and lifespan of our investment.

To illustrate the relative budgetary implications of these two approaches, we have calculated the estimated costs that each approach would incur, based upon current figures, were we to purchase contemporary models of those 16 principal items of teaching equipment that the TLIRWP recommends should be provided. We have done this first using the approach proposed by the TLIRWP, and the relevant spreadsheet is presented in Attachment B1. Assuming large (A class) teaching venues to be those

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<sup>2</sup> In our discussions, it was noted that the TLIRWP report does not recommend the provision of blackboards. We believe it is important to recognise that some academics, working in areas that require writing within lectures, are unconvinced that present alternatives to the blackboard fulfil their needs. Nevertheless, chalk dust does represent a potentially serious problem for new audiovisual technologies. Thus we agree that it is appropriate to aim to reduce or eliminate our reliance on chalk based teaching, but we think it important that this should be done by appraising and providing acceptable alternatives that do satisfactorily meet the needs of those academics who must write within lectures.

with capacities above 100 students, medium (B class) venues to be those with capacities of between 25 and 99 students, and small (C class) venues to be those with capacities below 25 students, this University has 20, 75, and 99 of each class of venue respectively. For some, but not all, categories of equipment the purchase cost is lower when the item need only service a smaller venue. The approximate price of each item is provided in the first column of figures within Attachment B1, while the second and third columns of figures respectively show the Audio Visual Unit's estimated maintenance costs and depreciation costs (based upon the need to replace the item after its estimated lifespan has elapsed). When the costs of only that equipment which the TLIRWP recommends should be provided as standard, within each type of venue, are multiplied by the number of such venues within the University, then this reveals a total expense of \$5,706,700. Having purchased this equipment, the annual funding required to cover its subsequent maintenance and depreciation (\$372,875 and \$730,000 respectively) would be in excess of \$1.00 million.

Against this, we can compare an estimate of the costs that would be required to provide sufficient fully updated teaching equipment to fully meet the actual level of current demand, which is shown in Attachment B2. Our assessment of this current demand is likely to represent a substantial overestimation, as we have calculated it by assuming that every item of equipment located in any venue where a lecture was given actually was required by the lecturer, and then have added to this any further equipment that the lecturer requested be made available. Once again, some items of equipment have been costed differently when their specifications make them appropriate for larger or smaller venues. These unit costs are provided in the first column of figures within Appendix B2. The demand for each item of equipment is shown in the second column, and the third column displays the total cost of purchasing the updated equipment needed to meet this demand. The remaining columns show estimates of maintenance and depreciation costs, calculated in the same manner as before. As can be seen from this spreadsheet, the total cost of updating all the equipment required in order to configure our teaching venues, on a semester by semester basis, in a manner that would fully satisfy the present level of demand, would be \$2,395,200. The annual expense required to meet maintenance and depreciations costs (\$171,590 & \$228,295 respectively) would be approximately \$0.4 million.

Appendix B3 shows a summary of this comparison between the expenses associated with these alternative methods of equipping our teaching venues. Of course, it is not unlikely that the demand for some items of equipment, such as LCD projectors, may grow in coming years, and so it is possible that the final budget associated with our own proposed purchasing approach could become higher. Nevertheless, even if this is so, it is almost certain to remain substantially lower than the budget required to sustain the approach proposed by the TLIRWP. Furthermore, as already has been pointed out, we believe that it would be better to purchase the latest technologies available in order to meet any growing need that develops in the future, rather than prematurely purchasing, and then storing across our teaching venues, an extremely costly collection of under-utilised equipment that is likely to become outmoded before it is fully exploited.

Given the central importance, recognised by the TLIRWP and endorsed by the Implementation Committee, of providing these upgraded teaching facilities within our

lecturing venues, we strongly recommend that this initiative be given the highest budgetary priority. Though it will not be an inexpensive matter to upgrade our teaching resources in this manner, we would expect this investment to have an immediate and highly visible impact upon the quality of our teaching.<sup>3</sup> Adopting the above described rationale to estimate likely demand for these specified teaching facilities, and allowing for some modest growth in this demand, while also taking account of certain other TLIRWP suggestions such as those contained in Recommendations 10 and 13 (in addition to Recommendation 7), and bearing in mind that the sum of \$1.0 million is available to commence the upgrading of our teaching infrastructure this coming year, we have developed a three year budget proposal designed to enable the implementation of this upgrading exercise. This proposal is shown in Attachment C. As can be seen, the recommended expenditure for the coming year is \$1.0 million, which comprises \$950,000 towards capital purchase and \$50,000 to cover maintenance costs. In the second year, a similar capital expenditure is proposed, though depreciation costs now are added to increased maintenance costs, requiring total funding of \$1.38 million. In the third year, the proposed capital expenditure reduces to approximately \$0.5 million, though the combined depreciation and maintenance costs climb to their asymptotic level of \$0.5 million, requiring total funding of just over \$1.0 million. Beyond this final capital expenditure, an annual budget of \$0.5 million would be required to maintain, service and replace this investment as required.

