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**Academic Staff List**

**Map of Liverpool Campus**

**Map of Leahurst Campus**



## INTRODUCTION

The last RCVS visitation took place in March 2003 with a follow up visit in 2005 to review the progress in implementing the visitor's recommendations with particular reference to the small animal teaching hospital. Since 2005 many significant changes have taken place at the School of Veterinary Science. Below is an outline of the main changes which have taken place with particular reference to those addressing recommendations by the 2003 visitor's report. Further detail on these developments can be found throughout the SED.

### *Organisational changes*

Until 2009 Liverpool Veterinary School was a separate Faculty within the University of Liverpool, the other Faculties being Medicine, Science, Engineering, Arts, and Social and Environmental Studies. This structure was reviewed and a restructure introduced with three large Faculty groupings each led by an Executive Pro-Vice Chancellor; Faculty of Health and Life Science, Faculty of Humanities and Social Sciences and Faculty of Science and Engineering (level 3 units). Following the appointment of Professor Ian Greer as Executive Pro-Vice Chancellor for the Faculty of Health and Life Science a new structure has been developed for this Faculty whereby the level 2 units will be five Institutes based on major research themes, plus one institute responsible for the development, planning and delivery of curricula across the Faculty (Institute of Learning and Teaching ILT). The school of veterinary science sits within ILT alongside the Schools of medicine, dentistry, life sciences, health sciences and psychology (level 1 units).

Professor Susan Dawson was appointed Head of the School of Veterinary Science in January 2011 following on from Professor Malcolm Bennett who was Dean and Head of School between August 2008 and December 2010.

### *New regulations relating to teaching*

Since the last RCVS visitation significant changes have been made to the student experience committee infrastructure, policies and procedures of the University. The Code of Practice on Assessment details changes made to:

- Regulations for conduct of examinations
- Progression of Students
- Assessment Appeals Procedures
- Code of Practice for External Examiner system
- Policy on adjustments to Examination arrangements for disabled students
- Policy for dealing with plagiarism, collusion and fabrication of data
- Policy on Mitigating Circumstances in relation to performance in examinations and assessments
- Policy of feedback on assessment

QA management and processes have changed in relation to:

- Programme approval
- Annual programme monitoring
- Periodic review
- Peer review of teaching
- Student complaints procedures
- Policy on student evaluation

In addition, the University has reviewed and updated it's fitness to practise procedures.

### *New buildings or major items of equipment*

There has been substantial investment in new buildings and equipment since the 2003 visit, outlined in the table below. Over the last six years the University has invested some £27million in new buildings which has been funded through endowments and the development campaign as well as over £10million invested from the University capital plan (2011/12).

| <b>Date completed</b> | <b>Development</b>                                                                                                                | <b>Campus</b> |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|
| 2007                  | Small Animal Teaching Hospital (SATH)                                                                                             | Leahurst      |
| 2007                  | Ritchie House office development                                                                                                  | Leahurst      |
| 2010                  | Wood Park farm developments including visitors' centre                                                                            | Leahurst      |
| 2010                  | Extension to Philip Leverhulme Equine Hospital (reception and other accommodation)                                                | Leahurst      |
| 2010                  | Refurbishment of Leahurst House including catering facilities                                                                     | Leahurst      |
| 2010                  | Refurbished student common room                                                                                                   | Leahurst      |
| 2011                  | Build of Equine Intensive Care Unit                                                                                               | Leahurst      |
| 2011                  | Refurbishment of post-mortem room suite                                                                                           | Leahurst      |
| 2012                  | Build of second post-mortem room                                                                                                  | Leahurst      |
| 2012                  | Veterinary school offices, student common room, committee rooms                                                                   | Liverpool     |
| 2012                  | Veterinary teaching suite (dissection room, clinical skills lab)                                                                  | Liverpool     |
| 2012                  | Refurbishment of teaching laboratories                                                                                            | Liverpool     |
| 2012                  | New facilities for Small Animal Practice                                                                                          | Liverpool     |
| 2012                  | Refurbished research facilities (Infection Biology and Integrative Biology)                                                       | Liverpool     |
| 2012                  | Refurbished laboratories (teaching and research)                                                                                  | Leahurst      |
| 2013                  | Leahurst Learning Centre (farm animal practice, teaching labs, seminar rooms, locker rooms and refurbishment of existing offices) | Leahurst      |

The main focus of developments until 2007 was to build the new small animal teaching hospital at Leahurst which was completed successfully and provides an excellent facility for our student teaching. Additional changes at Leahurst included enhancement and better utilisation of the two farms, Wood Park and Ness Heath. Both the farms are teaching resources for students across the five years of their programme as well as providing facilities for research and knowledge exchange projects. Investment in both farms has allowed us to make more use of the resource as well as providing undergraduates with the experience of commercially run facilities.

At the beginning of 2011 the decision was made to replace the Crown Street facilities in Liverpool. This building would have required substantial investment to make it fit for purpose and so the decision was made to move the school geographically. The planning for this redevelopment was carried out with the head of school and other staff from the Faculty as well as Facilities Management. While the schools initial request was to find premises all on one site this was not possible and so several developments have been completed to house the various activities. This has given the opportunity not only to enhance the facilities but to provide better space for increased student numbers. The University capital plan funded the £10M investment and the developments comprised a new school home, a veterinary teaching suite with a wet laboratory able to house up to 160 students for dissection classes and a clinical skills laboratory, a new small animal first opinion practice, new research facilities for infection biology and integrative biology, and new laboratory facilities for microscope and practical classes.

In addition to the £10m investment at Liverpool, the University has also matched endowment funding for the Leahurst Learning Centre. This new build and refurbishment of existing space will provide much needed up-dating of facilities for the livestock health and welfare division including the farm animal practice. New seminar rooms, dissection and clinical skills teaching space and student locker facilities will also be provided.

In conclusion, very substantial improvements have taken place in buildings and associated equipment both on the Liverpool and Leahurst sites. The school has benefited from significant investment and support from the University and the Faculty for these developments as well as gaining external funding through philanthropic donations and applications to external funding bodies.

### ***Main changes to the study programme***

BVSc undergraduate numbers have increased since the last visit in 2003 from a total of 495 to 608 (23% increase). In line with (or over) the increase in student numbers academic and support staff FTEs have also increased from 73.9 to 144.28 (95%) and 110.5 to 152.94 (38%) respectively. Many of the new posts are associated with areas of clinical service and therefore staff are involved in caring for and treating animals as well as student teaching. A main focus of the school has been to ensure that rotation group sizes do not increase and increased student numbers are accommodated without a detrimental effect on student experience. As described in chapter 4 changes to the rotation group timetables to expand to 36 weeks of the year ensure small group size and more utilisation of the clinical resources for student learning.

The BVSc has undergone a substantial review and as described in chapter 4 a new curriculum will be introduced from September 2013 for first year undergraduates. At the start of the curriculum review process focus groups were held with stakeholders including employers of our graduates, with representation from government, the pharmaceutical industry, public health and food hygiene services and associated charities. Emphasis was given to ensuring that graduates of the new curriculum would meet the day one competencies but also allowing an element of streaming through electives and project choices and a recognition of the importance of research underpinning all areas of the profession.

Outside the curriculum review many significant improvements have taken place within individual modules in delivery, assessment, feedback and clinical integration in the earlier years of the programme. These changes are recorded throughout the SED but of particular mention is the clinical skills teaching. A clinical skills laboratory in Liverpool is available for basic clinical skills learning to ensure the students have opportunity to practise these skills prior to starting on the clinical rotations. In addition, further clinical skills rooms are available at Leahurst and there will be integration of this teaching in the rotations. Additional academic posts are currently being recruited for clinical skills.

### ***Major problems encountered by the establishment whether resolved or not***

Many substantial changes have taken place to the structure of the school and where it sits within the University. In addition developments to buildings and changes associated with these have created a situation where a lot of substantial developments have happened over a short period of time. This has been unsettling for some staff and efforts have been made to ensure that all staff and students are involved in communications regarding any changes and that there is an opportunity for consultation. Overall these concerns are largely now disappearing and staff can see the benefits from the new facilities and structures.

The building developments are on-going with a further project, the Leahurst learning centre due for completion in May 2013. This will update the tired facilities in the farm animal area which were overdue for refurbishment as well as providing additional teaching space required for the increased student numbers. Office and laboratory space for staff remains tight at Leahurst and further plans are currently being discussed to look at a new building using the 'footprint' from the Jordan Building (used as temporary office space until May 2013 and then vacant thereafter). Planning permission on the Leahurst site is not always forthcoming and better use of space is needed. A Leahurst space utilisation committee has recently been set up to deal with these issues, chaired by Professor Sarah O'Brien.

Retention and recruitment of staff remains problematic in particular within paraclinical and clinical disciplines. A review of salaries has taken place (starting Nov 2011) and this is in three phases; phase 1 is completed at the time of writing and is to ensure clarity and fairness across grade structures and career pathways for clinical staff; phase 2 is under discussion and involves the consideration of a salary supplement for staff in areas difficult to recruit; phase 3 involves payment of a stipend/supplement for some of the substantial managerial tasks associated with the diversity and complexity of the school activities. A review of professorial salaries will take place across the University in 2013.

Financial issues are an increasing problem within our undergraduate body. There are hardship funds within the school which give out relatively small amounts of money (usually up to £1,000) to a student following consideration of an application by the committee or by Head of School under chairs action. This often makes the difference between a student being able to complete the programme or having to give up for financial reasons. Applications to these funds are increasing and it is a concern that this trend will continue.

Overall satisfaction in the NSS remains high (94%) although the school has lower than the University average for feedback. A new academic post was created in 2012, lecturer in student

experience, and part of the remit of this role is to consider and improve feedback to students (and from students).

### ***Response to recommendations made in the 2003 report***

#### **The Small Animal Teaching Hospital and clinical studies**

A recommendation from the 2003 visit related to the building of a small animal referral hospital at Leahurst and was an essential prerequisite for the successful development of small animal studies at Liverpool. In 2007 the £9M development of the new small animal teaching hospital (SATH) was completed. SATH provides state of the art facilities in all aspects of dog and cat surgery and medicine and is used to provide clinical teaching for undergraduates. In addition, it provides training for junior clinical posts in many disciplines, interns and residents. Key features include (further details in chapter 6):

- State of the art operating theatres including an endoscopy suite for arthroscopy and laparoscopy
- Dedicated cardiology and dermatology suites
- A full range of imaging modalities including MR, CT as well as two ultrasound rooms and two computed radiography rooms
- Radiotherapy unit
- ICU and isolation facilities
- Kennelling and support facilities
- Student accommodation for four students on out of hours duties

Case throughput is high with over 20,000 cases per year.

Laboratory diagnostic services are provided at the Leahurst campus and these provide a service to all the clinical areas. Students work with the diagnostic services as part of their clinical rotations and can also arrange further EMS time with the diagnostic service if they wish. Additional staff have been recruited to the diagnostic areas due to the increased clinical load.

#### **Small animal practice**

The practice is used as part of the clinical rotation weeks and also provides an elective opportunity. In addition, many students chose to spend further time in the practice during their EMS. The first opinion practices across all three divisions, small animal, farm and equine, are involved in business skills teaching with the students. The new building in which the small animal practice is housed opened in July 2012 and over the first month saw a very high number of new clients. This is a developing service which will provide excellent student experience. Positive feedback from students has been given on this rotation.

### **Curriculum changes**

The introduction of the new curriculum will enhance our response to many of the recommendations from the 2003 visit. Integration of clinical teaching earlier into the programme will allow clinical context to be given to basic science teaching and anatomy and physiology. Many of these changes have already taken place within modules but this will be enhanced in the new curriculum. Changes in assessment will also mean that there will be assessment of all topics covered at that time rather than sticking to specific modules only.

### **Finance (see Chapter 3)**

Budgeting for additional computers and IT staff has been enhanced. IT teams will be based at Liverpool (at institute level) and also at Leahurst. A head of IT and e-learning for the school has been appointed (Mrs Avril Senior) and along with colleagues she has ensured that the school has kept up to date with resources and requirements. More computers have been funded for students and are placed in the different areas where students may need to get access such as the hospitals. New buildings have Wifi and increasingly students wish to use laptops or Clinical theory, clinical rotations, electives. We have not provided all students with Clinical theory, clinical rotations, electives but this has been given consideration as more teaching resources are available on-line.

The Leahurst library is being refurbished as part of the Leahurst Learning Centre development.

### **Public health**

Since 2004 we have increased the number of academic staff in the area of Veterinary Public Health (VPH) to four, with a part time Professor whose remit is to champion Veterinary Public Health and to coordinate the teaching of the subject. This means we have strong team covering the subject. The content and teaching is constantly under review and is modified to take account of changes and development within the industry and the Veterinary Public Health curriculum at Liverpool meets the requirements of the RCVS Guidance on Veterinary Public Health Teaching in the UK Veterinary Schools. The overall course was reviewed and strengthened following the 2003 RCVS visitation in order to cover the whole range of topics within VPH and their relevance to the UK students. The overall aim was to develop Public Health as a concept integral to Veterinary Science and the profession. This was achieved throughout the undergraduate curriculum either in stand-alone modules and clinical rotations or included and highlighted in other relevant subjects. The curriculum is structured around clear learning objectives identified in the modules and in the specific rotations in VPH and clinical pathology during fourth and fifth years. Introductory lectures on Veterinary Epidemiology and Public Health (VEPH) are given in years one and two linked with animal husbandry, industry and economics. In Year 3, the two VEPH modules include lectures, problem based learning, discussions and practical classes in a range of subjects including meat inspection, and course work. The numbers of practical classes in the course have been increased and cover topics such as aspects of meat, milk, and water microbiology, food technology, egg quality control, fish, honey and practical meat inspection and safety. An important aim of this course is to highlight the role of the veterinarian in public health. Some lectures have been introduced into 3 year by specialist external lecturers and by colleagues from other universities.

As part of the clinical rotations in Years 4 and 5, students spend a week working on different aspects of public health. The rotation includes tutorials that discuss the contribution of veterinary science in public health, and the application of food safety in primary production and food processing. This is supported by visits to both poultry and red meat abattoirs in order to examine hygiene and through sample collection and analysis to examine microbiological hygiene. During the week the students are working and presenting on aspects of Public health of their choice which range from food hygiene to zoonoses of companion animals and aspects of mental health.

### **Farm animal division (Livestock Health & Welfare LHW)**

The LHW division will benefit from the Leahurst Learning centre development which will provide additional teaching space, including seminar rooms and a wet laboratory/clinical skills facility as well as much needed up-dating of the practice and office spaces. To accommodate increased student numbers and rotation group teaching weeks two new farm animal academic staff are currently being recruited. In addition, a further lecturer has been appointed to the farm practice; now staffed by 3 lecturers, a resident and an intern.

The lecturer in veterinary surveillance, previously funded by VLA, has moved to the core school budget, along with the two support staff. This activity will now be managed through the LHW division with a strategy to engage with local practices and farmers to encourage availability of cases. Sufficient funds will be available to help subsidise this activity where needed to ensure that adequate carcasses are available for student teaching.

### **Wood Park Farm**

Significant on-going development of Wood Park farm has taken place since the 2003 visit with much stronger engagement with the students. This development has been funded both by the University and outside collaborations including Tesco. Wood Park herd has developed from an industry standard herd with substandard accommodation to perform in the top 10% for technical performance. The farm also benefits from innovative working relationships with industry leaders like TESCO who have named the farm The Tesco Dairy Centre of Excellence and BOCM PAULS (the largest animal feed company in the UK) who advise and help us to show best practice in managing a modern dairy herd. The work with TESCO includes research and KE projects which influence over 10% of UK dairy farmers.

Undergraduate engagement includes:

- All 1st years get a cow allocated and access to online milk recording information and a monthly quiz/prize draw when the new recording data are posted.
- Animal handling and clinical exam practicals for 1st years
- Linear assessment of cows in the genetics component of 2nd year.
- 3rd year Introductory Clinical Course Practical sessions on clinical exam.
- 4th year clinical theory course practical sessions (Respiratory, nutrition, lameness, and Mastitis)
- Clinical Rotations: Wood Park is used by 4 of the clinical rotation weeks in LHW division

The small teaching room has been redeveloped into a visitor centre with funding from Tesco PLC. This is used by undergraduate teaching as well as School, Farmer, agricultural advisor/nutritionalist and vet groups as part of our knowledge exchange and widening participation activities.

### **EMS**

The school recognises the need to have excellent links with EMS providers. Although significant improvements have taken place this is an area which still requires further improvement. Copies of presentations given to the students outlining guidelines for placements are also given to practice providers who wish to know what instructions the school has given to the students. Feedback from providers on an individual student placement can be given as written feedback on forms provided by the school. This information is extracted and where excellent or cause for concern, this is discussed between the student and their tutor. This system will be changed in 2012/12 so that all students will have a discussion with their tutor regarding all feedback from placements. The school benefits from the support of the Alumni Association in improving EMS provider relationships. There is student representation on the Alumni Association Committee and in collaboration seminars have been organised to engage the Alumni and undergraduates in joint activities which will help foster relationships of benefit to EMS and also career guidance.

The school has been part of the working group at RCVS looking at 'Skillwise' database system for monitoring EMS. Changes during 2011/2012 have been introduced to allow more flexibility to students in placements, including the removal of strict requirements for placements (such as numbers of animals). The emphasis has moved from pre-post monitoring to post-placement so that students have the opportunity to reflect, evaluate and critique their learning experiences.

### **Staffing**

There has been a significant increase in staff numbers since the 2003 visit (see chapter 10 and above). There have been new posts across most areas of the programme and further expansion of staff numbers is budgeted over the coming years as the increased student numbers make their way through the five years of the programme. Difficulty still exists in recruiting in certain disciplines and a review of salaries is currently underway to try and address this. The annual review no longer has a quota and there are now opportunities for progression on a teaching and scholarship pathway which removes the ceiling for veterinary clinical staff not involved in basic research.

## Chapter 1 Objectives

As a research-intensive Russell Group university with a tradition and reputation for excellence, the University of Liverpool has a focus on existing and emerging strengths while planning to achieve growth in quality and scale across five key priorities. These areas are outlined in the University's strategic plan ([www.liv.ac.uk/intranet/excellence/strategic-plan.pdf](http://www.liv.ac.uk/intranet/excellence/strategic-plan.pdf)).

The five key priorities are:

- Improving research performance
- Positioning ourselves as a global university
- Driving knowledge exchange and innovation
- Enhancing student experience
- Extending widening participation

The School of Veterinary science completely supports this strategy and vision. As a 21<sup>st</sup> century veterinary school, with over a 100 years of history, we aim to develop our global reach and influence in order to reflect our academic heritage within a civic institution. In partnership with other Schools and Faculties in the University and beyond, we aim further to develop a strong infrastructure to support academic endeavour and teaching prowess, underpinned by research excellence. Our culture of collaboration will continue to benefit the communities in which we operate, both at home and overseas.