#### **v. Booking of Teaching Venues**

As already has been mentioned, the TLIRWP formulated its recommendations prior to the reconceptualisation of those notions concerning the Departmental “ownership” of teaching space that resulted from the Syllabus Plus exercise. In view of the now widely accepted tenet that all teaching venues (aside, perhaps, from one small seminar room in each Department) represent central University space, and are in no way owned by Departments, the Implementation Committee cannot fully support either Recommendation 16 or 17 proposed by the TLIRWP. The first of these recommendations suggests implementation of a booking system within which certain classes of teaching venues are preferentially allocated to those Departments identified as being “hosts” of these venues. Such a development would, in our view, now represent a retrograde step. Likewise, the central idea proposed within Recommendation 17, which is that a “booking database” summarising the facilities provided within each teaching venue should be made available to lecturers via the web, now is inconsistent with the centralised manner in which the Syllabus Plus approach allocates space. Nevertheless, the Implementation Committee does agree with the additional suggestion, contained within Recommendation 17, that lecturers should fully specify their equipment needs as part of the timetable exercise. Indeed, the equipment purchasing policy that we propose within section 6iv of the present report depends upon each lecturer’s equipment needs being submitted in this way, and so we firmly support this suggestion.

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<sup>3</sup> It should be noted that, as our investment in audiovisual technology increases, it may become appropriate to review security arrangements in teaching venues and, when appropriate, to ensure that these continue to satisfy our insurers

## **7. Summary and Conclusions**

As should be clear from the comments contained within this document, the Implementation Committee found itself in close agreement with the principles that appeared to underpin the great majority of the recommendations put forward by the Teaching and Research Infrastructure Review Working Party. We also should record our endorsement of TLIRWP Recommendation 9, which quite correctly proposes that those same principles, and the policies that result from them, should apply to all teaching facilities, whether these are located on or off the Crawley Campus.

Only with respect to three issues did the Implementation Committee dispute any matter of principle. Specifically, we challenged the virtue of developing specifications for a standard LCD projection system, as proposed in Recommendation 11; we questioned the merits of supplying a fixed computer within each teaching venue, as proposed in Recommendation 12, and we disagreed with the suggestion that different types of teaching venue should be discriminated on the basis of varying levels of Departmental ownership as proposed, for example, in Recommendation 7 and 16.

There were a small number of TLIRWP recommendations which, while not disputing their potential merits, the Implementation Committee thought to be less pressing and/or practical than most of the others. Among these were the proposals to construct a new 250 seat lecture theatre and to completely refurbish the Social Sciences Lecture Theatre (both contained within Recommendation 5), to restrict maximum class size to 350 (Recommendation 3), and to redirect very sizeable portions of the budget away from the support of other ongoing commitments (as suggested, for example, in Recommendations 2 and 19).

Aside from these few exceptions, the Implementation Committee agreed with all the major principles that we believe to have governed the thinking of the original working party, and these same principles have served to closely guide the construction of our suggested implementation strategy. For a variety of reasons, financial and otherwise, the specific details of a small number of the proposals contained within this suggested implementation strategy may depart slightly from the form of the original recommendations presented within the TRIRWP report. However, we do not believe that these minor variations compromise the spirit that motivated development of the original suggestions.

The implementation strategy that we have developed within the present report can be summarised as the following sequence of 10 steps:

- I. A new Office of Teaching Services should immediately be established by combining the Audio Visual Services Unit, Venues Booking and, if viable, the section that will be responsible for the continued management of the Syllabus Plus exercise.
- II. A staff member should be appointed as Manager of this newly created Office of Teaching Services, that itself falls within the Office of the Executive Director, Finance and Resources.

- III. A Teaching Infrastructure Subcommittee then should be established to develop planning and policy development within the Office of Teaching Services. In addition to the Manager of this Office, the subcommittee should include 1 nominee from the Teaching and Research Committee, 1 nominee from the Accommodation Committee, 1 nominee from the Office of Facilities Management, and 2 representatives from Faculty instructional technology groups, nominated by the Chair of the Teaching and Learning Committee. The Teaching Infrastructure Subcommittee should report through the Teaching and Learning Committee.
- IV. The \$1.00 million rendered available to the Accommodation Committee by the temporary suspension of the hot spots programme should be assigned to support the first year of the three year teaching infrastructure investment programme detailed in Appendix C of this report.
- V. The Teaching and Learning Committee should negotiate with the Planning and Budget Committee, with a view to securing funds which, perhaps when supplemented by a contribution from the University Strategy Fund, will serve to cover the \$2.4 million required to continue funding the remaining two years of this investment program. Such negotiations should also endeavour to establish a mechanism through which \$0.5 million of recurrent funding can be secured annually thereafter, to maintain and replace the stock of teaching equipment in which the University will have invested.
- VI. Upon appointment the Manager, Office of Teaching Services, should be given immediate responsibility for:
  - Developing specifications for a standard control system for all lecture theatres
  - Reviewing all teaching venues to identify which require upgrading to meet the three “high priority” environmental standards
  - Liaising with the Centre for Staff Development, and the Centre for the Flexible Delivery of Teaching, with the aim of assisting them to design appropriate training programs for staff members working within the Office of Teaching Services, and for lecturers unfamiliar with new teaching technologies
- VII. Once the \$1.00 million identified in IV above has been made available, the Manager should work with the Teaching Infrastructure Subcommittee to formulate a detailed plan of expenditure, based upon the investment programme specified in Appendix C of the present report. Among the highest priority targets for the Manager to accomplish as a result of this investment programme should be:
  - Commence the installation of the approved standard control system within lecture venues