The Liverpool graduate should be a global citizen, benefiting from an international curriculum and experience, and empowered to address global challenges. We will strive to ensure our students form a relationship with the University that they will want to continue throughout their lives.

A review of the University's priorities was carried out in March 2011 in response to the Browne report, the Government's Comprehensive Spending review and the significant changes to the higher education environment. University staff were given the opportunity to engage with the strategy review.

### School of Veterinary Science Vision Statement

**'to be a centre of regional, national and international  
excellence in research and learning in animal health and welfare'**

To this end the School of Veterinary Science at the University of Liverpool has the following objectives:-

- to maintain and develop excellence in veterinary research so as to underpin the learning and teaching environment and improve the health and welfare of animals and humans; to foster collaborative and inter-disciplinary research both within and outwith the University of Liverpool;
- to continue to deliver excellence in learning and teaching at clinical, paraclinical and preclinical levels; to be innovative and relevant to the current and future needs of veterinary graduates;

- to maintain and further develop international excellence in clinical veterinary studies, and to deliver such excellence in animal care through the provision of outstanding Hospital and Practice facilities;
- to be aware of and responsive to the wider and developing role of veterinary science in contributing to and informing social and environmental issues;
- to act as a regional and national resource for the veterinary profession, the animal industry and the general public through the provision of education, continuing professional development and services; and to act as a particular resource and focus for the alumni of the Veterinary School.

## Strengths

- Significant investment in facilities over the last ten years providing excellent resources for student learning including the small animal teaching hospital, refurbishment of the post-mortem room suite at Leahurst, the visitor's centre at Wood Park farm, the equine intensive care unit, and the £10M investment in facilities at Liverpool during 2012.
- First opinion practices in addition to referral centres for all three clinical divisions; livestock, health and welfare, equine and small animal.
- Clinical services run as efficient businesses with income able to substantially subsidise student teaching.
- Two farms on site providing teaching opportunities throughout the five years of the programme.
- Ability to maintain small rotation group size for clinical teaching to allow experiential rather than observational teaching.
- Dissection classes with cadavers for learning anatomy.
- Intramural rotations in public health with students and public health teachers visiting abattoirs.
- Significant in-put into widening participation activities for entry onto veterinary programmes both through engagement with educational opportunities (central University) and bespoke 'veterinary' courses eg Easter school.
- Peer-support as part of the student support package available for undergraduates in the school of veterinary science.
- Hardship funds for students with a significant contribution to the fund in 2012 through an endowment.
- Active student engagement with committees at school and Faculty level.
- Veterinary undergraduates gain from the 'University life' during the first three years in particular where their time is largely spent in Liverpool.
- Substantial developments on open days to allow more potential candidates to make informed decisions on their choices for university applications.
- A robust admissions process allowing feedback to be provided.
- Research managed through research departments with a focus on areas of strength.

## Weaknesses

- Difficulty recruiting and retaining staff in particular veterinary qualified staff where more attractive salaries could be gained elsewhere.
- Reliance on income generated through clinical services with potential risk associated with the general economy.
- Reliance on small numbers of academic staff at a senior level with insufficient succession planning.
- Split site campus giving issues for staff and students.
- Potential risk for research staff to lose engagement with school through restructuring into research focussed departments.

## Chapter 2 Organisation

### 2.1 Factual Information

#### **LIVERPOOL:**

School of Veterinary Science  
The University of Liverpool  
Thompson Yates Building  
Liverpool L69 3GB  
Tel: 0151 794 8238/5660; Fax: 0151 794 4279

#### **LEAHURST:**

The School of Veterinary Science  
The University of Liverpool  
Leahurst Campus  
Chester High Road  
Neston CH64 7TE  
Tel: 0151 794 6002; Fax: 0151 794 6005

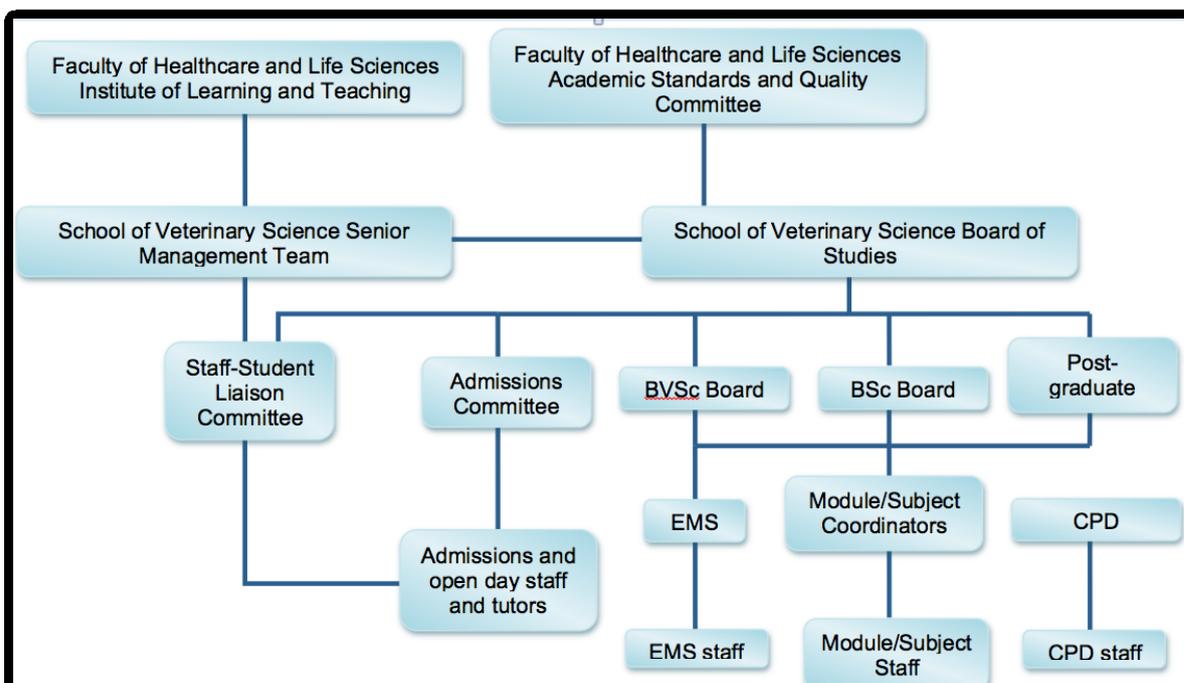
Head of School Professor Susan Dawson BVMS PhD MRCVS

The School of Veterinary Science sits within the Faculty of Health and Life Sciences. The Faculty was created following an extensive consultation carried out in 2008/09 which resulted in the creation of a three Faculty academic structure. The Faculty of Health and Life Sciences resulted from the reorganisation of the Faculties of Medicine and Veterinary Science and the Schools of Biological Sciences and Psychology in September 2009. The Dean of the Faculty is Professor Ian Greer who is an executive pro-vice chancellor of the University.

Once formed, the Faculty itself has undertaken a period of consultation to determine how best to support its research and teaching activities. This has led to the creation of five Research Institutes Ageing and Chronic disease, Infection and Global Health, Integrative biology, Psychology, health and society and translational medicine and one Institute of Learning and Teaching (ILT). The School of Veterinary Science sits within the Institute of Learning and Teaching along with five other schools; school of medicine, school of dentistry, school of life sciences, school of health sciences and school of psychology.

Head of ILT and student experience lead for the Faculty is Ms Eileen Thornton. ILT has a shared management structure to coordinate and optimise investment in staffing, teaching developments and facilities. In addition the Institute researches and develops best teaching practice and provides a number of shared services. In collaboration with Institutes within the Faculty and across the University, ILT incorporate the latest research discoveries quickly into the schools programmes.





**Figure 2.2 School of Veterinary Science Committee Structure for Learning & Teaching**

Professor Dawson was appointed as Head of School in January 2011. Recruitment to this post was through internal recruitment with interview and selection. The post is a three year post with the option of a second term if appropriate.

Professor Dawson set up the school senior management group at the time of her appointment and the group meet monthly with informal meetings between times. New appointments on to SMG are by invitation following agreement from the group.

**Table 2.1 Officers within the School of Veterinary Science**

| Position                                               | Incumbent                                                                 |
|--------------------------------------------------------|---------------------------------------------------------------------------|
| Head of School                                         | Professor Susan Dawson, BVMS PhD MRCVS                                    |
| School Administrator                                   | Mrs Rachael Atkins, BA (Hons) PGDip                                       |
| Head of Small Animal Division                          | Professor Laura Blackwood, BVMS PhD MVM<br>CertVR DipECVIM-CA (Onc) MRCVS |
| Head of Equine Division/School Finance Lead            | Mr Peter Bowling, BSc BVSc MRCVS                                          |
| Head of Livestock, Health & Welfare and Farms Division | Dr Dai Grove-White, BVSc MSc PhD FRCVS                                    |
| Head of Veterinary Pathology                           | Professor Anja Kipar, Dr.med.vet.habil<br>DiplECVP, MRCVS                 |
| Head of Veterinary Public Health                       | Professor Jim Scudamore, BVSc BSc DipECVPH<br>MRCVS                       |
| School Research Lead                                   | Professor Peter Clegg, MA VetMB PhD CertES<br>DipEVCS MRCVS               |

|                                                       |                                                                      |
|-------------------------------------------------------|----------------------------------------------------------------------|
| Head of Infection Biology                             | Professor Jonathan Wastling, BSc PhD CBiol MIBiol                    |
| Head of Epidemiology & Population Health              | Professor Matthew Baylis, BA DPhil (Oxon)                            |
| Head of Musculoskeletal Biology I                     | Professor John Innes, BVSc PhD CertVR DSAS(Orth) MRCVS               |
| BVSc Programme Director                               | Ms Carol Gray, BVMS MRCVS                                            |
| Director of Admissions and Disability Support Officer | Dr Kieron Salmon, BVSc PhD MRCVS                                     |
| Director of Student Experience                        | Ms Margaret Hannigan, BSc MSc PGCE                                   |
| Director of CPD                                       | Dr Cathy McGowan, BVSc MACVSc PhD DEIM DipECEIM MRCVS FHEA           |
| Assessment Officer                                    | Dr Tim Nuttall, BSc BVSc CertVD PhD CBiol MSB MRCVS                  |
| Senior Tutor                                          | Dr Richard Barrett-Jolley, BSc (Hons) DPhil (Oxon) FHEA FBPharmacols |
| Senior Tutor                                          | Ms Avril Senior, BVSc, MRCVS                                         |
| Head Vet (Equine Practice)                            | Mrs Angela Holland, BVSc BSc, CertAVP(EP) MRCVS                      |
| Head Vet (Farm Animal Practice)                       | Mrs Jo Oultram, BVSc CertCHP MRCVS                                   |
| Head Vet (Farm Animal Practice)                       | Miss Helen Williams, BVSc CertCHP MRCVS                              |
| Head Vet (Small Animal Practice)                      | Mrs Katherine Linney, BVSc MRCVS                                     |
| Farm Manager (Ness Heath)                             | Mr Nigel Jones, BSc                                                  |
| Farm Manager (Wood Park)                              | Mr John Cameron, OND HNC                                             |
| Site Manager (Leahurst)                               | Mrs Jean Wheeler, C.Biol M.I.Biol                                    |
| Site Manager (Liverpool)                              | Mr James Trafford, IMLS                                              |

There is an active alumni association with members of staff, including the head of school, sitting on the alumni committee. This gives the opportunity for the school to benefit from the experience and knowledge of alumni. In addition, many school staff have collaborations with other members of the profession either through research links, committee involvement or teaching roles such as external examining.

Our clinical referral and diagnostic service provision bring daily contact with many members of the profession. CPD and PGT provision also provide an opportunity for involvement of other members of the profession. Clinical services also bring a large number of members of the public onto the campuses and our undergraduates have interaction with these clients.

Specifically for the curriculum review focus groups were set up to gather data on requirements. Efforts were made to ensure representation from different areas and disciplines within the profession at these focus groups.

### Comments

Areas of service delivery within the school are run as separate business activity. Each business plan has a member of staff who oversees the business, both day-to-day running and management of the accounts. Support is provided by central University finance from Mr Naz Nanji and Miss Karen Fleming. The business plans as a whole are overseen at a school level by Professor Dawson and Mr Peter Bowling. An annual meeting is held to discuss the whole activity of each business and how it fits in with the strategic plan and there are quarterly meetings for budget planning and accounting.

**Table 2.2 Business plans within the school**

|                                          |                      |
|------------------------------------------|----------------------|
| <b>Small Animal Teaching Hospital</b>    | Prof Laura Blackwood |
| <b>Small Animal Practice</b>             | Mrs Katherine Linney |
| <b>Philip Leverhulme Equine Hospital</b> | Mr Peter Bowling     |
| <b>Equine practice</b>                   | Miss Angela Holland  |
| <b>Farm animal practice</b>              | Miss Helen Williams  |
| <b>KE Consultancy</b>                    | Dr Rob Smith         |
| <b>Veterinary Laboratories Services</b>  | Prof Anja Kipar      |
| <b>Wood Park farm</b>                    | Mr John Cameron      |
| <b>Ness heath farm</b>                   | Mr Nigel Jones       |
| <b>Diagnosteq</b>                        | Prof Chris Proudman  |
| <b>CPD</b>                               | Dr Cathy McGowan     |

## Chapter 3 Finances

### 3.1 Factual information

#### 3.1.1 General information

The University of Liverpool currently works on a three year planning performance and budgetary cycle. For the School of Veterinary Science this planning is carried out by the Head of School and the School Senior Management Team. Plans are reviewed for approval at both Institute and Faculty level. A separate budget is planned for each of the research institutes with targets for research income set for the next three years aligned to their research strategy. Income flows to the area where it is generated in this model and so all the student income, both HEFCE and student fee income is allocated to the school. Within the school of Veterinary Science there are also clinical and diagnostic services providing income and these are run as business plans within the School overall budget. Each business plan is managed separately with planning done for that area and then quarterly meetings take place at school level to review forecasts and confirm actual figures. The forecast surplus on the budget is set as the contribution to the University. The required contribution to the University is set at the School level, allowing the School the flexibility to manage the business plans strategically. The overall contribution for 2011/12 was 25%.

Capital planning and equipment replacement (above £5,000) is part of the same planning cycle. As with income and other expenditure, capital plans are initially produced separately for each business plan and then put together to create an overall School plan which goes to the Institute and Faculty for approval.

There is an opportunity twice yearly to review the plans and alter the forecast if required. Where changes are necessary, for example where additional students have been recruited or additional research income awarded, pay and non-pay expenditure can be adjusted in line with requirements. Forecasts are also carried out twice yearly for each business plan. Where something unexpected is required, for example the failure of a piece of equipment, then approval would need to be gained at Institute and Faculty level for expenditure not previously budgeted on plan.

Estates Management are responsible for upkeep and maintenance of the estate and this is budgeted for centrally. In addition, opportunities may arise where the University capital plan allocates new additional resource, for example, the £10M investment in estates for the School in 2012 has been allocated from the University capital plan. When new outside funds have been acquired for projects requiring either matched or additional funds, then the Head of School can make a case to the Institute and Faculty for further capital resource. The Leahurst Learning Centre, to be completed in May 2013, was resourced through endowment funds with an additional £900K from the Faculty to allow the full development to be carried out.

### 3.1.2 Information on extra income

The School of Veterinary Science generates significant extra income through clinical and diagnostic services run as business plans. There is not a set proportion of turnover from each business which is required as a contribution by the University (see above). This allows much more flexibility for the School whereby the Head of School can make decisions to allow an individual business plan to run at a loss where there are requirements for the activity. An example would be the first opinion small animal practice in Liverpool which has produced a deficit budget in previous years but provides an excellent part of the student experience. Subsidy from more financially successful areas within the School allows an assurance that all activities needed for student learning can be continued even in the face of a financially less successful year.

From 2012 onwards, Home/EU students pay tuition fees of £9,000 per year. Students who are on full-fees pay tuition fees of £21,830. All fee income flows to the School and is planned and budgeted as previously described.

### 3.1.3 Overview income (revenue) and expenditure

| Year    | State<br>(government) | Academic<br>fees and<br>support<br>grants | Income<br>generated by<br>the school<br><br>Research | Business plan<br>and<br>endowment | TOTAL  |
|---------|-----------------------|-------------------------------------------|------------------------------------------------------|-----------------------------------|--------|
| 2011/12 | 9,728                 | 4,850                                     | 4,647                                                | 11,200                            | 30,453 |
| 2010/11 | 9,940                 | 4,810                                     | 4,693                                                | 10,896                            | 30,339 |
| 2009/10 | 9,844                 | 4,389                                     | 5,168                                                | 10,279                            | 29,680 |

\*£1,000

**Table 3.2 Expenditure**

| Year    | Pay    | Non-pay<br>Teaching | Research |       | TOTAL  |
|---------|--------|---------------------|----------|-------|--------|
| 2011/12 | 14,919 | 5,222               | 2,771    | 7,993 | 22,912 |
| 2010/11 | 14,081 | 4,879               | 2,547    | 7,426 | 21,507 |
| 2009/10 | 13,771 | 4,643               | 2,472    | 7,116 | 20,887 |

\*£1,000

### 3.2 Comments

Whilst the planning and performance budgetary cycle is well established within the University the level of budgetary devolution is relatively new and it provides greater autonomy for the Head of School in terms of finances. Although, approval for additional expenditure is still required at a higher level the School can make decisions on the distribution of spend within the different activities and can relate increased spend directly to areas where extra income is earned. This encourages staff in gaining extra income as they can see the direct benefit.

The budgets are presented as requested in the outline SED. Management of the budgets within the structure of the Faculty of Health Sciences (see Chapter 2) separates the teaching and the research budgets with day to day management of the research budgets provided through the research institutes. The data presented in this chapter shows the school budget alongside the research income and spend for the academic staff associated with the school of veterinary science. It does not include the full budgets for other academics not included within this document (see Staff List)

Significant investment has been made in estates over recent years using both internal University funds as well as external sources such as endowments. The completion of the Leahurst Learning centre in 2013 will provide state of the art student resources across all clinical areas. Investment in additional requirements such as the clinical skills lab in Liverpool and provision of updated and expanded facilities to replace previously tired facilities has been completed in 2012. In terms of capital investment the next phase beyond 2013 would be expansion of research and staff facilities at Leahurst. A Leahurst space committee is chaired by Prof Sarah O'Brien and part of the remit of this group is to develop plans for expansion. The most likely site for these would be where the current temporary office accommodation is in the Jordan building.

Budget plans for the following three years include expansion of staff numbers across various disciplines in line with increased student numbers. Additional posts in livestock health and welfare, equine surgery and medicine and public health have been recruited over the last year. To adequately staff new areas or enhance staffing levels for key activities two new posts in clinical skills are also currently being recruited in addition to a new academic post in student experience. The process for new posts involves a decision by the Head of School and the senior management team as to which posts are required and addition of the posts to budget plans. Approval is subsequently sought at Institute and Faculty level.

### 3.3 Suggestions

The Head of School must ensure that academic and support staff are increased in line with student numbers and that this is captured in future budget plans. The challenge of retaining and recruiting staff in particular disciplines has led to a review of salaries and career paths and this additional cost will be added to the School expenditure (see Chapter 10). Facilities and resources are fit for current student numbers however to keep student rotation groups an appropriate size continual monitoring of requirements is needed. The School Senior Management Team should ensure that this monitoring takes place.

## Chapter 4 Curriculum

### 4.1 Factual information

The University of Liverpool School of Veterinary Science aims to deliver a curriculum that provides at least the essential competences (including knowledge, understanding, skills and attitudes) as prescribed by the RCVS and EAEVE.

The programmes offered, that lead to a veterinary degree (Bachelor of Veterinary Science – BVSc) and admittance to the RCVS Register, are the five-year D100 and the six-year D101 (which includes an intercalated year, usually taken between 3<sup>rd</sup> and 4<sup>th</sup> years of study). There is also a “fast-track” 4-year programme, which is offered to graduate entrants with suitable prior qualifications.

The current students follow a curriculum designed to run until 2017. First year students in 2013 will commence on a new version of the curriculum (non-modular for all 5 years), which is designed to address identified shortcomings in the current version (modular for year 1-3). This will mean that the two curricula will be run in parallel for several years.

The aim of the new curriculum is to integrate both horizontally and vertically throughout the 5 years. We recognize that there is a lack of integration currently in years 1-3, which then causes problems in years 4 and 5 as students, having compartmentalized their knowledge in the pre-clinical years, find it difficult to assimilate and apply prior knowledge in years 4 and 5.

In the absence of a defined national curriculum, we recognise the importance of the Subject Benchmark Statement for Veterinary Science produced by QAA. Our current curriculum aims are as follows:

1. To enable graduates to have the **skills, knowledge and confidence** necessary to develop as **veterinary/animal scientists**, whatever their subsequent careers;
2. To encourage students to be **self-motivated learners**, capable of capitalising on the diversity of backgrounds of their fellow students and staff, and to continue learning in their subsequent careers;
3. To enable graduates to be **valued by their employers** and make a **positive contribution to society**.
4. To impart to students during the undergraduate degree, an **appreciation of ongoing research in veterinary science** and the consequent need for **Continuous Professional Development**.
5. To ensure that graduates have basic clinical and other **essential competences** that meet the requirements of the RCVS immediately on graduation.

These have been modified slightly to fit with the new curriculum structure, due to commence in September 2013, and now read as follows:

---

|   |                                                                                                                                                       |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>To enable graduates to have the skills, knowledge and confidence necessary to practise, and to develop as veterinary scientists and clinicians</b> |
| 2 | <b>To develop independent and lifelong learning skills</b>                                                                                            |
| 3 | <b>To prepare graduates who are professional, competent and aware of their responsibilities to animals, clients, employers and wider society</b>      |
| 4 | <b>To develop the skills required for research and sourcing of evidence, leading to evidence-based veterinary practice.</b>                           |
| 5 | <b>To ensure that graduates meet the requirements of the RCVS, EAEVE and any other appropriate regulatory bodies at the point of graduation</b>       |
| 6 | <b>To produce veterinary graduates who are effective communicators, and can work with other members of the veterinary team</b>                        |

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**Table 4.1: Aims of the new BVSc curriculum**

A large-scale review of the curriculum has taken place, with submission to Faculty Academic Quality and Standards Committee (FAQSC) expected in September 2012, for implementation in September 2013. This extensive curricular change was underpinned by feedback from staff, students, recent graduates and employers.

Proposals for the new curriculum will be reviewed by two external curriculum experts, Professors Stuart Reid (Royal Veterinary College) and Susan Rhind (Royal (Dick) School of Veterinary Studies), and their comments acted upon.

Changes to the curriculum are developed at School level, are initially approved by the BVSc Board and the School of Veterinary Science Board of Studies, and are then presented to the FAQSC for review and approval.

However, while this larger review and change is taking place, there are smaller-scale changes being made to the programme on a regular basis. This procedure is carried out via presentation and discussion of proposed minor changes at BVSc Board, then if approved, submission to School Board of Studies for departmental approval, then to FAQSC for final approval and amendment to module details.

Years 1-3 are currently run on a modular basis. Most modules are worth 15 credits, and an average of 4 modules (60 credits) are studied in each semester. There are two semesters per

year. Examinations are held at the end of each semester, and comprise written and, often, practical examinations in each modular subject. The modular structure allows coverage of discrete subject areas at defined time points, and splits the examination requirement between two semesters. Years 1-3 have fairly fixed time allocations between the various subjects as they are run with pre-defined module length and module titles.

Years 4 and 5 are non-modular, and comprise a clinical theory course at the beginning of 4<sup>th</sup> year, and then a 24 week rotation block that spans years 4 and 5. There is also a 3 week elective block, where students select an area of veterinary practice for further study.

The School aims for an even distribution of time allocation between the 3 species areas (equine, farm animal and small animal) in years 4 and 5. However, the inclusion of a 4<sup>th</sup> rotation group that consists of Small Animal (SA) and equine anaesthesia, SA imaging, SA first opinion, clinical pathology and public health, tends to skew the hours slightly in favour of small animal clinical studies in the current timetable.

In terms of the balance between theoretical and practical training, currently there is a strong bias towards didactic (theoretical) teaching in years 1-3. We recognise that many students learn more effectively from practical sessions or by having the chance to apply theory to practice, so this is an area that we are addressing via curriculum review. We currently have a 21-week block of clinical theory teaching (mainly didactic lectures) at the start of 4<sup>th</sup> year, which we intend to intersperse with more clinically relevant practical sessions in the new curriculum.

#### 4.1.2 Current undergraduate curriculum followed by all students

**Table 4.1.2: Hours devoted to each subject in current curriculum**

| Year   | Hours of training    |          |                        |                                |                          |               |       | Total   |
|--------|----------------------|----------|------------------------|--------------------------------|--------------------------|---------------|-------|---------|
|        | Theoretical training |          | Self-Directed Learning | Supervised practical training  |                          |               | Other |         |
|        | Lectures             | Seminars |                        | Laboratory and desk-based work | Non-clinical animal work | Clinical work |       |         |
| (A)    | (B)                  | (C)      | (D)                    | (E)                            | (F)                      | (G)           |       |         |
| First  | 246                  | 8        | 24                     | 82                             | 10                       | 0             | 4     | 374     |
| Second | 169                  | 20       | 66                     | 97                             | 2                        | 0             | 4     | 358     |
| Third  | 235                  | 15       | 132                    | 161.5                          | 0                        | 0             | 4     | 543.50  |
| Fourth | 393                  | 82       | 26                     | 23                             |                          | 636           |       | 1160    |
| Fifth  |                      |          |                        |                                |                          | 800           |       | 800     |
| Total  | 1043                 | 125      | 248                    | 363.50                         | 12                       | 1436          | 12    | 3235.50 |

**Table 4.1.2a: Modules and module coordinators in current curriculum**

|                                                             |                                                                                              |  |                                                                                       |                                                                                  |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| BVSC 600 Professional and Communication Skills (Ms CA Gray) | <b>YEAR 1</b>                                                                                |  |                                                                                       |                                                                                  |
|                                                             | <b>Semester 1</b>                                                                            |  | <b>Semester 2</b>                                                                     |                                                                                  |
|                                                             | VETS 111 (7.5 credits) (Dr E Laird)<br>Concepts in biochemistry and cell biology             |  | VETS 121 (15 credits) (Dr L Iwajenko)<br>Genetics and genomics                        |                                                                                  |
|                                                             | VETS 112 (15 credits) (Dr IS Young)<br>Introduction to systems physiology – cellular support |  | VETS 122 (15 credits) (Dr T Thippeswamy)<br>Limbs of the domestic animals             |                                                                                  |
|                                                             | VETS 113 (15 credits) (Dr S Tew)<br>Body Systems 1                                           |  | VETS 123 (7.5 credits) (Ms C Gray)<br>Body Systems 2                                  |                                                                                  |
|                                                             | VETS 114 (15 credits) (Dr CM Argo)<br>Animals in their environment                           |  | VETS 124 (15 credits) (Dr J Bro-Jorgensson)<br>Whole animal design and function       |                                                                                  |
|                                                             | VETS115 (7.5 credits) (Dr L Pickavance)<br>Cells and Tissues                                 |  | PHAR164 (7.5 credits) (Dr NR Kitteringham)<br>Introduction to pharmacology            |                                                                                  |
|                                                             | HACS and PCEMS (Dr N McEwan/Ms F Penrose)                                                    |  |                                                                                       |                                                                                  |
|                                                             |                                                                                              |  |                                                                                       |                                                                                  |
|                                                             | <b>YEAR 2</b>                                                                                |  |                                                                                       |                                                                                  |
|                                                             | <b>Semester 3</b>                                                                            |  | <b>Semester 4</b>                                                                     |                                                                                  |
|                                                             | VETS 231 (15 credits) (Professor SD Carter)<br>Molecular and cellular basis of disease       |  | VETS 241 (7.5 credits) (Dr LC Pickavance)<br>Integrative & applied veterinary biology | VETS 245 (7.5 credits) (Dr PJ Cripps)<br>Introduction to veterinary epidemiology |
|                                                             | VETS 232 (15 credits) (Dr KSH Salmon)<br>Gastrointestinal tract                              |  | VETS 242 (15 credits) (Dr R Barrett-Jolley)<br>Neuroscience and neuropharmacology     |                                                                                  |
|                                                             | VETS 233 (15 credits) (Mrs F Penrose)<br>Functional Anatomy of the Head                      |  | VETS 243 (15 credits) (Dr IS Young)<br>Diverse Species                                |                                                                                  |
|                                                             | VETS 234 (15 credits) (Dr CM Argo)<br>Reproduction                                           |  | VETS 244 (15 credits) (Ms M Hannigan)<br>Animal maintenance                           |                                                                                  |
|                                                             | PCEMS (Ms F Penrose)                                                                         |  |                                                                                       |                                                                                  |

|                                                                                                                                                                                                     |                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                     |                                                                                                                                                                                                        |
| <b>YEAR 3</b>                                                                                                                                                                                       |                                                                                                                                                                                                        |
| <b>Semester 5</b>                                                                                                                                                                                   | <b>Semester 6</b>                                                                                                                                                                                      |
| VETS 351 (15 credits) (Dr N Williams)<br><br>Infectious diseases I                                                                                                                                  | VETS 361 (7.5 credits) (Dr K Ganapathy)<br><br>Infectious diseases II                                                                                                                                  |
| VETS 352 (22.5 credits) (Professor DJL Williams)<br><br>Veterinary parasitic diseases                                                                                                               | VETS 362 (15 credits) (Dr A Freeman)<br><br>Research project and dissertation                                                                                                                          |
| VETS 353 (15 credits) (Dr J Chantrey)<br><br>Pathology I                                                                                                                                            | VETS 363 (15 credits) (Dr L Roussel)<br><br>Pathology II                                                                                                                                               |
| VETS 354 (15 credits) (Dr PH Jones)<br><br>Veterinary epidemiology and public health I                                                                                                              | VETS 364 (15 credits) (Dr E Michalopoulou)<br><br>Veterinary epidemiology and public health II                                                                                                         |
| Clinical EMS (Dr RD Murray)                                                                                                                                                                         |                                                                                                                                                                                                        |
|                                                                                                                                                                                                     |                                                                                                                                                                                                        |
| <b>YEARS 4 &amp; 5</b>                                                                                                                                                                              |                                                                                                                                                                                                        |
| <b>Year 4</b>                                                                                                                                                                                       | <b>Year 5</b>                                                                                                                                                                                          |
| Clinical theory course (BVSC410) comprising:<br><br>BVSC448 Livestock Health & Welfare (Dr J Duncan)<br><br>BVSC458 Equine Studies (Dr ER Singer)<br><br>BVSC468 Small Animal Studies (Dr N McEwan) | Clinical rotations (BVSC520) comprising:<br><br>BVSC548 Livestock Health & Welfare (Dr J Duncan)<br><br>BVSC558 Equine Studies (Dr ER<br><br>Singer)<br><br>BVSC568 Small Animal Studies (Dr N McEwan) |
| Clinical rotations (BVSC420)                                                                                                                                                                        | Electives (BVSC530) (Dr R Goncalves)                                                                                                                                                                   |
| Clinical EMS (Dr RD Murray)                                                                                                                                                                         |                                                                                                                                                                                                        |

**Vets 111 – Concepts in biochemistry and cell biology.** Covers relevant topics in protein, carbohydrate and lipid function and metabolism, nitrogen metabolism and cell signalling.

**Vets 112 – Introduction to systems physiology – cellular support.** Covers cell structure and function, homeostasis and nerve/muscle tissues.

**Vets 113 – Body systems 1.** Covers basic embryology, peripheral nervous system, cardiovascular and respiratory systems.

**Vets 114 – Animals in their environment.** Covers agriculture as an industry, animal growth and production, nutrition and feeding.

**Vets 115 – Cells and tissues.** Covers basic tissue types, use of microscope.

**Vets 121 – *Genetics and genomics*.** Covers genome structure, nucleic acid structure, pedigrees, breeding programmes, recombinant DNA technology and polymerase chain reactions.

**Vets 122 – *Limbs of the domestic animals*.** Covers skeleton and joint gross anatomy, normal locomotion, limb development and functional diversity.

**Vets 123 – *Body systems 2*.** Covers excretory and endocrine systems, and structures of the thorax.

**Vets 124 – *Whole animal design and function*.** Covers evolution, behaviour, welfare and quantitative genetics.

**Phar 164 – *Introduction to pharmacology*.** Covers the study of pharmacology and drug development, pharmacokinetics and the role of drug receptors.

**Vets 231 – *Molecular and cellular basis of disease*.** Covers immunology, mechanisms of tissue injury, response to injury, mechanism of action of NSAID and glucocorticoid drugs, use of laboratory results including biochemical tests to assess organ and system function.

**Vets 232 – *Gastrointestinal biology*.** Covers embryology, anatomy and physiology of gastrointestinal tract.

**Vets 233 – *Functional anatomy of the head and axial skeleton*.** Covers anatomy and physiology of head, axial skeleton and special senses.

**Vets 234 – *Reproduction*.** Covers control of reproduction in males and females, assessment of reproductive capacity and dealing with sub-fertility.

**Vets 241 – *Integrative and applied veterinary biology*.** Covers application of knowledge from basic scientific principles, using scientific research.

**Vets 242 – *Neuroscience and neuropharmacology*.** Covers structure of brain, special senses, neurological basis of behaviour, learning, memory and development of animal brain, and pharmacology of drugs used on nervous system.

**Vets 243 – *Diverse species*.** Covers anatomy, physiology and husbandry of fish, birds, reptiles and amphibians.

**Vets 244 – *Animal maintenance*.** Covers production systems, farm and companion animals, feeding, housing and production capacity.

**Vets 245 – *Introduction to veterinary epidemiology*.** Covers epidemiological measures and how to conduct studies, statistics.

**Vets 351 – *Infectious diseases 1*.** Covers structure and diversity of bacteria, viruses and fungi, host-pathogen interaction and pathogenesis, microbial disease ecology, diagnosis and control of infections.

**Vets 352 – *Veterinary parasitic diseases*.** Covers causes and diagnosis of parasitic disease, life cycles and epidemiology of significant parasites, antiparasitic drugs and resistance, and parasitic zoonoses.

**Vets 353 – *Pathology 1*.** Covers disease at a cellular, tissue and organ level, disordered tissue growth, haematology and diseases of the skin, cardiovascular, respiratory and alimentary systems.

**Vets 354 – *Veterinary epidemiology and public health 1*.** Covers application of epidemiology to human and animal diseases, legislation controlling food production and environmental protection and principles of risk analysis applied to the food chain.

**Vets 361 – *Infectious diseases 2*.** Covers major infectious diseases of small animals, horses and birds, including diagnostic features, laboratory diagnostic methods and control via treatment, vaccination and eradication.

**Vets 362 – *Research project and dissertation*.** Covers development of skills in project design, use of scientific literature and scientific writing.

**Vets 363 – *Pathology 2*.** Covers development of problem-solving skills in post-mortem examination, description and interpretation of findings and use of laboratory data; diseases of the liver and pancreas; urinary, reproductive, nervous, locomotor and endocrine systems; and special senses.

**Vets 364 – *Veterinary epidemiology and public health 2*.** Covers basic concepts in food hygiene, common lesions and problems found in abattoir, application of epidemiology and risk analysis to problem solving in animal and human disease, and contribution (as part of a multidisciplinary team) to human health.

**BVSC600 – *Professional and communication skills*.** Covers professional ethics, personal learning techniques, clinical communication skills, dealing with difficult situations.

**BVSC410 – *Clinical theory*.** Covers common disease conditions of equine, farm animal and small animal species.

**BVSC420, BVSC520 – *Clinical rotations*.** Covers 24 rotation weeks undertaken in farm animal, small animal, equine and miscellaneous divisions.