- The significant extension of venues connected to the campus backbone via a high speed (100 Base/T) line, and the development of technical guidelines for the use and maintenance of these facilities
  - The provision of docking facilities within teaching venues capable of connecting either PC or Mac based laptops to the local audiovisual resources and, when applicable, to the campus network.
- VIII. The Manager, Office of Teaching Services, should be required to develop a formal policy for:
- Recruiting information (through the Syllabus Plus submissions in future years) concerning individual teaching equipment needs
  - Using quantified indices of such demand to guide the future purchase of teaching equipment
  - Determining each semester the most efficient configuration of teaching equipment across venues that will ensure the demand is economically met.
- IX. The Teaching and Learning Committee should ensure that the Teaching Infrastructure Subcommittee engages with the design team responsible for the planning and construction planning of any new teaching facility. The Teaching Infrastructure Subcommittee should be invited to provide an input into the development of any teaching facility presently being planned for the new University House complex.
- X. The Teaching and Learning Committee should approach the Centre for Staff Development, with the request that the Centre mount an annual workshop devoted to training academic staff in those teaching techniques and key technologies of particular relevance to the education of large classes

This ten step implementation strategy will enable the University community to begin to derive those benefits to teaching and learning that promise to flow from the planning contribution made by our colleagues within the Teaching and Learning Infrastructure Review Working Party. Beyond these initial steps, of course, it will be necessary to continue the refinement and extension of implementational procedures, and also to troubleshoot as unexpected problems arise. The Implementation Committee recommends that this ongoing responsibility should be devolved to the Teaching Infrastructure Subcommittee, which will be well-positioned to provide sound advice on such matters, to the Teaching and Learning Committee, across the coming years.

## **Appendix A**

### **Recommendations of the Teaching and Learning Infrastructure Review Working Party**

#### **Recommendation 1**

The Teaching and Learning Committee should play more of a role in the design function of lecture facilities. An important consideration is that architects are generally ignorant about effective lecture theatre design, and a specialist should be employed. The WP recommends that the Manager, Office of Teaching Services (working title only), and an educational technologist together with representatives of the Teaching and Learning Committee be involved in the design teams for future lecture space developments. A mechanism should also be devised for taking account of the views of academics and students.

#### **Recommendation 2**

The Teaching and Learning Committee must, as a matter of urgency, approach the Planning and Budget Committee for funds to enable a strategy aimed at improving the teaching and learning environment to be implemented. This will require large injections of funds for the restructure, remodelling and maintenance of lecture theatres and upgrading of the general learning environment.

#### **Recommendation 3**

The WP is of the opinion that lecturing is only appropriate when there is interaction, and the latter becomes impractical in very large classes. It recommends that the number of students attending a standard lecture should not exceed 350 students. Being pragmatic, the number is based upon the perceived maximum capacity of a revamped Social Science Lecture Theatre or half the maximum number of our largest first year classes.

#### **Recommendation 4**

Large classes should be handled with strategies that provide students with appropriate learning resources (notes related to Web-based presentations), whilst also increasing opportunities for interaction with facilitators through seminars and small group work.

#### **Recommendation 5**

The WP recommends that:

- no new teaching venue should have a capacity in excess of 350;
- the Octagon be retained as the preferred venue for the occasional public lecture where an audience of more than 350 is anticipated.
- the interior and equipment of the Social Sciences Lecture Theatre should be *completely* refurbished to modern standards, and with a capacity of approximately 350 seats;
- to balance campus needs, a new 250-seat Southern Campus Theatre should be constructed in accordance with the guidelines set out in this Report.

The WP believes that UWA should have a state-of-the-art theatre, formatted to a high standard, to act as a forum for the public face of UWA.

The WP asks the Teaching and Learning Committee to consider which new or revamped theatre should become the key presentation venue for this campus and provide appropriate resourcing.

### **Recommendation 6**

The WP recommends that the following venue classification system be adopted (more detail is provided in Table 1). It is recommended that a Working Party of the Teaching and Learning Committee be established to classify all teaching space into one of the four categories below.

**Category A** venues are defined as “large theatres, accessible to all campus users through the central bookings system, equipped, serviced and maintained from central budgets.”