**Table 4.2: Curriculum hours in EU-listed subjects taken by each student (current curriculum)**

| Subject                                                                                    | Theoretical training |           |                        | Supervised practical training  |                          |                   | Other    | Total      |
|--------------------------------------------------------------------------------------------|----------------------|-----------|------------------------|--------------------------------|--------------------------|-------------------|----------|------------|
|                                                                                            | Lectures             | Seminars  | Self-directed learning | Laboratory and desk based work | Non-clinical animal work | Clinical training |          |            |
|                                                                                            | A                    | B         | C                      | D                              | E                        | F                 | G        |            |
| <b>1 Basic subjects*</b>                                                                   |                      |           |                        |                                |                          |                   |          |            |
| a) Physics                                                                                 | 0                    | 0         | 0                      | 0                              | 0                        | 0                 | 0        | 0          |
| b) Chemistry                                                                               | 0                    | 0         | 0                      | 0                              | 0                        | 0                 | 0        | 0          |
| c) Animal biology                                                                          | 0                    | 0         | 0                      | 0                              | 0                        | 0                 | 0        | 0          |
| d) Plant biology                                                                           | 0                    | 0         | 0                      | 0                              | 0                        | 0                 | 0        | 0          |
| e) Biomathematics                                                                          | 0                    | 0         | 0                      | 0                              | 0                        | 0                 | 0        | 0          |
| <b>1. Total number of hours</b>                                                            | <b>0</b>             | <b>0</b>  | <b>0</b>               | <b>0</b>                       | <b>0</b>                 | <b>0</b>          | <b>0</b> | <b>0</b>   |
| <b>2 Basic sciences</b>                                                                    |                      |           |                        |                                |                          |                   |          |            |
| a) Anatomy (incl. histology and embryology)                                                | 72                   | 9         |                        | 76                             |                          |                   |          | 157        |
| b) Physiology                                                                              | 121                  |           | 2                      | 43                             |                          |                   |          | 166        |
| c) Biochemistry, cellular and molecular biology                                            | 63                   |           |                        | 41                             |                          |                   |          | 104        |
| d) Genetics (including molecular genetics)                                                 | 36                   |           |                        |                                |                          |                   |          | 36         |
| e) Pharmacology and pharmacy                                                               | 20                   | 2         |                        |                                |                          |                   |          | 22         |
| f) Toxicology (including environmental pollution)                                          | 4                    |           |                        | 3                              |                          |                   |          | 7          |
| g) Microbiology (including virology, bacteriology and mycology)                            | 46                   | 5         |                        | 47                             |                          |                   |          | 98         |
| h) Immunology                                                                              | 10                   |           |                        |                                |                          |                   |          | 10         |
| i) Epidemiology (including scientific and technical information and documentation methods) | 2                    | 7         |                        | 10                             |                          |                   |          | 19         |
| j) Professional ethics                                                                     | 2                    | 2         | 5                      |                                |                          |                   |          | 9          |
| <b>2 – Total number of hours</b>                                                           | <b>376</b>           | <b>25</b> | <b>7</b>               | <b>220</b>                     |                          |                   |          | <b>628</b> |
| <b>Clinical sciences</b>                                                                   |                      |           |                        |                                |                          |                   |          |            |
| <b>3</b>                                                                                   |                      |           |                        |                                |                          |                   |          |            |
| a) Obstetrics                                                                              | 12                   |           |                        |                                |                          | 40                |          | 52         |
| b) Pathology (including pathological anatomy)                                              | 66                   |           |                        | 53                             |                          | 40                |          | 159        |
| c) Parasitology                                                                            | 45                   |           | 27                     | 34                             |                          |                   |          | 106        |
| d) Clinical medicine and surgery (including anaesthetics)                                  | 276                  | 54        | 15                     | 15.5                           |                          | 814               |          | 1174.5     |
| e) Clinical lectures on various domestic animals, poultry and other animal species         | 88.5                 | 10        | 4                      | 3                              |                          |                   |          | 105.5      |
| f) Field veterinary medicine (ambulatory clinics)                                          | 4                    |           |                        |                                |                          |                   |          | 4          |
| g) Preventive medicine                                                                     | 2                    | 2         |                        |                                |                          |                   |          | 4          |
| h) Diagnostic imaging (including radiology)                                                | 9                    |           |                        | 3                              |                          | 40                |          | 52         |

|   |                                                                                                                             |            |           |           |              |           |            |               |
|---|-----------------------------------------------------------------------------------------------------------------------------|------------|-----------|-----------|--------------|-----------|------------|---------------|
|   | i) Reproduction and reproductive disorders                                                                                  | 30         |           | 26        | 6            |           |            | 62            |
|   | j) Veterinary state medicine and public health                                                                              | 2          |           | 2         |              | 40        |            | 44            |
|   | k) Veterinary legislation and forensic medicine                                                                             | 4          | 7         |           |              |           |            | 11            |
|   | l) Therapeutics                                                                                                             | 10.5       | 2         |           | 3            |           |            | 15.5          |
|   | m) Propaedeutics (including laboratory diagnostic methods)                                                                  | 19         |           |           | 9            | 6         |            | 34            |
|   | <b>3- Total number of hours</b>                                                                                             | <b>568</b> | <b>75</b> | <b>74</b> | <b>126.5</b> |           | <b>980</b> | <b>1823.5</b> |
|   | <b>Animal Production</b>                                                                                                    |            |           |           |              |           |            |               |
| 4 | a) Animal production                                                                                                        | 16         | 6         |           |              |           |            |               |
|   | b) Animal nutrition                                                                                                         | 10         |           |           |              |           |            |               |
|   | c) Agronomy                                                                                                                 | 2          |           |           |              |           |            |               |
|   | d) Rural economics                                                                                                          | 2          |           |           |              |           |            |               |
|   | e) Animal husbandry                                                                                                         | 20         |           | 24        | 6            | 10        |            |               |
|   | f) Veterinary hygiene                                                                                                       | 2          |           |           |              |           |            |               |
|   | g) Animal ethology and protection                                                                                           | 16         |           |           | 3            |           |            |               |
|   | <b>4 – Total number of hours</b>                                                                                            | <b>68</b>  | <b>6</b>  | <b>24</b> | <b>9</b>     | <b>10</b> |            | <b>117</b>    |
| 5 | <b>Food hygiene/Public Health</b>                                                                                           |            |           |           |              |           |            |               |
|   | a) Inspection; and control of animal foodstuffs or foodstuffs of animal origin and the respective feedstuff production unit | 48         |           |           | 6            |           |            | 54            |
|   | b) Food hygiene and technology                                                                                              | 4          |           |           | 10           |           |            | 14            |
|   | c) Food science including legislation                                                                                       | 10         |           | 14        |              |           |            | 24            |
|   | d) Practical work (including practical work in places where slaughtering and processing of foodstuffs takes place)          |            |           |           | 35           |           |            | 35            |
|   | <b>5 – total number of hours</b>                                                                                            | <b>62</b>  |           | <b>14</b> | <b>51</b>    |           |            | <b>127</b>    |
|   | <b>Professional knowledge</b>                                                                                               |            |           |           |              |           |            |               |
| 6 | a) Practice management                                                                                                      | 6          |           |           |              |           |            | 6             |
|   | b) Veterinary certification and report writing                                                                              | 2          |           |           | 1            |           |            | 3             |
|   | c) Career planning and opportunities                                                                                        |            |           | 5         |              |           |            | 5             |
|   | <b>6 – total number of hours</b>                                                                                            | <b>8</b>   |           | <b>5</b>  | <b>1</b>     |           |            | <b>14</b>     |

| Subject |                             | Theoretical training |                   |                                 | Supervised practical training           |                                   |                        | Other       | Total |
|---------|-----------------------------|----------------------|-------------------|---------------------------------|-----------------------------------------|-----------------------------------|------------------------|-------------|-------|
|         |                             | Lectures<br><br>A    | Seminars<br><br>B | Self directed learning<br><br>C | Laboratory and desk based work<br><br>D | Non-clinical animal work<br><br>E | Clinical work<br><br>F |             |       |
| 7       | <b>Research methods</b>     | 4                    | 10                | 84                              | 1.5                                     |                                   |                        | <b>99.5</b> |       |
| 8       | <b>Communication skills</b> | 6                    |                   |                                 | 8                                       |                                   | 20                     | <b>34</b>   |       |
| 9       | <b>Professional skills</b>  | 2                    | 2                 |                                 |                                         |                                   |                        | <b>4</b>    |       |
| 10      | <b>Clinical elective</b>    |                      |                   | 120                             |                                         |                                   |                        | <b>120</b>  |       |

\*Basic subjects achieved prior to entry

### 4.1.3 Further information on the curriculum

Clinical rotations are currently run over 24 weeks, with 12 weeks currently undertaken in Year 4, and 12 weeks in Year 5. Each week is assessed as a stand-alone clinical training assessment, with its own discrete learning outcomes. Assessment is carried out by all staff involved in supervising the students. Each student must pass all 24 individual weeks. Attendance is full-time and monitored.

Group sizes for rotations are 4-6 students.

Students have responsibility for patient care, participate in treatment, present cases at ward rounds, communicate with clients at initial presentation, prepare discharge instructions, and for some weeks, prepare a presentation on a particular topic.

Week titles are as follows:

| Rotation title | Equine                           | Farm                             | Small Animal           | Front Line Skills                |
|----------------|----------------------------------|----------------------------------|------------------------|----------------------------------|
| 1              | Orthopaedics 1                   | Herd monitoring                  | Cardiology/behaviour   | Public health                    |
| 2              | Orthopaedics/Imaging             | Lameness                         | Orthopaedics/neurology | Clinical pathology               |
| 3              | Soft tissue surgery              | Reproduction                     | Soft tissue surgery    | SA imaging                       |
| 4              | Medicine                         | Sheep/Beef                       | Medicine               | Equine anaesthesia               |
| 5              | 1 <sup>st</sup> opinion practice | 1 <sup>st</sup> opinion practice | Dermatology/oncology   | SA anaesthesia                   |
| 6              | Out of hours                     | Farm Assurance                   | Out of hours           | 1 <sup>st</sup> opinion practice |

**Table 4.1.3: Rotation week titles (current curriculum)**

At the start of Year 4, a “buddy” system is run during the clinical theory course to prepare students for clinical rotation teaching. Each 4<sup>th</sup> year student is paired with a 5<sup>th</sup> year student, and will spend time at the start and end of the day with their “buddy”, in order to see how rotations work and what the student’s responsibilities are in terms of patient care. This

provides a useful orientation opportunity for the new 4<sup>th</sup> year students, and will continue in the new curriculum.

A dedicated out of hours rotation week is scheduled for both equine and small animal hospitals, during which student groups are involved with emergency admissions and out of hours patient care. However, there are also out of hours duties attached to many other rotation weeks,

A key component of the rotation weeks is the opportunity to see first opinion cases, as well as referral cases, with 1 week spent in each of the divisional first opinion practices in equine, small animal and farm animal.

#### 4.1.4 Obligatory extramural work

There is currently no part of the BVSc course that is delivered outside the School of Veterinary Science. However, there are plans for ophthalmology teaching (part of small animal rotation weeks) to move to a local ophthalmology referral practice (from October 2012). There will be no changes to teaching and assessment of this part of the course, which has been run in the SA referral hospital in previous years. This is merely a change of location.

All students are required to complete the obligatory periods of extramural studies required by the Royal College of Veterinary Surgeons, but these studies do not form part of the course.

#### 4.1.5 Specific information on the practical training in food hygiene/Public Health

All students complete a one-week clinical rotation in Public Health. As part of this week, they have two visits to abattoirs, one to a chicken abattoir in Sandycroft, Flintshire (approximately 10 miles from the School) and one to a lamb abattoir in Gaerwen, Anglesey (approximately 70 miles from the School). There are 4-6 students per group. The visits last from 2 to 3 hours and the groups are led by one of the VEPH lecturers and supported by local staff (OV and/or plant manager). These cover all the aspects of the plant operation and inspection processes.

This is only one part of the practical aspect as Meat inspection is taught in-house in practical classes with specimens collected from local abattoirs.

#### 4.1.6 Ratios

|            |                                                                      | Denominator                       |                        |
|------------|----------------------------------------------------------------------|-----------------------------------|------------------------|
| <b>R6:</b> | Theoretical training<br>(A + B + C)                                  | $(1043 + 125 + 248)$              | $\frac{1416}{1}$       |
|            | Supervised practical training<br>(D + E + F)                         | $(363.50 + 12 + 1436)$            | $\frac{1811.50}{1.28}$ |
| <b>R7:</b> | Clinical work<br>(F)                                                 | $1436$                            | $\frac{1436}{1}$       |
|            | Laboratory and desk-based work<br>+ non-clinical animal work (D + E) | $363.50 + 12$                     | $\frac{375.50}{0.26}$  |
| <b>R8:</b> | Self directed learning<br>(C)                                        | $248$                             | $\frac{248}{1}$        |
|            | Teaching load<br>(A+B+C+D+E+F+G)                                     | $(1043+125+248+363.5+12+1436+12)$ | $\frac{3239.5}{13.06}$ |

**Table 4.1.6: Ratios of theoretical to practical training, clinical work to laboratory work, and self-directed learning to teaching load (current curriculum)**

#### 4.1.6.2 Special indicators of training in food hygiene/public health

|             |                                                                                                                                               |     | Denominator |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|
| <b>R9:</b>  | Total no. curriculum hours                                                                                                                    |     |             |
|             | Food Hygiene/Public Health                                                                                                                    | 127 | 1           |
|             | $\frac{\text{Food Hygiene/Public Health}}{\text{Total no. hours curriculum}} = \frac{127}{3239.50} = \frac{1}{25.5}$                          |     | <b>25.5</b> |
| <b>R10:</b> | Total no. curriculum hours                                                                                                                    |     |             |
|             | Food Hygiene/Public Health                                                                                                                    | 127 | 1           |
|             | $\frac{\text{Food Hygiene/Public Health}}{\text{Hours obligatory extramural work In Veterinary inspection}} = \frac{127}{40} = \frac{1}{0.3}$ |     | <b>0.3</b>  |

**Table 4.1.6.2: Ratios of public health teaching to total teaching, and curriculum hours in public health to EMS work in public health (current curriculum)**

## 4.2 Comments

### Curriculum development

The BVSc curriculum prepares our veterinary graduates for practice in a variety of areas. As the majority of them will enter first opinion practice (at least initially), our teaching and assessment is focused on the achievement of the RCVS Day One competences expected of a new veterinary graduate. However, our curriculum also aims for what we have labelled “Day One plus” in specific areas of expertise, where the students are encouraged to see and evaluate cases at a higher level in our referral hospitals. This facility to push the boundaries of the students’ knowledge also encourages the development of critical analytical skills and the use of evidence based medicine, both of which are essential competences for lifelong and independent learning.

Currently, in the United Kingdom, there are more jobs available in small animal practices than in other areas of veterinary practice. Consequently, our curriculum is slightly more heavily weighted to small animal medicine and surgery in years 4 and 5. However, earlier in the curriculum, there is an even balance between types of species discussed and used as examples. In the “animal husbandry” modules, for example, the emphasis is on animal populations and environment, meaning there is a distinct bias towards farm animals.

A major curriculum review has been underway for the past 5 years, involving key members of academic staff, and initially, employers, researchers and recent graduates. The new curriculum resulting from this work is scheduled to commence with first year students in September 2013. A key motivator for the development was the feedback from clinical staff, and employers, that our students/graduates found it difficult to think in an integrated fashion, or apply existing

knowledge, when faced with a novel case or situation. Employers were also keen to increase the amount of business skills taught in the curriculum.

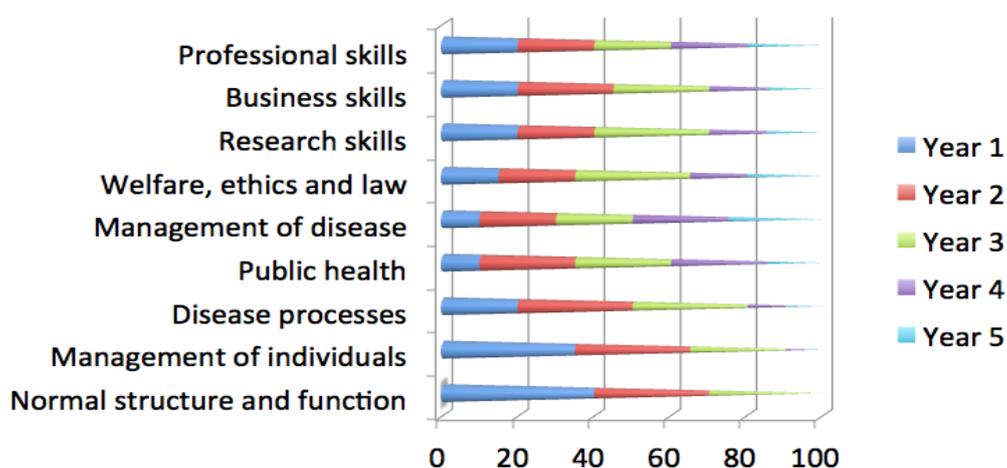
The curriculum is based on a spiral model, where there is vertical and horizontal integration between themes, and this integration is promoted by an integrated assessment strategy.

**Learning outcomes** have been developed to follow the major themes that run throughout the new curriculum:

|    |                                                                                                                                                                    |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <p><b>The veterinary graduate, as a SCIENTIST and PRACTITIONER, must be able to :</b></p>                                                                          |
| 1. | Recognise and describe normal structure and function in healthy animals of the common domestic species                                                             |
| 2. | Demonstrate competence in the care and management of individual animals and groups of the common domestic species                                                  |
| 3. | Explain and evaluate disease processes in individual animals and in groups                                                                                         |
| 4. | Demonstrate competence in the diagnosis, treatment and management of common diseases in individual animals and in groups                                           |
| 5. | Undertake the role as a key participant in essential areas of public health and food safety                                                                        |
|    | <p><b>The veterinary graduate, as a SCIENTIST and SCHOLAR, must be able to</b></p>                                                                                 |
| 6. | Effectively source and evaluate evidence, make use of research in decision-making, and demonstrate a commitment to continuous development in the profession        |
|    | <p><b>The veterinary graduate, as a PROFESSIONAL, must be able to</b></p>                                                                                          |
| 7. | Demonstrate effective communication skills in a variety of situations                                                                                              |
| 8. | Include ethical and legal reasoning in decision-making, and show primary concern for the welfare of animals                                                        |
| 9. | Appreciate the business, personnel and management skills required for success in various areas of veterinary employment, including the ability to cope with change |

**Table 4.2.1: Learning outcomes (new curriculum)**

The **9 major learning outcomes** are supported by associated **subset of learning outcomes**. These are available as an Appendix (Appendix 1), and are delivered via the **9 themes** that run throughout all 5 years of the programme.



**Table 4.2.2: themes as proportion per year (new curriculum)**

The learning outcomes have been mapped to the RCVS list of essential Day One competences, which are very closely aligned with the QAA Subject Benchmark Statement for Veterinary Science, and the

EAEVE (European Association of Establishments for Veterinary Education) requirements. Assessment for most subjects will be via written assessments (based on short answer questions, Extended Matching Item questions, Multiple Choice Questions, and essay-type questions), practical assessments (“spot tests” and Objective Structured Clinical Examinations) and case-based coursework, which forms part of the portfolio submitted each year.

| Learning Outcome | Year          | Assessment                                                                                           | RCVS Day One Competences |
|------------------|---------------|------------------------------------------------------------------------------------------------------|--------------------------|
| 1                | 1, 2, 3       | End of year integrated written assessments, end of year practical assessments, case-based coursework | B1.1, B1.4               |
| 2                | 1, 2, 3, 4, 5 | End of year integrated written assessments, end of year practical assessments, case-based coursework | B1.4, C1.2, C1.5         |

|    |               |                                                                                                                            |                                                                                                              |
|----|---------------|----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 3  | 1, 2, 3, 4, 5 | End of year integrated written assessments, end of year practical assessments, case-based coursework                       | <i>B1.5, C1.6, C1.16, C1.18, C1.20</i>                                                                       |
| 4  | 1, 2, 3, 4, 5 | End of year integrated written assessments, end of year practical assessments, case-based coursework                       | <i>A1.2, B1.5, B1.7, B1.8, C1.1, C1.3, C1.4, C1.7, C1.8, C1.10, C1.11, C1.12, C1.13, C1.14, C1.17, C1.19</i> |
| 5  | 1, 2, 3, 4, 5 | End of year integrated written assessments, end of year practical assessments, case-based coursework                       | <i>A1.6, B1.6, B1.7, B1.9, C1.1, C1.6, C1.8, C1.9, C1.16, C1.17, C1.18, C1.19, C1.20</i>                     |
| 6  | 1, 2, 3, 4, 5 | Coursework (literature review in year 2, research project in year 3, case report in year 4 and elective report in year 5). | <i>A1.6, A1.8, A1.11, B1.2, B1.3</i>                                                                         |
| 7  | 1, 2, 3, 4, 5 | Coursework (portfolio tasks) in each year, end of year practical assessments (OSCEs)                                       | <i>A1.1, A1.2, A1.3, A1.5, A1.12, C1.1, C1.14, C1.15</i>                                                     |
| 8  | 1, 2, 3, 4, 5 | End of year integrated written assessments, end of year practical assessments, case-based coursework                       | <i>A1.4, A1.5, A1.6, A1.9, B1.6, B1.7, B1.8, C1.9, C1.15, C1.19</i>                                          |
| 9. | 1, 2, 3, 4, 5 | Coursework (portfolio tasks) in each year, end of year integrated written assessments                                      | <i>A1.3, A1.5, A1.7, A1.10, A1.11, A1.12</i>                                                                 |

**Table 4.2.3: Learning outcomes mapped to assessment and RCVS Day One Competences (new curriculum)**

An overview of the assessment strategy is provided in Appendix 2.

**The main subject areas covered by each theme are as follows:**

**Normal structure and function:** anatomy, physiology, cell biology and biochemistry.

In **year 1**, theoretical knowledge of anatomy and physiology will lead to a more systems-based approach in **year 2**, and application to clinical scenarios in **year 3** (e.g. placement of nerve blocks when diagnosing site of equine lameness).

**Management of individuals and groups:** animal husbandry, reproduction, behaviour, genetics and preventative healthcare

In **year 1**, care and management of individuals and populations of healthy animals leads to consideration of how environment relates to disease processes in **years 2 and 3**, and continued in context in farm assurance and herd health topics in **years 4 and 5**.

**Disease processes:** infectious diseases, parasitology, pathology.

The development of underpinning knowledge in **years 1 and 2** leads to contextualised disease scenarios in **years 3 and 4** and clinical case work in **years 4 and 5**.

**Public health:** one health, food safety, epidemiology.

Basic studies on food production and meat quality in **years 1 and 2** (integrated with anatomy teaching) lead to a risk-based approach to food safety in **years 3 and 4**, and public health considerations of clinical cases and real-life food safety scenarios in **year 5**.

**Welfare, ethics and law:** animal welfare, professional and personal ethics, animal law.

Theoretical consideration of professional ethics and veterinary regulation in **year 1** leads to application to case studies in **year 2**. In parallel, personal ethical development is encouraged via reflective coursework, and leads to reflection on cases seen on extra-mural studies in **year 3**. The main pieces of animal welfare legislation are studied in **years 1 and 2**, and then applied in **years 3, 4 and 5**. All case scenarios require ethics and welfare considerations.

**Business skills:** practice management, personnel management, personal development.

Development of teamwork, together with basic business theory in **years 1 and 2** will then lead to the production of business reports and calculation of fees in **year 3**, and the production of a business plan in **year 4**. In **year 5**, the focus will move to personal career planning, and CV production.

**Professional skills:** professionalism, communication skills, team-working.

Integration with professional ethics in **year 1** encourages development of personal professional identity, which is continued through portfolio reflections in **years 2, 3, 4 and 5**. Communication skills are developed through role-play with peers and with educational actors in **years 1, 3 and 4** to practise basic consultation skills and then to progressively deal with more complicated situations. Teamwork is developed through case-based learning and team assessment tasks in **all years**.

**Research skills:** literature searching, project design, evidence-based medicine.

A week dedicated to the development of study and research skills in **year 1** will lead to skills required for a literature review in **year 2** and an independent research project in **year 3**. Research skills will then be enhanced via case studies and targeted reports in **years 4 and 5**.

**Management of disease:** causes of disease, diagnosis of disease, prevention of disease, treatment of disease

Development of clinical practical skills will begin in **year 1**, and theory of the causes of disease will be developed in **years 2 and 3**. **Years 4 and 5** will use actual cases and case scenarios to develop a holistic approach to case management.

### **Timetable hours**

The design of the timetable is based around a maximum of 30 hours' teaching per week, which is divided up amongst themes and includes a block of integrated teaching. The blueprint for years 1-3 is reproduced as an appendix (Appendix 4).

Years 4 and 5 will retain a similar structure to the current one, with a block of clinical theory at the start of year 4, but with more integration and inclusion of relevant practical and seminar sessions. The number of rotation weeks is likely to increase from 24 to 36, in order to maintain current group sizes of 4-6 students in the face of increasing student numbers. It is proposed to introduce this change in 2014, in advance of the new curriculum working through to 4<sup>th</sup> year, in order to increase students' exposure to clinical cases in the hospitals, and to maintain small group sizes in the face of increasing student numbers. The timetable would follow the blueprint shown (based on dates for 2012-13), with the main change being the positioning of the elective period after the final examinations:



Rotation weeks will be titled as follows:

| <b>Small Animal</b>            | <b>Livestock Health &amp; Welfare</b> | <b>Equine</b>       |
|--------------------------------|---------------------------------------|---------------------|
| <b>Oncology</b>                | Practice 1                            | Orthopaedics 1      |
| <b>Dermatology</b>             | Practice 2                            | Orthopaedics 2      |
| <b>Cardiology</b>              | Lameness 1                            | Soft Tissue Surgery |
| <b>Soft Tissue Surgery</b>     | Lameness 2                            | Medicine            |
| <b>Orthopaedics</b>            | Reproduction 1                        | Out of hours        |
| <b>Neurology</b>               | Reproduction 2                        | Practice            |
| <b>Internal medicine</b>       | Farm Assurance                        | Equine anaesthesia  |
| <b>First opinion practice</b>  | Herd Monitoring                       | Exotics             |
| <b>Imaging</b>                 | Sheep/Beef                            | Clinical Pathology  |
| <b>Out of hours</b>            | Public health                         | Clinical skills     |
| <b>Ophthalmology/Behaviour</b> | Vac/CEMS                              | Vac/CEMS            |
| <b>SA anaesthesia</b>          | Vac/CEMS                              | Vac/CEMS            |

**Table 4.2.5: Rotation week titles (new curriculum, from 2014)**

### **Delivery**

The programme will be delivered through a mixture of learning and teaching methods including:

- lectures (face-to-face and on-line)
- small group seminars
- practicals, including animal handling, dissection classes, clinical skills development and post mortems
- group-work: case or scenario-based learning, used to promote integration between subjects
- self-directed learning, often in preparation for seminars
- clinical rotations and electives
- experiential learning, including role-play scenarios
- research projects

The main bulk of the teaching week will be devoted to lecture, seminar and practical sessions, with appropriate integration between themes. There is dedicated time allocated in each week where all themes covered in the week are brought together via group activities. These may be case-based, scenario-based, or involve group work to develop new strategies or protocols. Many of the in-course assessment tasks are linked to this integrative model.

Summative assessment is carried out at the end of each year via written and practical examinations, with formative assessments held at the end of the first semester in years 1-3, and at appropriate points in the year in years 4 and 5.

The main change with this new curriculum is the de-modularisation of both teaching and assessment. The amount of time devoted to individual subjects will not change substantially, and although there is some reallocation of subjects to different years, this should achieve two key purposes:

- a) introduction of more clinical material into years 1 and 2
- b) increased application of integrated learning throughout the course

The integrated approach to assessment should help to develop (b), and the achievement of (a) should increase motivation and interest among students in earlier years, as well as helping with their inauguration into the “community of practice” in the School’s hospitals and practices.

Teaching hours for each subject should remain similar, with the number of hours allocated to each “theme” as follows:

| Theme                                                                     | Year | Hours |
|---------------------------------------------------------------------------|------|-------|
| <b>Normal structure and function</b>                                      | 1    | 140   |
| <i>(Cell biology, anatomy, physiology + comparative)</i>                  | 2    | 140   |
| <b>Management of individuals and groups</b>                               | 1    | 65    |
| <i>(Animal husbandry, behaviour, reproduction, preventative medicine)</i> | 2    | 45    |
| <b>Disease processes</b>                                                  | 2    | 85    |
| <i>(Infectious diseases, pathology, parasitology)</i>                     | 3    | 275   |
| <b>Management of disease (pharmacology)</b>                               | 1    | 45    |
| <b>Management of disease</b>                                              | 1    | 45    |
| <i>(Clinical theory, medicine, surgery, anaesthesia, therapeutics)</i>    | 2    | 45    |
|                                                                           | 3    | 55    |
|                                                                           | 4    | 210   |
| <b>Public health and epidemiology</b>                                     | 1    | 45    |
|                                                                           | 2    | 45    |
|                                                                           | 3    | 55    |
| <b>Professional, clinical, research and business skills</b>               | 1    | 220   |
|                                                                           | 2    | 220   |
|                                                                           | 3    | 220   |

**Table 4.2.6: Subject hours (new curriculum)**

It is felt that this new curriculum will address the problems identified with the current curriculum, and will allow the development of essential lifelong learning skills.

## Chapter 5 Teaching, Quality & Evaluation

### 5.1 Teaching & Learning

#### 5.1.1 The teaching programme

##### *Coordination of teaching*

Veterinary Science at Liverpool comprises Veterinary Education plus five Research Institutes, all of which contribute to teaching. The co-ordination of teaching involves:

- Programme Director
- Module Coordinators – with responsibility for specific modules, from module specification design and planning through to delivery and assessment.
- Subject Coordinators – responsible for coordination of front-line skills, equine studies, livestock health and welfare, Small Animal Studies and Public Health in the clinical years.

*\*It should be noted that the new curriculum (starting with Year 1 in September 2013) will be co-ordinated by Theme and Year Directors.*

The BVSc Board meets at least once a term to discuss matters relating to teaching and assessment. Student representatives are invited to the Board and their opinions and feedback are actively sought. Decisions and recommendations from this Board are then reported to the Veterinary Board of Studies for ratification.

##### *Institutional Pedagogy*

The School's learning, teaching and assessment strategy has been informed by, and is consistent with, the Institute of Learning and Teaching strategy. The School is also fully committed to the University's policies on disability and equality. The School espouses the view that teaching is a skill that has equal prestige with research. The School is within a research led University and as such aims for excellence in its scholarship where teaching is informed by its research activities.

The aim of teaching and learning within the School is to:

- Provide students with a high quality learning experience
- Stimulate in students a life-long desire to learn
- Produce well-qualified graduates who are equipped with the necessary skills for employment
- Ensure that we are fair and responsive to student feedback
- Promote excellence in teaching and learning

The central tenet of the veterinary curriculum is the development of lifelong learning for students and vets so they can use the latest veterinary concepts and techniques to improve the lives of the animals in their care. Students are taught to use evidence to find solutions so that, when they encounter an unfamiliar situation, that they have the knowledge and skills to make

decisions about the best way to proceed. The best methodology for developing such skills and knowledge has produced passionate debate - a process which has extended the period of curriculum review and inevitably some compromise is the result.

The curriculum is delivered by pre-clinical and clinical specialists, academic staff engaged in research and others with a stronger teaching bias. Currently there is a bias towards theoretical lectures in the pre-clinical years 1-3. The latter has proved to be a driver for the curriculum review with the aim of shifting from a largely didactic approach to a more themed clinically integrated science programme. The School aims to preserve the best inclusions of the current curriculum whilst not “throwing the baby out with the bathwater”. The School is committed to hearing the student voice in relation to teaching and learning. Student feedback indicates that they often value traditional teaching approaches so these must not be ignored as we incorporate new strategies and methods into the curriculum.

The current modular curriculum has distinct benefits, including:

- flexibility of delivery,
- offering common modules to BVSc and BSc students,
- breaking up the curriculum for convenient assessment.

The prevailing view now is that, despite its strengths, modularisation has encouraged bite-sized learning rather than a learning continuum. Review of some modules has flagged up some inconsistencies in module structure and delivery, with perhaps a view that “the new curriculum” will solve all problems.

### ***Supporting the Development of the Independent Learner***

The School is committed to encouraging students to become independent learners who can take responsibility for their own education. This is particularly important as the School has a growing number of non-traditional entrants and the assumption that all entrants have developed the same skills in learning cannot be made. In recognition that these skills do not develop overnight, the School has used external funding to develop a contextual web-based support resource called TYMFU. It has been developed with ease of use in mind so that students can access it via a network PC, Mac or a mobile device. The material included has initially focussed on assisting students in building a primary tool kit covering learning styles and how to utilise them, how to do more than cope with lectures, examination tips and techniques and practical skills. Video and audio content features heavily – with examples and exemplars, student “talking heads”, narrated powerpoints. The TYMFU resource can develop alongside both old and new curricula and as new priorities for assisting students are identified, they can be added. The new curriculum incorporates a “study skills” unit in the first semester of Year One, which initiates the process of embedding student ownership of their learning. TYMFU can complement these sessions.

### **Teaching methodology and innovation**

A variety of other teaching methods are in use and these include: seminars, demonstrations, practical laboratory work, dissection, animal handling sessions, self-directed learning sessions. As expected, students particularly value the “hands-on” elements (such as laboratory and dissection work) in their learning.

An effective curriculum evolves and incorporates new methods and practice. At the last RCVS visit it was noted that closed-loop, reiterative Problem-Based Learning (PBL) was in the early stages of development and evaluation in the integrated Reproduction unit in Animal Husbandry and Veterinary Biology in Year 2. Trained facilitators working with small groups of students have been costly but effective in helping students to navigate through their scenarios. The following example describes the introduction of PBL on *Disease Outbreak Investigation* to the teaching of *Veterinary Epidemiology and Public Health (VEPH)* in the spring of 2007.

*The purpose of the PBL introduction was to familiarise students with the procedures used to control infectious diseases of public health significance in humans and animals. It consists of an “almost real time” investigation of a zoonosis affecting humans and/or animals. The students are given the case information and are asked to investigate and control the outbreak. During the course of the investigation they divide into groups and they are asked to cover three different aspects: the “field work” i.e. the investigation of the disease in the population, the “lab work” i.e. the investigation into the properties of the pathogen that is causing the disease and the “policy work” i.e. the existence or, if necessary, the introduction of laws and bye-laws that are necessary or affect the control of the outbreak. This division simulates the way work is divided between different agencies in real outbreaks. The students collect information using questionnaires that they have to construct based on their own research on the pathogen, its diagnosis, transmission, risk factors and control measures including legal aspects and therapeutics. They use the answers to these questionnaires in order to decide on disease source, course and control. Three different scenarios were originally used for the PBL and a fourth one was added in 2011 to accommodate the increasing number of students and student requests for smaller groups. A facilitator is randomly appointed to each group and is responsible for answering the questionnaires and thus provides the scenario information and for facilitating the group operation when needed.*

*The assessment consists of presentations of the group’s investigation in front of an audience of their peers and a panel of experts including academic staff and representatives of different government agencies (AHVLA, DEFRA and HPA). In addition to the presentation a dossier summarising the investigation is prepared by each group. Students present in the session also mark the presentations and their mark contributes to the overall presentation mark. The mark is then moderated for individual student participation by peer and self assessment. Over the years student feedback has indicated that the PBL is favourably accepted (score ranging from 3.4 to 3.8 out of 5) while individual comments identify group work, type of learning and knowledge of outbreak investigation as the main learning outcomes while group size remains the main concern.*

The School is seeking to make some efficiency savings through training facilitators in-house to work with PBL groups rather than buying in time. PBL is now established in a number of

modules. Student evaluations indicate that they value the PBL experience as a learning tool, even though some note that they don't always enjoy the process.

In some cases, complex technology has been considered and rejected in favour of simple means of promoting interactivity in lecture sessions. A good example of this is the use of *communicubes* as a means of incorporating student opinion where the student can give an anonymous answer and the lecturer can quickly see patterns in response. In first and second year anatomy and physiology modules, students are given clinical scenarios to work through in groups, and use the *communicubes* at intervals to vote on a preferred course of action.

Digital Interactive Veterinary Applications (DIVA) is an e-learning initiative, developed by a clinician teacher and a specialist in veterinary anatomy, to bring clinical relevance to preclinical teaching. Feedback from pre-clinical students highlighted the perception that anatomy was "boring & difficult- especially from text books" and that students struggled with relevancy at that stage. Upon reaching their clinical years, the relevance was easier to appreciate but the practicals were difficult to revisit with the time pressures of rotations. DIVA has been described as "running in the background" of the traditional modular course. A series of highly visual on-line guides are freely available and accessible to the students, even via mobile devices, so they will be able to use them at their own pace. A series of clinical cases are introduced to the students, via VITAL – a Virtual Learning Environment, at the onset of the module and they are expected to work on them independently throughout the course. The cases have been carefully chosen so that some have medical outcomes and the others have a surgical outcome. Towards the end of the module a discussion of all the cases takes place in an interactive session, followed up by relevant cadaver surgery in the dissection room. The outcome is that students see the clinical relevance, revise their anatomy and begin to get an appreciation of surgical techniques.

Teaching effective communications skills to veterinary students is highly valued at Liverpool. The School has been the host and key driver of the National Unit for the Advancement of Veterinary Communication Skills since 2002. NUVACS' funding has now ended, but the collaborative venture continues with on-line meetings between representatives from UK veterinary schools, Australian colleagues and veterinary nursing educators. A repository of scenarios for teaching and assessment is maintained on a secure, limited-access website, and discussion topics are hosted on NOVICE, with an anticipated presence on Wikivet for curriculum content, theory of communication in different situations and self-assessment.

The School makes full use of the University's IT provision in communicating essential information such as timetabling, examination results and policies and protocols to students and staff. The main on-line tools are:

VOCAL - a Microsoft *Sharepoint* site facilitating collaboration on documents and projects, housing discussion and policy documents, minutes of meetings, general information about the administration of examinations and FAQs

SPIDER – provides timetables and exam results to students

TULIP (The University of Liverpool Information Portal) – carries module specifications, student and class information

VITAL – Blackboard Virtual Learning Environment for teaching and learning materials.

It is unusual for students to be provided with paper hand-outs, as students can access relevant resource materials on-line through VITAL. For each module, information is typically organised as:

*Module Information:* module handbooks, locations, equipment/clothing required, PBL timetables, group allocations and scenarios

*Learning Resources:* lecture notes/PowerPoint, video clips, pod casts, reference documents, workshop exercises, video clips, essential reading, bibliographies and web links

*Assessment:* assessment model for module, sample exam questions and answers

Normally resources and information are loaded into VITAL in timely fashion to facilitate the student taking charge of their learning, with lecture materials being posted *prior* to lectures themselves. The facility exists to release information at specified intervals – for instance, students working through a PBL scenario may need to check VITAL at intervals for release of new material.