**Category B** venues are defined as “medium-size theatres, accessible to all users (although the “host department or faculty” has first call), with standard AV equipment and maintenance funded both centrally and by departments and faculties.” A priority system of booking with regards to host departments/faculties would occur through the central venues system.

**Category C** venues are defined as “small size, mainly used by host departments and faculties”. While centrally controlled through Syllabus Plus, the host department/faculty is permitted to book these spaces directly. This will require a system where departments/faculties apply for restricted access to book spaces designated as Category C. This space would be equipped and maintained by department/faculty funds.

**Category D** venues are defined as “very small rooms” that may be exclusively controlled by a department/faculty. Nomination of these rooms will be made by the department/faculty for ratification by the a Working Party set up to classify teaching space by the Teaching and Learning Committee. These rooms which would typically be used for:

- Lecture preparation
- Conference presentation preparation
- Ad-hoc meetings, seminars and tutorials (that are occurring more often because of the large numbers of full-fee students) would be equipped and maintained by the department/faculty funds. It is anticipated that any department would only have one or two of these category rooms depending on EFTSU load.

### **Recommendation 7**

The WP recommends that all Category A and B venues should be equipped with a standard set of AV equipment, and suggests the following as a starting point for discussion. The list, once established, should be subject to regular, scheduled review, and it is recommended that an educational technologist be included in any review group.

The WP recommends that items indicated below as “Standard” in Category A and B venues should be funded centrally. Items indicated in Category B as “Optional” should be funded centrally, but need case-by-case decisions. (ie. is the particular

venue large enough to *justify* a sound system, etc). All items in Category C venues should be funded by the host department/faculty.

**TABLE 1: EQUIPMENT AND VENUE CATEGORISATION**

Item	Category A	Category B	Category C
AMX Touch Panel	✓	⊗	
Lectern	✓	✓	
White board (several in larger venues)	✓	✓	▲
Projection screen(s)	✓	✓	
Overhead projector	✓	✓	▲
35 mm slide projector(s)	✓	✓	▲
VHS video player linked to TV/ monitor			▲
VHS video player linked to LCD projector	✓	✓	
Audio playback (cassette player linked to sound system)	✓	⊗	
Sound system	✓	⊗	
Audio recording	✓	⊗	
Induction loop	✓	⊗	
Radio mike / stand mike	✓	⊗	
Multimedia-capable desktop computer	✓	✓	
Provision for plugging-in portable computer	✓	✓	▲
LCD projector	✓	✓	⊗
Campus LAN access	✓	✓	⊗
Telephone	✓	⊗	⊗
Provision for video-recording of lectures	✓	✓	▲

**KEY**

✓	Standard equipment
⊗	Optional equipment
▲	Recommended

**The WP recommends (but not unanimously) that chalkboards be removed from all Category A and B venues for health and technical reasons.**

Brief, yet informative instructions as to the operation of all installed AV equipment should be provided in all theatres.

### **Recommendation 8**

The WP further recommends the following environmental standards be established.

**TABLE 2: ENVIRONMENTAL STANDARDS**

Item	Category A	Category B	Category C
Tiered, curved layout	✓	✓	

Air-conditioned	✓	✓	✓
Carpeted	✓	✓	✓
Set desks (as in Elizabeth Jolly Lecture Theatre, Curtin University)	✓	✓	
Chairs (padded)	✓	♻️	
Wheelchair access	✓	✓	✓
Acoustically designed	✓	✓	
Full control over ambient and teaching wall lighting	✓	✓	

### **Recommendation 9**

The off Campus (Crawley Campus) facilities should be reviewed in the same fashion as recommended by the WP for Crawley Campus facilities and whilst recognizing issues of shared ownership and usage, the Office of Teaching Services could have a major input into issues of design and maintenance.

### **Recommendation 10**

The WP recommends that the Manager, Office of Teaching Services, be required to develop a specification for a standard control system for all Category A and B lecture theatres, which can then form the basis of a program of replacement and refurbishment.

### **Recommendation 11**

The WP recommends that the Manager, Office of Teaching Services be required to develop a specification for a standard LCD projection system for all Category A and B venues.

The Manager should also develop a process whereby units can be used most efficiently to meet demand, and can be “recycled” (eg. moving ageing units into smaller Category C and D venues and replacing them with higher-power, up-to-date equipment).

### **Recommendation 12**

Category A and B theatres will be provided with a multimedia-capable computer (upgraded every two years). Each lectern will be provided with a “docking station” with standard connectors whereby external hard disks, etc, can be connected. Ideally, the PC will be fitted with USB ports so devices can be hot-plugged (without the need to restart the computer).

Lecturers will have four options:

- bring their software on a CD-ROM
- bring their software on a portable hard disk (eg. ZIP, JAZ, Superdrive, etc)
- bring their software on a portable computer
- network from the theatre to their personal PCs via the Internet

The computers will require very regular maintenance from AV Services.

The Working Party recommends that Category A venues be equipped with IBM-type computers, but that Category B hosts be given the responsibility for selecting the platform type (ie. Macintosh or PC) most suitable for their own academics.

We also recommend that three further forms of support be made available.

- The Office of Teaching Services should offer dollar-for-dollar support grants to encourage departments to purchase portables for their Category A theatre lecturers. (In the long run, the more academics use portables, the easier it will be for the overall system).
- The Office of Teaching Services should be funded to have a small supply of portables which it can rent to departments on a daily, weekly or semester rate. This system should be close to cost-neutral, and will fill a need from departments unwilling (for whatever reason) to purchase portables.
- The Office of Teaching Services should also maintain a small stock of desktop computers of both popular platforms that can be installed at short notice into Category A and B theatres. This will cover guest lectures, breakdowns and emergencies (and reduce the discriminatory nature of our earlier suggestion that all A venues be equipped with PCs).

This system has the advantage of allowing a number of computer platforms to be centrally maintained across campus. This will have the obvious advantage of bulk purchase prices, maintenance contracts, and on-going software and hardware updates.

All computers should be equipped with a high-speed CD-ROM drive and network card, a high-capacity hard drive, suitable presentation software (eg Powerpoint or Persuasion) and a WWW browser.

We must not however, neglect the standard AV equipment in the face of computerisation. Whilst IT will undoubtedly play a rapidly-increasing role in lecture theatres, the provision of basic and effective delivery systems in medium to large venues will remain important. It is essential that all facilities have the redundancy provisions (such as overheads projectors to enable lectures to continue in the face of technological breakdown.

### **Recommendation 13**

The WP recommends that all lecture venues (and student computer laboratories) should be wired into the campus backbone via a high-speed (100 Base/T) line as soon as it can be afforded.

### **Recommendation 14**

Video-conferencing is only available in two departments on campus, and the WP feels that consideration should be given to the establishment of portable video conferencing facilities in strategic venues across campus. This is essential if lectures are to be delivered to remote sites (eg., Albany Campus) on-line and live.

### **Recommendation 15**

The WP urges the Teaching and Learning Committee to ensure that an effective budget model be established to ensure that adequate funds are provided for the support of staff lecturing in large teaching venues, and for the maintenance of both the venue and its AV equipment. An initial step in this direction would be the retraining

of the current AV Unit staff so that they can more effectively deal with issues created by the change in technology.

### **Recommendation 16**

The WP recommends that the central booking system (Syllabus Plus) be used to allocate Category A, B and C venues. Category B and C venues should be allocated after PRIORITY has been given to the host department/ faculty. Nominated personnel within departments/ faculties would be granted access to Category C bookings so that they are able to be made from the host department/faculty. The host department/faculty would retain control over the Category D venues.

### **Recommendation 17**

The moves to maintain a central database that tracks lecture theatres and their facilities must be encouraged, as it allows more effective utilisation of the facilities (this may occur automatically with the introduction of Syllabus Plus). The booking database must be available via the WWW. Lecturers would therefore specify their equipment needs as part of the timetable exercise (this must include LCD projector and other computer requirements).