As would be expected, the university has invested in learning technologies such as digital projectors, high definition TV screens, to enhance the learning experience. This has become more noticeable as the Vet School has moved from its old Liverpool site.

Textbooks are still recommended for some modules and, where this is the case, students are encouraged to place a block order so that the most favourable price can be achieved through university discounts. Each recommended textbook is also held in the University library.

### **Occasional teaching**

External veterinary (or other professionals) are involved in teaching of students on an occasional basis.

*Examples:*

- (i) Outsourcing of ophthalmology for 4<sup>th</sup>/5<sup>th</sup> years as part of their small animal rotation to *Eye-vet Referrals* in Frodsham. Under the direction of Peter McElroy, the practice has been providing ophthalmology services for SATH since 2009 and has also welcomed clinical year students for Extra Mural Study placements.
- (ii) Visiting speakers, such as *Dr Sonya Hill*, Research Officer at *Chester Zoo* who gives a presentation on zoo husbandry to second year students.

A complete list of external (to the University) teachers is attached as Appendix 4.

The current curriculum has not effectively focussed on confirming Day One Skills until fourth and fifth year. Setting up a clinical skills laboratory had a few false starts but in 2012 a new clinical skills centre has been included in the new VTS. This will provide the opportunity for pre-clinical students to learn and become more competent in Day One Competencies prior to their starting EMS and Clinical Rotations. It is being developed as a “self teach” drop-in centre, along with some instructed practical classes and an on-line assessment of progress. DIVA guides for

all the competencies will enable learners to watch particular techniques and then practise these techniques in the practical lab or cadaver classes.

### 5.1.2 The teaching environment

#### *Staff development at School level*

Wherever possible, the School facilitates attendance at courses within the university and beyond. Frequently this level of development is connected with new technologies or sharing good practice or knowledge exchange which will impact upon teaching and related activity. Recent examples of “in-house” training include:

|                              |                               |
|------------------------------|-------------------------------|
| Giving a good lecture        | 27 <sup>th</sup> January 2012 |
| Peer observation of teaching | 27 <sup>th</sup> April 2012   |
| Research Ethics training     | 16 <sup>th</sup> May 2012     |

#### *Staff development at University level*

The University asks all new academic staff to complete a Certificate in Professional Studies (CPS) within their first few years in post. The University’s Centre for Lifelong Learning delivers and assesses this programme, and also offers a Postgraduate Certificate of Higher Education (PGCHE). Both the CPS and PGCHE are accredited by the Higher Education Academy and benefit from fee remission.

Many members of staff have teaching qualifications, or are working towards them. A list of those held, or in progress, is attached as Appendix 5.

Members of staff who are MRCVS must undertake CPD, but all staff are encouraged and supported in CPD. Staff wishing to undertake Masters and PhD programmes qualify for fee remission and are supported through the provision of time for research, attendance at workshops, etc. Staff are encouraged to join the Higher Education Academy and undertake CPD relating to learning, teaching and assessment generally both within and external to the University.

#### *Staff development provided by external sources*

The School has strong links with a number of other veterinary schools, evidenced by visits and collaborations, e.g., Nottingham, RVC, Edinburgh, Bristol and Liverpool submitted a joint bid to HEA for a Teaching Development Grant for a project on learning support for international students. Liverpool has a regular presence at the VetEd (Veterinary Education) Symposium, presenting details of research and development projects as well as knowledge exchange with representatives of all UK Vet Schools (and international representatives). The School has actively collaborated with the National Unit for Veterinary Assessment of Communication Skills (NUVACS) in continuing development of communication skills. CPD opportunities have arisen through links with BVA, HEA, VETNET LLN.

Examples of recent CPD:

Seven members of staff attended the 2012 Veterinary Education symposium in Edinburgh. This included 5 members of staff who delivered a workshop session on developing study skills support for veterinary undergraduates, and 2 members of staff who presented posters.

### ***Recognition for teaching***

The annual Professional Development Review (PDR) provides an opportunity to reflect on achievements and progress made during the academic year, and discuss these with line managers/Head of School. The University is seeking to develop a career progression route for academic staff whose focus is solely on teaching and learning and is not viewed as a “lesser entity” than research. The criteria for promotion include teaching quality, teaching leadership, teaching innovation and good citizenship (including PhD supervision, outreach).

Identifying excellence in teaching and significantly enhancing the student experience is often recognised by the University through awards. The *Sir Alistair Pilkington Teaching Awards (SAPTA) for Excellence in Teaching* is the most obvious example. Since the last RCVS visit, the following awards were made:

|      |              |                                                                                                                                                                                                                                                                                                                                                                                         |
|------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2007 | Dr P Wigley  | <u>Veterinary Pathology</u><br>Excellent Teaching Innovation in MSc Veterinary Infectious Disease and Control. Includes an unusual, highly innovative and interactive module in which the students act as disease control officers, responding to, and hopefully, successfully controlling a virtual outbreak of disease as it threatens to ravage livestock in the UK.                 |
| 2007 | Ms F Penrose | <u>Veterinary Pre-Clinical Sciences</u><br>- for developing interactive dissection guides for teaching veterinary anatomy                                                                                                                                                                                                                                                               |
| 2008 | Dr K Salmon  | <u>Veterinary Pre-Clinical Sciences</u><br>Innovation in teaching for introducing carefully designed clinical scenarios in first and second year of the BVSc which the students investigate by applying their knowledge of anatomy, physiology and pharmacology. This reinforces the relevance of these basic sciences and introduces the approach required for differential diagnoses. |

|      |                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2009 | Dr M Mosing, Dr M Senior, Dr I Iff, Dr M Gurney, Dr D Bardell, Dr P Macfarlane and Dr E West | <u>Veterinary Clinical Science, Anaesthesia Division</u><br>- for an approach that has fundamentally changed the delivery of anaesthesia teaching and is acting as an exemplar for the rest of the clinical theory course. The development of new learning strategies for the students has proved successful as measured by their subsequent improved performance in clinical rotations and assessments. |
|------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The funding for SAPTA has ended but the Pro-Vice-Chancellor for the Student Experience, Professor Kelvin Everest, is leading a cross-Faculty group to establish new awards within the 2012-13 academic year. Preliminary discussions regarding nominations, categories and criteria have taken place in May 2012. Further meetings are planned at Faculty and University level with the intention to have a new scheme operating in semester two of 2013

***Other measures taken to improve the quality of teaching***

Peer observation of teaching in the School has, in the past, occurred sporadically, usually as a requirement for completion of the Certificate in Professional Studies or as a component of an application for promotion. However, following a staff training session in April 2012, run by a colleague from the Centre for Lifelong Learning, a pilot scheme was run from May to July 2012, where reviewers and reviewees who had attended the training session undertook observations. It has been agreed that peer review will take place at regular intervals (at least once every two years) for all members of teaching staff. This will ensure that the School complies with the University policy on Peer Review of Teaching.

**5.1.3 The Examination system**

***Examination policy***

The University is committed to ensuring that all methods of assessment are fair and effective in measuring student attainment of stated learning outcomes and that policies and practices in monitoring the validity, equity and reliability of assessment are also effective. Links are provided at the end of this chapter to the University’s *Code of Practice on Assessment* and the document “*School of Veterinary Science: guide to the conduct of assessments*” is located in VOCAL.

Examinations vary in format - ranging from essay questions, short-answer questions and multiple choice questions (MCQs) to practical and oral examinations. While this diversity of assessment is encouraged, it takes place within a policy framework, and course/module documentation is expected to contain a justification of the choice of methods of assessment.

The School has also laid down quantitative guidelines as follows:

- the limit per 15 credit module should normally be two hours of assessment
- for modularised years of the course, between one and three forms of assessment can be used for a module, including long essays, short answers, MCQs and oral examinations.
- in MCQs, there should be a choice of 4 or 5 answers.
- MCQs and EMQs are **not** negatively marked.

OSCEs are run as practical final assessments in year 5, with one round of 9 or 10 stations in each division (equine, farm, small). Most stations have an examiner in them, who observes each candidate performing a practical task (although there are a few paper-based stations, where candidates review a video, for example, and write their answer on a slip of paper/post it in a box) and a few stations use actors as simulated clients. These have replaced old-style practical exams and vivas.

There are two formal examination periods in an academic year (January and May/June) with re-sit examinations in late August.

### *External Examiners*

The role of the external examiners is to monitor standards to ensure that our assessments are fair, rigorous, appropriate and consistent.

External examiners are expected to give advice on programme content, balance and structure, on award schemes and on assessment processes. They approve assessments before they are set, and have access to marks, scripts and other appropriate information and data. Material is supplied in good time to allow thorough review. External examiners are not primarily concerned with the assessment of individual students, but may be asked to arbitrate on problem cases. They do not participate in the assessments, unless they assess all the students within a cohort. External examiners are appointed annually for a maximum four years. External examiners are appointed for each module or equivalent study component, although an external examiner can be responsible for more than one module or course.

A new system of appointing examiners at different levels is being introduced in 2012-13. This will identify external examiners as being associated with subjects/modules, the programme or the final award. A report summarising the external examiner's findings and recommendations is submitted to the University and a School response is then composed to address any concerns. Following Faculty approval of this response it is forwarded to the Examiner. External examiner reports are discussed at subsequent meetings of the BVSc Board.

### *Resit Opportunities*

The pass mark for all **BVSc** written examinations and assessments (including graduates on the accelerated programme) is 50%. The Final Year BVSc Objective Structured Clinical Examinations (OSCEs) have a variable pass mark that is based on the borderline group method (May/June exams) or Angoff method (August resits) of standard setting. The OSCE pass marks are not released prior to the exams.

Students failing an examination have a re-sit opportunity in August/September. Resit examinations are capped at 50% (BVSc) no matter what the actual mark achieved is (unless there were mitigating circumstances and students have been permitted to resit the examination as a 'first attempt').

Final year BVSc students can resit up to two failed clinical rotations in January/February of Final Year. Further failed or incomplete rotations, electives or CEMS may have to be completed in the summer prior to the August exams. Students who fail resit examinations are not normally permitted to proceed into the next year of studies. The Board of Examiners may require the student to terminate their studies but normally the student is permitted to repeat the year of studies, retaking those modules which they have failed. The Board decides whether this should be with or without attendance. Students who have previously repeated a year of studies (other than under mitigating circumstances) are not normally permitted to repeat a further year and are usually required to terminate their studies.

**BVSc** students may vire (i.e. progress to the next year of studies with failed credit) up to 15 credits in the range 45-49%. **Graduate entry (fast-track) BVSc** students may vire up to 30 credits in the range 45-49%, but **only** in the "fast track" year – thereafter it reverts to up to 15 credits. **Fourth and Final year BVSc** students are not permitted to vire any marks. BVSc students that fail any one exam with marks of less than 45% or that fail more than 15 (BVSc) or 30 (BVSc 2-in-1) credits are not permitted to vire any modules or exams, even if the marks are nominally within the vire zone.

Rarely, a Board of Examiners may recommend that a student is allowed to progress into the next year of study after failing a resit exam outside the vire zone (for example, a first year student joins second year and resits a failed first module in January in addition to their second year exams). This, however, will only be permitted where mitigating circumstances have been accepted for the resit examinations, for no more than 15 credits of study, and where the student has an otherwise good academic record (i.e. BVSc students the mean mark for the passed credit must be >60%).

With the introduction of the new curriculum, the vire system will disappear and each set of exams must be passed to allow progression to the next year.

### **Progression**

The following applies equally to students registered on D100 and D101. In addition, students registered on the D101 programme are required to undertake an intercalated degree before completion of the BVSc programme.

#### *Year 1*

To progress to Year 2, students must

- Pass all modules with a mark of not less than 50%; or
- Pass modules to a value of 105 credits with a mark of not less than 50% and have a mark of no less than 45% in other modules (i.e. students may vire up to 15 credits with a mark between 45-49%).

#### *Graduate entry accelerated ("fast-track") programme*

- To progress to Year 3, students must
- Pass all modules with a mark of not less than 50%; or
- For students taking eight modules, pass modules to a value of 105 credits with a mark of not less than 50% and have a mark of no less than 45% in other modules (i.e. students may vire up to 15 credits with a mark between 45-49%); or
- For students taking more than eight modules, pass all modules with a mark of not less than 50% save that they may have a mark of no less than 45% in modules to the value of 30 credits (i.e. students may vire up to 30 credits with a mark between 45-49%).

#### *Year 2*

- To progress to Year 3, students must
- Pass all modules with a mark of not less than 50%; or
- Pass modules to a value of 105 credits with a mark of not less than 50% and have a mark of no less than 45% in other modules (i.e. students may vire up to 15 credits with a mark between 45-49%)

#### *Year 3*

- To progress to Year 4, students must
- Satisfy the additional requirements of the following modules:
- VETS363: submit an satisfactory Necropsy Report by the stated deadline
- Pass all modules with a mark of not less than 50%; or
- Pass modules to a value of 105 credits with a mark of not less than 50% and have a mark of no less than 45% in other modules (i.e. students may vire up to 15 credits with a mark between 45-49%). It should be noted that VETS352 is a 22.5 credit module and therefore students must pass this module; it is not possible to vire this module (i.e. students cannot progress with a mark of 45-49% even if other modules are passed)

#### *Year 4*

- To progress to Year 5, students must
- Pass all three subjects of the Year 4 examination with a mark of not less than 50% in each subject (i.e. no vires are possible)

#### *Year 5*

- To be eligible to sit the Final BVSc Examinations, students must, by the appropriate deadline
- Satisfactorily have completed all clinical rotations
- Satisfactorily have completed an elective
- Satisfactorily have completed a clinical case report
- Satisfactorily have completed a Professional Skills Portfolio

- Satisfactorily have completed an CEMS Portfolio including completion of a minimum of 26 weeks of approved Clinical Extra-Mural Studies (CEMS)

To graduate, students must

- Pass all components of the three subjects of the Year 5 examinations with a mark of not less than 50% in written/EMQ assessments and not less than the designated pass mark in each of the OSCE assessments (i.e. no vires or compensation are possible)
- Failed candidates are required to re-sit the both EMQ and OSCE examinations in the failed subject(s) even if only one of these is failed at the first attempt (i.e. students are not permitted to carry forward failed credit).

#### *Students having difficulties with their studies*

The School uses various measures to support students who are experiencing difficulties with their studies or with non-academic issues, including support from Personal Tutors, Support teams within the university. [Refer to **Student Welfare** below]

#### **5.1.4 Evaluation of teaching**

##### *Assessment of the quality of teaching*

The University works within national policies and procedures affecting Higher Education. The University Student Experience Committee and the Academic Standards and Quality Committee are responsible for developing the Policy on Academic Quality and Enhancement in Learning and Teaching in the wider university. The policy sets out the University's aims and objectives in this area and key principles and beliefs that underpin the University's quality assurance strategy. The associated guidelines outline how the aims and objectives are met by setting out the responsibilities of the key players in the processes for the assurance and enhancement of quality and standards in the University's taught provision. The Teaching Quality Support Division (TQSD) supports the identification of good practice in learning and teaching through internal quality assurance processes.

The School is compliant with the University's quality assurance strategy and following the restructuring is working with other Schools within the Faculty to achieve cross Institution consistency of practices. The School Board of Studies receives reports and recommendations from the BVSc Board and in turn reports its decisions to Faculty level. Major and minor changes to specifications, etc must be approved by FAQSC so that there is consistency across Faculty programmes.

##### *How does Evaluation occur?*

Evaluation occurs in a number of ways:

- At an individual level, teaching staff reflect on their own teaching and practice annually when completing their PDR, in terms of achievements and innovations.

- End-of-module reviews completed by students providing feedback on the features that have assisted effective learning as well as identifying aspects that did not work and why. Some module teachers incorporate rolling evaluations into the module, allowing them to feedback more immediately and, if needs be, correct an issue while the module is still being delivered.
- Student Representatives attend almost all School Committees and Boards and volunteer opinions and reported views about most things that happen within the School. The STSLC (Staff Taught Student Liaison Committee) alternates between Liverpool and Leahurst and is well attended. A typical meeting might include queries about improving ventilation in a lecture theatre to a recurring problem in a module. The students have a confident, yet diplomatic, voice at these meetings and have even presented petitions with many signatures on issues that they feel strongly about.
- Final year students contribute to the National Student Survey which evaluates the degree experience and levels of satisfaction nationally. Veterinary students consistently demonstrate a high level of response (in 2011, the response rate was 81%), and the overall satisfaction results compare favourably with sector averages.

| Year | Overall satisfaction score % (UoL BVSc programme) | Sector average % (JACS code L3 Veterinary Sciences) |
|------|---------------------------------------------------|-----------------------------------------------------|
| 2009 | 94                                                | 84                                                  |
| 2010 | 94                                                | 87                                                  |
| 2011 | 96                                                | 89                                                  |
| 2012 | 95                                                | 91                                                  |

**Table 5.1.4a: NSS results for the past 4 years**

There are two pilot projects in progress which focus on feedback in rotations – capturing good practice and progress; facilitating swift feedback to the students and giving them the means of learning from their mistakes and improving in the rest of the rotation and certainly in those that follow.

The first covers all of the clinical rotation areas (small animal, farm, equine and front-line skills), with a randomly-selected student from each area being released for a focus group at a pre-determined time. Each focus group is facilitated by two professionals from the Centre for Lifelong Learning within the University. They ask pre-agreed questions, record answers and probe some responses more deeply. The students are very enthusiastic about the process thus far and have provided some very detailed feedback. The students have commented that they feel less inhibited about making potentially critical responses to non-veterinary personnel. The responses are collated and sent back to the students within a fortnight. Initial comment from the students upon receiving the feedback was that they appreciated the speed of return. Some of their comments deal with logistical problems, whilst others focus on the learning experience and how it might be improved. The analysis and evaluation of the first stages of the pilot are continuing during the summer months. The enthusiasm for focus group methodology may lead to extending the pilot beyond clinical rotations.

The second project is exploring using technology to improve feedback. Feedback On Clinical Achievement @ Liverpool (FOCAL). This pilot involved the use of an iPad Clinical theory, clinical rotations, electives for clinical staff assessing veterinary students. The aim of the project was to enhance the student experience by improving the feedback to the students and create a positive impact on our National Student Survey (NSS) score. Additionally, the School is keen to utilise new approaches to institutional mobile e-learning and facilitate/encourage members of staff to give midweek feedback.

Fifty students were involved in the pilot, with the Clinical theory, clinical rotations, electives used for three different rotations (9 weeks in total) and an extra week when students re-sat a rotation. The students were assessed formatively Monday morning to Wednesday afternoon, with the member of staff responsible for the rotation using the Clinical theory, clinical rotations, electives to assess and capture in real-time the performance of a student as they undertook their clinical work. The form was then sent to each individual student as a PDF file. It means that students have two more days to improve their performance (ie summative assessment) for that particular clinical rotation.