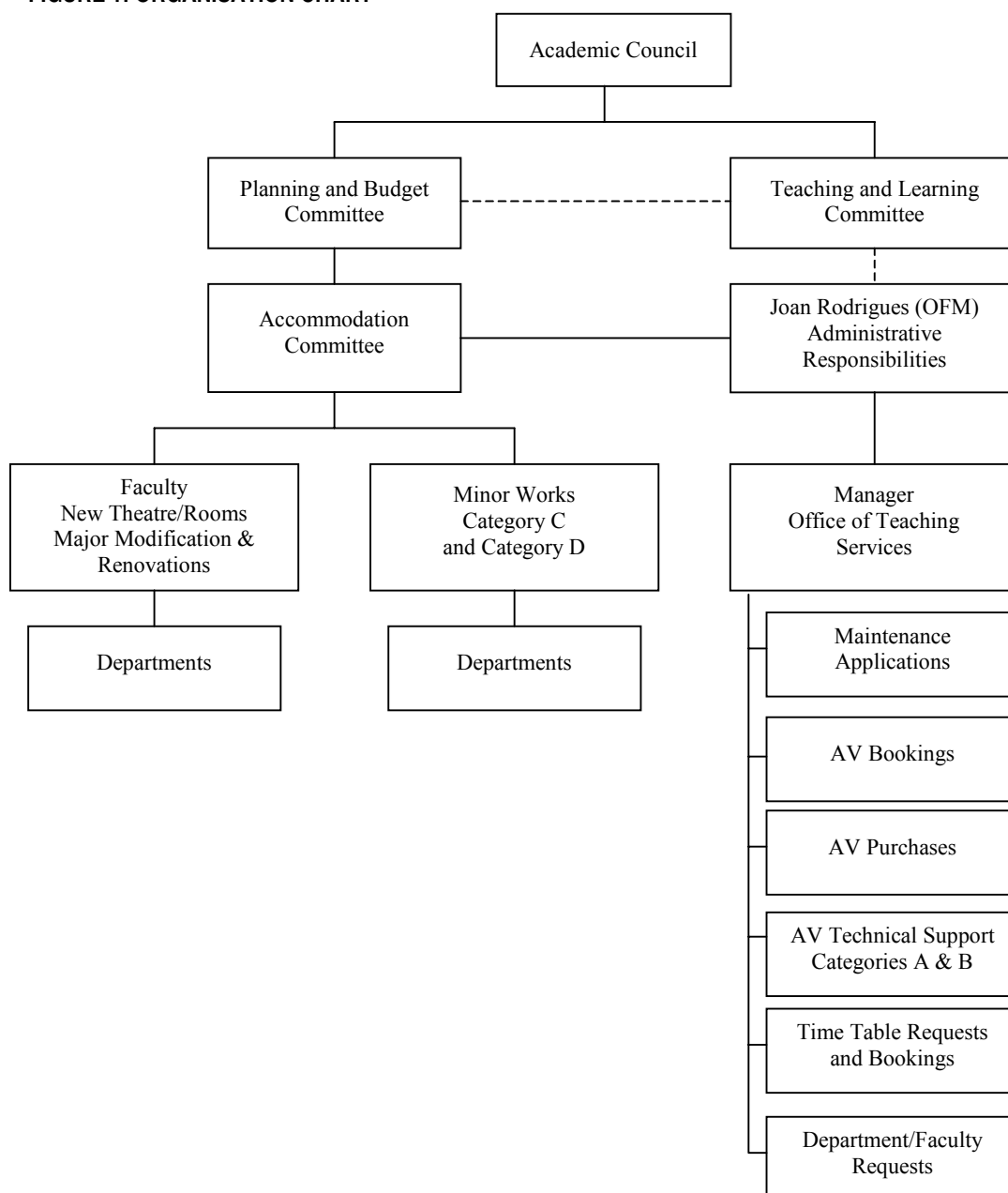
### Recommendation 18

The WP recommends that the current Venues Booking and A-V Services units be combined to form a new Office of Teaching Services (working title only) and be administered by the newly-appointed Manager of AV Services (to be renamed Manager, Office of Teaching Services). The day-to-day operations of the timetable group could also fit into this structure. The restructured unit would then be answerable to the Executive Director, Finance and Resources from a line-management perspective and the Teaching and Learning Committee for policy guidance.

It is recommended that this unit be centrally managed and financed, and that the guidelines for application to this group for equipment, bookings and technical resources be the responsibility of the Manager of the Office of Teaching Services.

The following university organisational structure is therefore recommended for consideration: (See Figure 1)

**FIGURE 1: ORGANISATION CHART**





### **Recommendation 19**

A structure needs to be established that performs a number of functions. It must be able to:

- Ensure that a logical system of building and refurbishment occurs to establish and then maintain quality facilities.
- Ensure that student needs are continually addressed in the refurbishment of facilities on an annual basis.
- Enable the day-to-day operating of central facilities (Category A, B and C) to occur with maximum efficiency.

### **Sub Committee**

A Sub Committee should be established under the umbrella of the Teaching and Learning Committee to monitor the quality of AV and general lecturing/tutorial facilities at UWA. This should be chaired by a member of the Teaching and Learning Committee and have representation from:

- Facilities Planning
- Office of Teaching Services
- Faculty instructional technology groups.

### **Financing (link to Accommodation Committee)**

The Teaching and Learning Committee through the Deputy Vice Chancellor apply via the appropriate budgetary process for an increase in funds so that lecture theatre building/refurbishment and maintenance are of a standard commensurate with a top university.

### **Recommendation 20**

The WP recommends that funds be made available to ensure appropriate training for staff of the Office of Teaching Services, and that the Teaching and Learning Committee consider ways of delivering appropriate staff development to inexperienced lecturers. It is further recommended that this in-service training occur in the host departments/faculties.