Questionnaires were used to collect information from the students and staff and student focus groups also provided more detailed feedback. Three versions of the form loaded into the Clinical theory, clinical rotations, electives were used during the pilot to respond to student feedback. For example, the student response to the first version *"Maybe give more feedback not just tick boxes"* resulted in a format change to allow more space for comment.

A few examples of student comments made with respect to the latter versions:

*"Helped to see where you could improve"*

*"It gave me an idea of how I was doing"*

*"Nice to have midweek feedback "*

*"May be give more feedback not just tick boxes"*

*"It reassured me that I was doing ok and increased my confidence"*

*"It was more thorough than previous feedback"*

The pilot was positively received by students and staff. The impact of introducing an electronic mid-week feedback still needs to be quantified but we postulate that the project improved students' performance during that particular rotation. We are discussing the introduction of this mode of feedback for the next academic year and how to improve it further by incorporating audio feedback. Students value personal and specific feedback. Using the Clinical theory, clinical rotations, electives means it is quick and easy for staff to send constructive feedback. It ensures that students recognise it as feedback, whereas they can often miss the significance of oral feedback.

A Director of Student Experience was appointed in 2012 to take an overview of the student experience. To that end, a student-shadowing exercise was conducted with anecdotal, anonymous interviews to gain a snapshot of student satisfaction levels. Early indications showed a high level of satisfaction coupled with some frustration about logistical and

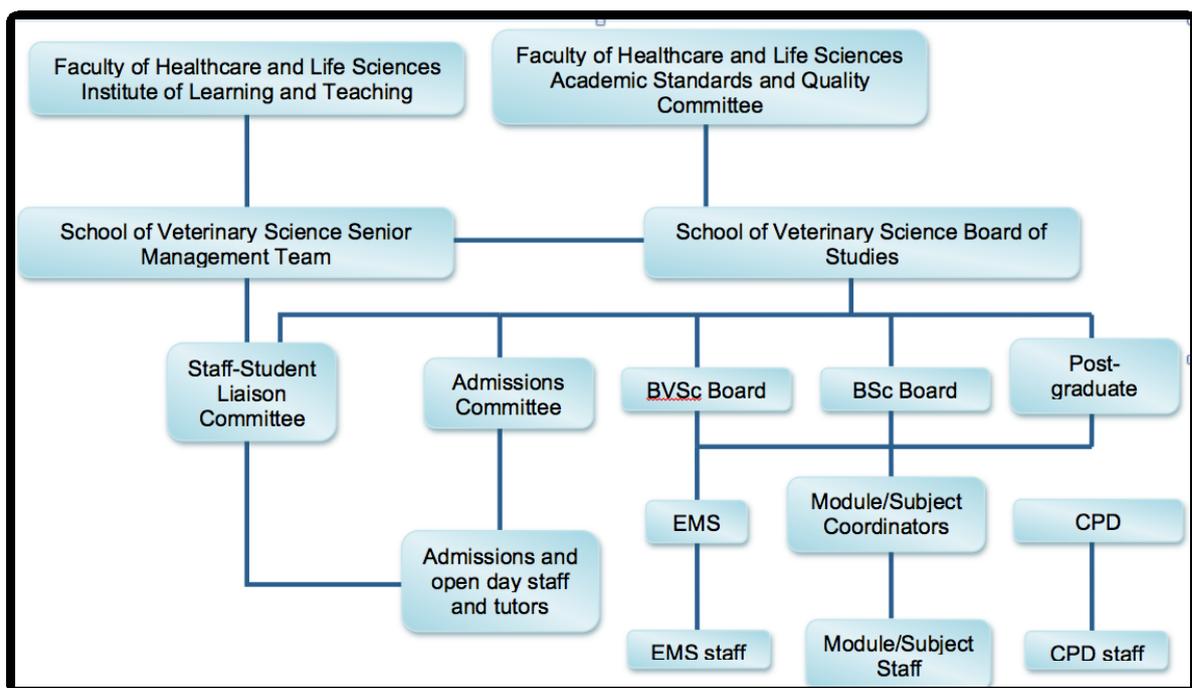
communication problems. The exercise is being followed up with a broader survey to determine whether levels of satisfaction are as high as initially suggested.

**Describe the follow up to evaluation**

There is an established culture of evaluation in the School. There are examples of good practice, where staff will build evaluation and feedback into their sessions on a continuing basis, so that feedback is almost instantaneous. Conversations with students underline how much they value this. In some other modules, the same issue arises repeatedly and is discussed at committee meetings with no clear resolution.

Feedback from Committees and Boards is always minuted and referred to School Board of Study and then onwards to Faculty level. It is usual for a summative report for the year to be prepared for committees such as Student Experience, showing a representative sample of issues raised and resulting action taken.

The committee system is illustrated below:



**Table 5.1.4b: School of Veterinary Science overall committee structure**

The following table shows student representation on each of these committees (in red):

| <b>Committee or group</b>                        | <b>Role</b>                                                                                                              | <b>Membership (Chair in bold)</b>                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Faculty Academic Standards and Quality Committee | Oversight of all teaching and academic issues in the Faculty; highest decision making body                               | <b>Head of The Institute of Learning and Teaching</b><br>Senior faculty academic staff, Head of Veterinary Education                                                                                                                                                                                                                                     |
| Senior Management Team                           | Oversight and management of all activity within the School                                                               | <b>Head of School</b><br>Heads of Clinical Divisions, Pathology, Knowledge Exchange and Veterinary Education, Senior Technical Managers, and School Administrator                                                                                                                                                                                        |
| School Board of Studies                          | Oversight of teaching and academic issues in the School; highest academic decision making body in the School             | <b>Head of School</b><br>Head of Veterinary Education, Senior Tutors, BVSc Programme Director, BSc Programme Director, PGT Programme Director, Director of Admissions, Director of Student Experience, Director of E-Learning, Disability Officer, School Administrator, and <b>Student Representatives (BVSc Liverpool, BVSc Leahurst, BSc and PGT)</b> |
| BVSc Board                                       | Oversight and administration of teaching and academic issues on the BVSc Programme                                       | <b>BVSc Programme Director</b><br>Head of Veterinary Education, Module/Subject Coordinators, Director of EMS, School Administrator, and <b>Student Representatives (BVSc years 1-5 and BVSc graduate entry)</b>                                                                                                                                          |
| BSc Board                                        | Oversight and administration of all teaching and academic issues on the BSc Programme                                    | <b>BSc Programme Director</b><br>Head of Veterinary Education, Module/Subject Coordinators, School Administrator, and <b>Student Representatives (BSc years 1-3)</b>                                                                                                                                                                                     |
| PGT Board                                        | Oversight and administration of all teaching and academic issues on the PGT Programmes (including CPD)                   | <b>PGT Programme Director</b><br>Head of Veterinary Education, Director of CPD, Module/Subject Coordinators, School Administrator, and <b>Student Representative</b>                                                                                                                                                                                     |
| Admissions Committee                             | Oversight and administration of admission to the BVSc and BSc Programmes, including widening participation and open days | <b>Director of Admissions</b><br>Head of School, Head of Veterinary Education, Director of Student Experience, Disability Officer, Senior Tutors, and School Administrator                                                                                                                                                                               |

|                                       |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPD Committee                         | Oversight and administration of CPD                                                                                                                                             | <b>Director of CPD</b><br>Head of Knowledge Exchange, Director of E-Learning, and CPD Administrator (the nature of the programmes/courses makes student representation unfeasible, but feedback is addressed)                                                                                                                                                                |
| EMS Committee                         | Oversight and administration of EMS                                                                                                                                             | <b>Director of EMS</b><br>PCEMS Coordinator, CEMS Coordinator, Director of E-learning, EMS administrators, and <b>Student Representatives (clinical and pre-clinical)</b>                                                                                                                                                                                                    |
| Module/Subject Coordinators and staff | Direct administration and implementation of teaching and assessment for each module, subject or other course                                                                    | <b>Module/Subject Coordinator, Director or Leader</b><br>Teaching staff (address student feedback, but there is no formal student membership)                                                                                                                                                                                                                                |
| Admissions/Open Days staff and tutors | Direct administration and implementation of admissions and open days                                                                                                            | <b>Director of Admissions</b><br>Director of Student Experience, School Administrator, Admissions tutors, Admissions administrators, Senior Technical Administrators                                                                                                                                                                                                         |
| Staff-Student Liaison Committee       | Oversight and review of school activities relevant to student experience; does not have a formal remit for academic issues but can refer matters to the School Board of Studies | <b>Head of School/LVS President</b> (alternating)<br>Head of Veterinary Education, Director of Student Experience, Senior Tutors, Director of E-Learning, Disability Officer, School Administrator, Librarian, <b>Student Representatives (BVSc years 1-5, BVSc graduate entry, BSc years 1-3 and PGT; LUVS president, AVS rep and welfare rep), and LGOS Representative</b> |

**Table 5.1.4c: Student representation (in red) on School committees**

The University recognises the importance of appropriate student representation at all levels in the institution. Student representation on departmental and faculty committees and the University Senate is governed by a Code of Practice on Student Representation. This is supplemented by an Annual Annex, which offers guidance on the principles and implementation of the Code. The Code of Practice provides an institutional framework for student representation and sets out the minimum requirements for student representation at departmental level.

All students are encouraged to stand for election to the School staff-student liaison committees and information on the election process and dates are made available through the School/LUVS. All Student Representatives on Staff-Student Liaison Committees are offered training by the Guild of Students and may have an opportunity to be a representative on school or Faculty committees, or at the University Senate. In particular, BVSc students are represented by Year Representatives on the BVSc Board of Studies and the Staff-Taught Student Liaison Committee.

Liverpool University Veterinary Society (LUVS), which represents students at Liverpool and Leahurst, organises social events throughout the year, such as the Vet Dinner, entertainment during Welcome Week and the Summer Ball. In addition to bulk ordering textbooks and clothing for students, LUVS also raises money for various charities and their own sport teams.

### **5.1.5 Student welfare**

#### ***Biosecurity and Protection***

Students are directed to familiarise themselves with the School's Safety and Biosecurity procedures via the Intranet site containing information on Safety and Biosecurity. Potential hazards from working with animals include allergies, physical injuries and zoonotic infections.

Safe working with laboratory animals is covered by the University of Liverpool Code of Practice on Allergy to Laboratory Animals (Revised 2011) and the Code of Practice on Animal Hazards (Revised 2011). These Codes of Practice, however, do not cover working with domestic animals in clinical and teaching settings. The School of Veterinary Science has therefore drafted a Code of Practice to establish safe working practices in these situations. This is divided into two parts: Part One is an evidence-based assessment of the risks from working with animals and Part Two includes individual risk assessments and working guidelines for exposure to animal allergens, physical risks and zoonotic infections.

Students who think that they may be pregnant are directed to inform the School Office immediately as there may be certain additional risks because of the environment in which they are working. Students with medical issues (e.g. mobility problems, immunosuppression, allergies etc.) are also required to inform the School Office. Alerting the School then allows appropriate precautions and working practices to be discussed.

Further information on Safety and Biosecurity is given in Chapter 6.

#### ***Student facilities***

The old Veterinary Sciences Building had little space for students to meet for group work outside lectures, practicals and seminars, whereas the newly developed Thompson Yates building has a dedicated social learning zone for students to meet for informal group work. Computer access is provided and the furniture arrangement is conducive to collaborative working. This, coupled with the new VTS, means that there is dedicated and bespoke space for veterinary students to engage in a range of learning activities.

Students attend lectures in various buildings on campus and comment favourably on this unless their lectures over-run. All of the study and leisure resources and facilities that would be expected in a large university are located within the Liverpool campus.

### ***Support and Advice***

All students on veterinary programmes at the University of Liverpool are allocated a Personal Tutor /Academic Advisor. This person also supervises their Professional Development Planning (PDP). Tutors first meet their new tutees informally at the beginning of the undergraduate program and then again at least once per semester in more formal one to one meetings. Tutors are also available throughout the year to give impromptu advice and support, either face to face or via email and telephone contact. The tutor is expected to discuss exam results, academic performance and provide advice on improving that performance. They are often the first port of call if a student is having problems with their academic studies, but there is also a Pastoral Support team available should Tutors be temporarily unavailable. The Pastoral Support Team is also available for tutees who wish to speak to a member of staff in addition or instead of their tutor.

Within the School there are two Senior Tutors who act as a first point of contact for Tutors who need advice in supporting a tutee experiencing difficulties with any aspect of University life. The Senior Tutors provide advice on School level procedures (with additional advice from the school administrator and assessment officer) and signposting to central and specialised welfare support services for students, in addition to that given by the personal tutor.

The University has an extensive and well established welfare support network offering advice, guidance and support services for all students. Specialist teams and experienced advisers are available to support students on a whole range of issues. These include the Disability Support Team, the Financial Support Team, the International Support Team and Support for Care Leavers, Counsellors and GPs. Students also have access to the Careers and Employability advice service.

In addition to staff-based support, the school has a number of trained *peer supporters*. These are students that have been trained by the Counselling Service to listen and support other students that are experiencing any problems with student life. They can help students by simply listening to concerns in a non-academic setting or can help students access the appropriate support services. There are a number of posters in the Liverpool and Leahurst campuses that list the current peer supporters and their contact details.

A report is appended in the Reference/Links section which indicates how this service is used. (No details are given due to the obvious need for confidentiality). It should be noted that Peer Supporters have mobile numbers for professional Counsellors, in case of difficulties, and strict "referral" guidelines.

In addition to the Peer Supporters, all new students are allocated student "Buddies" from the years above. The Buddy role is much more skewed towards home sickness and social matters –

helping in the transition from living at home to Halls, good and safe places to eat and walk, etc. Buddies are therefore encouraged to steer more serious issues to Peer Supporters and staff, usually Personal or Senior Tutors.

There are two sources of funding available for students in financial difficulties, the Clare Harrison and Enid Holden funds.

The Clare Harrison Memorial Fund was established in October 1995 to commemorate Clare Harrison, who was tragically killed while riding at a horse trial. The Fund is endowed with donations from her family and friends and the Veterinary School. This endowment produces a small income from which discretionary grants can be made to students of the School of Veterinary Science. Further donations are received each year into the Fund and if needed capital can also be spent as well as income. The primary purpose of the Fund is to assist undergraduates in the later years of the BVSc programme who find themselves in severe financial difficulty with regard to the requirements for extramural study. However, any student registered on a taught programme in the School who is in financial hardship for whatever reason may apply to the Fund for assistance.

To receive a grant from the Fund, students need to show that they are in hardship despite having explored other options open to them, such as a Government Student Loan or assistance from the University Access to Learning Fund.

Grants are normally made on a twice-yearly cycle, in the First and Second Semesters. In certain circumstances, short-term interest-free loans may be made.

The Enid Holden Fund is a new fund which was endowed to the School in 2011/12. This fund will be awarded following application through the Clare Harrison Memorial Fund's Committee. Applications to the Enid Holden Fund are restricted to female students in fourth and final year and each award is limited to £1000.

## **5.2 COMMENTS**

### ***The Teaching Programme***

The Teaching Programme at Liverpool has a bias towards didactic delivery in Years 1-3. We believe that the new de-modularised curriculum, with more clinical material integrated into early years, will increase motivation (which is already high) and encourage more effective, deeper learning and a greater focus on Day One Skills.

### ***The Teaching Environment***

The University and School provide a rich learning environment for students and staff alike in terms of teaching and active research. There are many courses (short and long), workshops on using technology to deliver an enhanced learning experience, opportunities to pursue active research and collaborate with colleagues within the university, other vet schools and other universities. There is a philosophy of lifelong learning and a distinct career path for those academic staff who prefer to focus on teaching.

### ***The Examination System***

The examination system implemented by the School is robust in its standards and is committed to fairness and equity. We are fortunate to have appointed external examiners who are supportive yet objective and share our focus on the best means of enabling students to demonstrate what they know, how they can apply it and what they can do.

### ***Evaluation of teaching***

The culture of evaluation is well established within the school and there are plenty of opportunities for us to hear the “student voice” about teaching and curricular issues. The School is committed to enhancing opportunities for collecting student views, injecting more consistency and ensuring that student satisfaction can be measured rather than inferred. We are also committed to ensuring that there is a true feedback loop where students universally receive feedback on an appropriate timescale.

### ***Student Welfare***

There is a strong focus on the welfare (academic, physical, mental and emotional) of our students at Liverpool. We have layers of support to assist with a range (or combination) of problems which can affect studies – from buddies, Peer Supporters, Personal and Senior Tutors, and a suite of professional support services within the university. We are committed to ensuring that all of our students get the best support in developing independent learning skills, especially as some of our entrants come from vocational, Access or other non-traditional backgrounds.

We have worked hard to create a safe, stimulating environment for learning where students will feel invested. New dissection rooms, clinical skills centres and a social learning zone all flag up a commitment to our students’ needs.

### ***Participation of students***

Student opinion is actively sought and there are numerous opportunities for students to provide feedback to staff informally and formally. Our students participate in most of our decision-making meetings – something we are grateful for when we hear other schools asking how to get students engaged.

## **5.3 SUGGESTIONS**

With the approach of the new curriculum, it is important not to overlook the students who are still embarking on or following the “old” one. It would be useful to run a workshop for Module Coordinators, and those who are stepping into the role, revisiting procedures and ensuring that those concerned know what is expected of them and when.

Extending the bank of exam questions is always useful and they can be used /adapted in future as the curriculum changes.

It would also be helpful to have a panel of reviewers for exam questions to ensure consensus regarding approved questions. Discussions with one of our external examiners revealed that

staff took a non-teaching day to have a review of questions- he noted it was time consuming yet worthwhile.

The School is keen to join the proposed collaborative project (originated by the University of Nottingham) to set up a national veterinary sciences question bank, as we feel that this would increase the validity and reliability of the questions used in examinations.

Sometimes the feedback loop is not effectively closed, as feedback does not always reach the students in timely fashion. They have often moved on to another module or another year by the time their feedback is acted upon. The wider adoption of in-course feedback would be a possible solution to this.

On-line evaluation questionnaires are to be sent to staff and students so that suggestions for improving feedback can be collected and satisfaction can be measured.