## APPENDIX B1

## INFRASTRUCTURE WORKING PARTY RECOMMENDATION

Category A Items	Cost per Unit	Maintenance	Depreciation	Life Span
AMX Touch Panel	\$14,000	\$750	\$1,400	10
Lectern	\$3,500	\$50	\$233	15
White Board	\$5,000	\$100	\$333	15
Projection Screen	\$5,000	\$100	\$333	15
Overhead Projector	\$2,500	\$600	\$250	10
35mm Slide Projector x 2	\$5,000	\$400	\$500	10
VCR Linked to LCD Proj.	\$700	\$100	\$140	5
Audio Tape Rec/Player + CD	\$1,000	\$100	\$200	5
PA Sound System	\$3,500	\$100	\$350	10
Radio Mic	\$1,700	\$150	\$340	5
Neck Mic	\$400	\$50	\$133	3
Computer Docking Station	\$1,500	\$50	\$150	10
LCD Projector	\$16,000	\$1,500	\$4,000	4
Campus LAN Access	\$2,000	\$50	\$200	10
Telephone	\$300	\$20	\$30	10
Cabling, Sundries & Installation	\$8,000	\$500	\$800	10
<b>Total</b>	\$70,100	\$4,620	\$9,393	
	20			
	\$1,402,000	\$92,400	\$187,867	
Category B Items	Cost per Unit	Maintenance	Depreciation	Life Span
AMX Touch Panel	\$9,000	\$450	\$900	10
Lectern	\$2,500	\$50	\$167	15
White Board	\$4,000	\$100	\$267	15
Projection Screen	\$3,500	\$75	\$233	15
Overhead Projector	\$1,700	\$170	\$170	10
35mm Slide Projector	\$2,500	\$200	\$250	10
VCR Linked to LCD Proj.	\$500	\$100	\$100	5
Audio Tape Rec/Player + CD	\$1,000	\$100	\$200	5
PA Sound System	\$2,500	\$100	\$250	10
Neck Mic	\$400	\$50	\$133	3
Computer Docking Station	\$1,500	\$50	\$150	10
LCD Projector	\$10,000	\$1,000	\$2,500	4
Campus LAN Access	\$2,000	\$50	\$200	10
Cabling, Sundries & Installation	\$6,000	\$400	\$600	10
<b>Total</b>	\$47,100	\$2,895	\$6,120	
	75			
	\$3,532,500	\$217,125	\$459,000	
Category C Items	Cost per Unit	Maintenance	Depreciation	Life Span
White Board	\$1,000	\$25	\$67	15
Projection Screen	\$800	\$25	\$53	15
Overhead Projector	\$800	\$100	\$80	10
35mm Slide Projector	\$2,500	\$200	\$250	10
Television/Video	\$1,200	\$200	\$240	5
Cabling, Sundries & Installation	\$1,500	\$100	\$150	10
<b>Total</b>	\$7,800	\$650	\$840	
	99			
	\$772,200	\$64,350	\$83,160	
<b>Total Equipment Valuation</b>	\$5,706,700			
<b>Total Service Budget</b>	\$372,875			
<b>Total Depreciation Budget</b>	\$730,000			

## APPENDIX B2

## IMPLEMENTATION COMMITTEE RECOMMENDATION

Category A Items	Cost per Unit	Qty/ Demand	Total	Maintenance	Depreciation	Life Span
AMX Touch Panel	\$14,000	20	\$280,000	\$23,900	\$28,000	10
Lectern	\$3,500	20	\$70,000	\$1,000	\$4,660	15
White Board	\$5,000	12	\$60,000	\$1,200	\$3,996	15
Projection Screen	\$5,000	17	\$85,000	\$1,700	\$5,661	15
Overhead Projector	\$2,500	28	\$70,000	\$16,800	\$7,000	10
35mm Slide Projector x 1	\$2,500	39	\$97,500	\$7,800	\$9,750	10
VCR Linked to LCD Proj.	\$700	6	\$4,200	\$600	\$840	5
Audio Tape Rec/Player + CD	\$1,000	15	\$15,000	\$1,500	\$3,000	5
PA Sound System	\$3,500	17	\$59,500	\$1,700	\$5,950	10
Radio Mic	\$1,700	11	\$18,700	\$1,650	\$3,740	5
Neck Mic	\$400	13	\$5,200	\$650	\$1,729	3
Computer Docking Station/LCD Projector	\$17,500	19	\$332,500	\$29,450	\$2,850	10/4
Campus LAN Access	\$2,000	15	\$30,000	\$750	\$3,000	10
Telephone	\$300	20	\$6,000	\$400	\$12,000	10
Cabling, Sundries & Installation	\$8,000	17	\$136,000	\$8,500	\$13,600	10
			\$1,269,600	\$97,600	\$105,776	

Category B Items	Cost per Unit	Qty/ Demand	Total	Maintenance	Depreciation	Life Span
AMX Touch Panel	\$9,000	22	\$198,000	\$9,900	\$19,800	10
Lectern	\$2,500	22	\$55,000	\$1,100	\$3,674	15
White Board	\$4,000	26	\$104,000	\$2,600	\$6,941	15
Projection Screen	\$3,500	29	\$101,500	\$2,175	\$6,757	15
Overhead Projector	\$1,700	47	\$79,900	\$7,990	\$7,990	10
35mm Slide Projector	\$2,500	55	\$137,500	\$11,000	\$13,750	10
VCR Linked to LCD Proj.	\$500	13	\$6,500	\$1,300	\$1,300	5
Audio Tape Rec/Player + CD	\$1,000	15	\$15,000	\$1,500	\$3,000	5
PA Sound System	\$2,500	18	\$45,000	\$1,800	\$4,500	10
Radio mike	\$1,700	1	\$1,700	\$150	\$340	5
Neck Mic	\$400	14	\$5,600	\$700	\$1,862	3
Computer Docking Station/LCD Projector	\$11,500	13	\$149,500	\$19,500	\$34,450	10/4
Campus LAN Access	\$2,000	10	\$20,000	\$500	\$2,000	10
Cabling, Sundries & Installation	\$6,000	18	\$108,000	\$7,200	\$10,800	10
			\$1,027,200	\$67,415	\$117,164	

Category C Items	Cost per Unit	Qty/ Demand	Total	Maintenance	Depreciation	Life Span
White Board	\$1,000	36	\$36,000	\$900	\$2,412	15
Projection Screen	\$800	11	\$8,800	\$275	\$583	15
Overhead Projector	\$800	32	\$25,600	\$3,200	\$2,560	10
35mm Slide Projector	\$2,500	10	\$25,000	\$2,000	\$2,500	10
Television/Video	\$1,200	0	\$0	\$0	\$0	5
Cabling, Sundries & Installation	\$1,500	2	\$3,000	\$200	\$300	10
			\$98,400	\$6,575	\$8,355	

<b>Total Equipment Valuation</b>	\$2,395,200
<b>Total Service Budget</b>	\$171,590
<b>Total Depreciation Budget</b>	\$228,295

## APPENDIX B3

### COMPARISON OF EQUIPMENT COSTS

	INFRASTRUCTURE WORKING PARTY RECOMMENDATION				IMPLEMENTATION COMMITTEE RECOMMENDATION		
Equipment	Capital Cost	Maintenance	Depreciation		Capital Cost	Maintenance	Depreciation
AMX Touch Panel	\$955,000	\$47,750	\$95,500		\$478,000	\$33,800	\$47,800
Lectern	\$257,500	\$4,750	\$17,185		\$125,000	\$2,100	\$8,334
White Board	\$499,000	\$11,975	\$33,318		\$200,000	\$4,700	\$13,349
Projection Screen	\$441,700	\$10,100	\$29,382		\$195,300	\$4,150	\$13,001
Overhead Projector	\$256,700	\$34,650	\$25,670		\$175,500	\$27,990	\$17,550
35mm Slide Projector	\$535,000	\$42,800	\$53,500		\$260,000	\$20,800	\$26,000
VCR Linked to LCD Proj.	\$51,500	\$9,500	\$10,300		\$10,700	\$1,900	\$2,140
Audio Tape Rec/Player + CD	\$95,000	\$9,500	\$19,000		\$30,000	\$3,000	\$6,000
PA Sound System	\$257,500	\$9,500	\$25,750		\$104,500	\$3,500	\$10,450
Radio Mic	\$34,000	\$3,000	\$6,800		\$20,400	\$1,800	\$1,080
Neck Mic	\$38,000	\$4,750	\$12,635		\$10,800	\$1,350	\$3,591
Computer Docking Station/ LCD projector	\$1,212,500	\$109,750	\$281,750		\$482,000	\$48,950	\$37,300
Campus LAN Access	\$190,000	\$4,750	\$19,000		\$50,000	\$1,250	\$5,000
Television/ Video	\$118,800	\$19,800	\$23,760		\$0	\$0	\$0
Telephone	\$6,000	\$400	\$600		\$6,000	\$400	\$12,000
Cabling, Sundries & Installation	\$758,500	\$49,900	\$75,850		\$247,000	\$15,900	\$24,700
<b>TOTAL</b>	<b>\$5,706,700</b>	<b>\$372,875</b>	<b>\$730,000</b>		<b>\$2,395,200</b>	<b>\$171,590</b>	<b>\$228,295</b>

## APPENDIX C

### PROPOSED THREE YEAR INVESTMENT PLAN

	1st Year Budget	2nd Year Budget	3rd Year Budget
AMX Control / Touch Panel	\$200,000	\$200,000	\$100,000
Lecterns	\$22,000	\$25,000	\$28,000
Whiteboards	\$60,000	\$60,000	\$40,000
Projection Screens	\$50,000	\$50,000	\$30,000
Overhead Projectors	\$85,000	\$85,000	\$30,000
Slide Projectors	\$75,000	\$120,000	\$75,000
VCR	\$5,000	\$5,000	\$5,000
Audio Tape Rec/ CD Player	\$15,000	\$15,000	\$5,000
PA Sound System	\$50,000	\$50,000	\$10,000
UHF Radio Microphones	\$10,000	\$10,000	\$5,000
Neck Mics	\$5,000	\$5,000	\$3,000
Data Projectors & Docking Stations	\$220,000	\$220,000	\$120,000
Campus Lan Access	\$25,000	\$25,000	\$10,000
Telephones	\$3,000	\$3,000	\$3,000
Cabling & Installation	\$125,000	\$125,000	\$50,000
<b>Purchase Cost</b>	<b>\$950,000</b>	<b>\$998,000</b>	<b>\$514,000</b>
<b>Service Cost</b>	<b>\$50,000</b>	<b>\$378,000</b>	<b>\$526,000</b>
<b>Total Cost</b>	<b>\$1,000,000</b>	<b>\$1,376,000</b>	<b>\$1,040,000</b>