## References

### Links to documents on UoL website

- <http://www.liv.ac.uk/students/exams/policies-procedures/index.htm>.
- <http://www.liv.ac.uk/students/exams/policies-procedures/code-of-practice>
- Documentation supporting SAPTA:
  - (i) Anaesthesia abstract
  - (ii) Road to DIVA presentation
- University of Liverpool Code of Practice on Assessments:  
<http://www.liv.ac.uk/students/exams/policies-procedures/index.htm>
- University of Liverpool Code of Practice for External Examiners for Taught Programmes:  
<http://www.liv.ac.uk/sas/externalexaminers/index.htm>
- Teaching Quality Support Division: <http://www.liv.ac.uk/tqsd/index.htm>
- Documentation for approval of new programmes, new modules or module amendments:  
<http://www.liv.ac.uk/tqsd/qualityframework/programmeapproval.htm>
- Proposal for Clinical Skills Centre
- University of Liverpool Counselling Service:  
<http://www.liv.ac.uk/counserv/index.htm>

The following are available on the intranet and so hard copies are provided in Appendix 6:

- Peer support service usage report
- Code of Practice on Animal Hazards:  
[https://www.liv.ac.uk/intranet/safety/Intranet\\_only\\_docs/Code\\_of\\_Practice\\_on\\_Animal\\_Hazards\\_2011\\_revision.pdf](https://www.liv.ac.uk/intranet/safety/Intranet_only_docs/Code_of_Practice_on_Animal_Hazards_2011_revision.pdf)

- Code of Practice on Animal Allergens:  
[https://www.liv.ac.uk/intranet/safety/Intranet\\_only\\_docs/COP\\_on\\_Allergy\\_to\\_animals\\_Nov11.pdf](https://www.liv.ac.uk/intranet/safety/Intranet_only_docs/COP_on_Allergy_to_animals_Nov11.pdf)
- Working with animals:  
[https://www.liv.ac.uk/intranet/media/intranet/schoolofveterinaryscience/pdf/Working\\_with\\_animals%20july12.pdf](https://www.liv.ac.uk/intranet/media/intranet/schoolofveterinaryscience/pdf/Working_with_animals%20july12.pdf)

## Chapter 6 Facilities and equipment

### 6.1 Factual information

#### 6.1.1 Premises in general

##### Liverpool Site

The former Veterinary Science Building on Brownlow Hill has closed, (July 2012). The activities carried out there have been transferred to new or refurbished sites on the Liverpool and Leahurst campuses.

The reorganisation of the University, under the Strategic Plan, promotes the shared use of specialist teaching and research resources. The Brownlow Hill building, opened in 1961, was no longer suitable for modern scientific and training use and the opportunities for redevelopment of that site were effectively exhausted. Substantial University and School investment in buildings and equipment and the reorganisation of Faculty and School structures into themed Institutes has allowed the School to transfer and develop the activities formerly associated with the old building into new and much-improved facilities.

The new locations have been designed to offer an improved environment with modern capacity for teaching and research. They allow cognate activities and groups to come together and work more effectively. The new Institutes provide critical mass and allow more efficient use of space, capital, and specialist staff and equipment.

The School transferred the old Small Animal Teaching Hospital, (SATH), to a new £9m development at Leahurst in 2007, leaving a Small Animal Practice, (SAP), and pathology support, behind in Liverpool. The closure of the Brownlow Hill site has allowed Pathology, (Histology and post-mortem facilities), to move to Leahurst where the proximity to SATH can be restored, to mutual advantage. A new 605m<sup>2</sup> Small Animal Practice has been built adjacent to its former site in Liverpool.

##### **The School of Veterinary Science** - Administration and Student Social Learning

The School has redeveloped some unutilised space in the Thompson-Yates Building to provide a School Administration and Student Support hub. This has restored an historic part of the original Liverpool campus that was largely derelict and out of use for many years, to produce a welcoming, well-appointed “home” and student resource.

This space has been converted to:

Office of the Head of School

1x Academic staff office (2 places)

The School General Office, (Admissions, Student Records, General Administration)

1x large, (16 place) Committee Room

1x small, (4 place) Confidential Meeting Room

There are 6x “Hot desks” for Academic staff working away from their office, (teaching or attending meetings, etc).

There is a large (65m<sup>2</sup>) Student Social Learning Zone with workstations for self-directed individual and group learning for approximately 40 students.

There is a large (145m<sup>2</sup>) Museum area which forms the main entrance and public face of the School. It is flexibly available for both staff and student uses such as individual study or relaxation, as well as Functions and Events such as Open days.

There is Wi-fi connectivity in all areas, as well as generous cabled access to the Net.

The Safety Supervisor for this building is Helen Orton: tel 45735 (Deputy; L Brignal: tel 45799)

### **The Veterinary Teaching Suite**

This is a fully refurbished building, specifically designed for its new purpose and opened in July 2012.

On the ground floor there is a Clinical Skills Laboratory, (64m<sup>2</sup>), with 6 PCs, a microscopy/staining station, a 4-person scrub station, six work tables and space for 30+ students. This will be used for formal teaching in clinical skills and be available for self-directed learning and practice. There are 30 student microscopes.

On the first floor is a large student wash and gown-up room leading to the main practical teaching rooms where dissections, food hygiene and other “wet” classes are held.

These 2 Teaching Rooms cater for up to 80 students, each. They can be opened out to produce one large room with 160 places. They are each equipped with video cameras, PCs and visualisers for demonstrating via the (32x) large LED screens above each table.

This arrangement allows flexible use of rooms for either “wet” practicals, (dissections, etc) or “dry” (demonstration, etc) classes.

Museum specimens, (both anatomy and pathology) are available for teaching and revision. There is a small staff laboratory for sample preparation and research activities.

The building has a secure preparation area which also contains a large freezer room, (-20°C) and a large cold store (+4°C), for keeping teaching materials. There is a workshop for production of skeletons and museum exhibits and a secure, refrigerated clinical waste store.

Student locker space is available on the ground floor. All necessary PPE, (gowns, gloves, etc), are provided.

There is Wi-fi connectivity in all areas, as well as cabled access to the Net.

The Safety Supervisor for this building is Mr J Trafford: tel 44263 (Deputy: L Moore: tel 50267 (to be confirmed)).

### **Practical Teaching Laboratories A-F, School of Life Sciences**

Preclinical and paraclinical practical classes are transferred to the Life Sciences laboratories A-F. These have been substantially upgraded by the University, in consultation with the School, to be used as a central resource for veterinary and bioscience practical teaching.

There are two suites of 3 laboratories, (A-C and D-F) catering for the Faculty's needs:

The laboratories are networked with new AV equipment that allows them to be used individually or in any combination. Classes can be taught as single cohorts or smaller groups, as preferred.

The laboratories are suitable for work at Containment Level 2. This is sufficient for Parasitology and Microbiology teaching.

The rooms are also used for Histology, (Anatomy and Pathology), Haematology, Food Hygiene and Preclinical (Bio)veterinary sciences, (Biochemistry, Physiology, etc).

There are 300 student microscopes and 24 dissection microscopes for anatomy, pathology, microbiology and parasitology teaching.

There are 2 (new) Demonstration microscopes with digital video camera, PCs and visualisers. These are principally for use from the large laboratories A and D. The output can be sent to any or all of the other labs.

The building contains all of the necessary support facilities – preparation rooms, sterilisation, waste disposal, storage, office and staff and student rest, social and cafeteria spaces.

The Safety Supervisor for this building is Mr J Carroll: tel. 55119 (Deputy: Ms E Mayers: tel 44355)

### **Research**

The various research groups have been brought together with Faculty colleagues in new Research Institutes.

Infection Biology, part of the Institute of Global Health, has moved to the newly built (2012) Science Park IC2 Building. This includes both Research and Pathology Services, (Test-a-Pet), laboratories, as well as staff and postgraduate office spaces.

Further, substantial, modern research space is available in the Life Sciences Building, (Institute of Integrative Biology), and the University Clinical Department, (UCD). The UCD houses the Institute of Ageing and Chronic Disease.

### **Leahurst Site**

Leahurst is situated on the A540 at Neston and covers an area of approximately 200 acres. Included in the Campus is a working farm namely Ness Heath Farm, accessible by an underpass below the A540. The farm has a 470 ewe breeding flock producing approx 900 lambs per

annum, 20 Gloucester Old Spot pedigree sows producing approx 280 finished pigs per annum and 20 Pedigree cows producing 20 calves per annum. Adjacent to Ness Heath and just across the A540 from the Main Campus is Woodpark Farm which has a closed herd of 185 milking cows and 140 young stock, working closely with Tesco as the “Tesco Dairy Centre of Excellence”.

### ***The Small Animal Teaching Hospital (SATH)***

The Small Animal Teaching Hospital, its home originally in Liverpool, was moved to a brand new state of the art building at Leahurst in 2007, leaving the first opinion practice behind in Crown Street. This Small Animal Practice has now moved into a purpose built 605m<sup>2</sup> modern building and was opened in summer 2012. The Hospital is one of the largest, modern and well-equipped hospitals for small animals in the United Kingdom, covers 2500m<sup>2</sup>, and has space for 72 in-patients at any one time.

It is a single storey construction, essentially in three tiers:

The first tier consists of reception, pharmacy, accounts, seven consult rooms, student accommodation, staff accommodation, staff kitchen, seminar rooms, two hot desk areas, dermatology, cardiology, anaesthesia, ICU, recovery, laboratory, gait analysis and student locker area.

The second tier consists of linear accelerator, x-ray including dexa scanner, ultrasound, MRI scanner, CT scanner, 3 operating theatres, isolation ward, cat wards, dog wards, dog wash, chemotherapy, laundry and food prep.

The third tier consists of sterilising rooms and outside dog runs and kennels external to the dog

### ***Philip Leverhulme Equine Hospital (PLEH) and Equine Practice***

The Philip Leverhulme Equine Hospital has undergone substantial refurbishment in recent years and is one of the busiest equine referral centers in the UK. The clinic sees over 2,000 equine cases per year headed by a team of highly qualified senior equine clinicians whose skills are recognised nationally and internationally.

There are two operating theatres, stocks areas for animal examination, a pharmacy, sterilising room, laboratory and a diagnostic imaging unit with full radiography facilities. The scintigraphy suite has recently been re-sited and upgraded. In its place there is now a fully operational equine CT scanner. There is a seminar room with full audio visual capabilities and a further meeting room for small group teaching. A new reception area, opened in 2010 has meant that extra space has been released to provide student hot desk areas and welfare facilities. The new reception has an archive room, consult rooms and a waiting room for clients.

An MRI scanner was installed in 2010 and the Barrie Edwards Intensive Care Unit was opened in Autumn 2011. This state of the art building consists of 11 stables monitored 24 hours by cameras, including stables to accommodate mare and foals, a stocks area for examination, a small laboratory, viewing room and seating area for clients. In addition there is stable

accommodation for 37 horses, 5 of which can accommodate a mare and foal. The radiation block of stables includes one isolation stable. There are hard and soft lunge areas, one trot-up, 4 in-hand grazing paddocks and 8 turn-out paddocks.

Situated within the hospital yard is Sandstone Cottage which houses the first opinion equine practice. Also in this building are student crash facilities and accommodation for the on-call vet surgeon.

Plans for further expansion are in the offing for the future.

Hospital staff have offices either within the equine hospital, equine practice or in the 1952 Building adjacent to the practice.

### ***Livestock Health & Welfare (LHW) and Farm Practice***

The Farm Practice is housed within the Livestock, Health and Welfare Building. This building contains offices for the staff of the division plus a seminar room for student teaching. Adjoining the building is also the Leahurst library – a branch of the University's library system, housing text books, journals and two study areas. There are also a number of computers and a printer for student use.

The Farm Animal yard has 6 stables for large animals plus sheep pens, pig pens, an examination/treatment room and a bovine operating theatre. The Dutch barn houses a bull pen as well as being used to store animal feed and bedding.

On the other side of the L, H & W building there is a student changing room with a wash down area outside. Within the same block there is a wet room for the examination of small pieces of post mortem material.

Adjacent to this there is parking for the 5 vehicles used for farm visits and the crushes used for restraining cattle for examination or foot trimming.

A new development project is now underway to enhance and update these facilities with extensive additions to constitute the Leahurst Learning Centre (LLC). The LLC will include will include 3 fully equipped seminar rooms, clinical skills laboratory, changing rooms, farm animal practice facilities and new office space for clinicians and academics. This will be completed by May 2013.

There is a hospital yard (Surgical Training Unit: STU) with hospitalisation, examination and surgical facilities which are also being upgraded as part of the proposed development of LHW. This is a key facility for surgical teaching with the majority of surgical cases seen by the Farm Animal Practice being transported to the STU for surgery thereby allowing maximal surgical exposure to undergraduates.

## **MAIN BUILDING**

On the main campus, the main building accommodates the main reception, administration office and student experience offices, a student common room, lecture theatre, clinical skills laboratory, 2 data centres and a post mortem room recently refurbished to a very high standard. A second small animal post mortem room has recently been completed also to a very high standard.

This building also houses research and diagnostic laboratories for epidemiology, infectious and parasitic diseases, clinical pathology and the connective tissue research group.

***Veterinary Pathology*** - The post mortem room suite comprises one large post mortem room (refurbished in 2011) for the routine diagnostic work and a smaller post mortem room (built in 2012) for teaching purposes (mainly undergraduate student necropsy classes). All diagnostic work of the Division as well as the teaching involving whole animals is undertaken at the Leahurst site.

## **MAMMALIAN BEHAVIOUR AND EVOLUTION**

MBE incorporates a Behavioural Isolation Unit and Small Mammal Centre. The building houses small mammal accommodation, behaviour monitoring rooms and laboratories. This research facility is under Home Office license as is BLOCK B which is also licensed for small animal work. Adjacent to the MBE is animal accommodation for cattle, sheep and pigs. This is part of Ness Heath Farm and, as well as the farm, has designated areas for teaching animal handling to undergraduate students. Both sites also have facilities to accommodate cattle for research purposes.

## **NATIONAL CONSORTIUM FOR ZOOZOSIS RESEARCH**

Leahurst hosts the hub of the National Consortium for Zoonosis Research (NCZR), an international network of research groups that focus on research into zoonoses. As well as research, the NCZR provides advice and information to the media on disease outbreaks and organises interdisciplinary conferences and training events. The building houses offices and two meeting rooms.

## **LEAHURST HOUSE**

The first floor of Leahurst House was converted to conference facilities some years ago. There are four meeting rooms, the largest of which can hold up to 40 people and is equipped with fixed audio visual equipment. The three other rooms are enabled for power point presentations or can be used as small group teaching rooms. The CPD Unit also has its office on this floor.

The ground floor was upgraded in 2010 to provide a refectory for students, staff and clients, a bar for both staff and students for special events, a common room and a fitness suite. The House is Wi Fi enabled.

## RITCHIE HOUSE

Originally built to provide study bedrooms for undergraduate students, Ritchie House has been converted into an office block, primarily for the Small Animal Teaching Hospital staff. As well as offices, there is one meeting room on the ground floor.

## OXENHALE LABORATORY

A small category 2 building with 1 main laboratory, a service room and two offices. Used for veterinary services.

## WELLCOME BUILDING

Consists of offices and laboratories which are used by staff and postgraduates for research and also some diagnostic services.

### 6.1.2 Premises used for clinics and hospitalisation

**Table 6.1: Places available for hospitalisation and animals to be accommodated**

| Regular hospitalisation | Species                 | No. places                                                         |                                |           |
|-------------------------|-------------------------|--------------------------------------------------------------------|--------------------------------|-----------|
|                         | cattle                  | <b>8</b>                                                           |                                |           |
|                         | horses                  | <b>45</b>                                                          |                                |           |
|                         | small ruminants         | <b>11</b>                                                          |                                |           |
|                         | pigs                    |                                                                    |                                |           |
|                         | dogs                    | SATH 62*                                                           | SAP                            | <b>11</b> |
|                         | cats                    | SATH 26                                                            | SAP                            | <b>11</b> |
|                         | other <sup>1</sup>      | SAP                                                                | <b>Rabbits (2) Rodents (2)</b> |           |
| Isolation facilities    | farm animals and horses | <b>4</b>                                                           |                                |           |
|                         | small animals           | <b>SATH (4) (2 can be used for dogs or cats)</b><br><b>SAP (8)</b> |                                |           |
|                         | other <sup>1</sup>      | <b>1 (Equine)</b>                                                  |                                |           |

\* (Includes ICU, Recovery and Chemotherapy)

### 6.1.3 Premises for animals

The Veterinary School owns two large farms, located at the Leahurst campus, namely Wood Park Dairy Farm and Ness Heath

**Wood Park** is a dairy farm currently milking 185 cows and rearing all its own replacements. As the nominated Tesco centre of Dairy Excellence it serves as a focal point for dissemination of “best practice” in dairy cow health management and research findings to the 720 members of the Tesco Sustainable Dairy Group. Current annual milk yield is 11,500 litres per cow. Data collected on the farm is used extensively for undergraduate and postgraduate teaching as well as for research purposes. Animals of all ages are used extensively for teaching purposes by all years (1 – 5). During Final Year Rotation teaching periods there will be at least one group of students on the farm at any time. Facilities for handling include cattle crushes (5) and a custom

built palpation area. There is a designated viewing gallery for use of all students for teaching and research purposes. There is also the Tesco Centre of Dairy Excellence building which is used for small group on farm teaching purposes, comprising two seminar rooms and a large “wet room” that can be used for teaching and demonstration purposes. This is equipped with full AV facilities

**Ness Heath** is a mixed farm with approximately 470 Lleyn and Lleyn-Cross breeding ewes, 20 breeding Gloucester Old Spot sows and 20 Hereford beef suckler cows with followers. All animals are used for teaching purposes by all years (1 – 5). During the Final Year Rotation period it is used extensively as a focus for studies in beef and sheep clinical and population medicine. During the lambing season, the farm is used extensively for learning in ovine obstetrics with students providing night cover for the lambing ewes. Facilities for handling include 1) Sheep race and penning 2) Farrowing crates 3) Cattle race and crushes [2]. Ness Heath is also used extensively for research purposes with extensive Home Office licensed premises suitable for cattle, sheep, pigs and horses.

High speed internet access to both farms has recently been installed. This will allow remote monitoring of animals by students and remote access to farm recording data for learning purposes.

In addition to the two University farms, there is a thriving Farm Animal Practice servicing farms in the Wirral and Cheshire. As well as providing clinical exposure and training to students, the practice farms are also used extensively for teaching herd health and preventive medicine.

#### **6.1.4 Premises used for theoretical, practical and supervised teaching**

##### **Liverpool**

##### **The Veterinary Teaching Suite**

Animal Handling, Gross Pathology, Food Hygiene, Parasitology and Anatomy practical classes formerly conducted in the Veterinary Science Building are given in the Veterinary Teaching Suite, along with Clinical Skills training.

##### **Practical Teaching Laboratories A-F, School Life Sciences Building**

The University provides centrally-booked facilities for timetabled practical classes. Laboratory Practical Classes, previously given in the Thompson Yates Building and in the Pathology Practical Classroom in the former Veterinary Science Building are now be given in the newly refurbished, (2012), teaching laboratories in the School of Life Sciences Building .

**Table 6.2: Premises for clinical work and student training**

|                         |                       | SATH                               | SAP                                                                  |
|-------------------------|-----------------------|------------------------------------|----------------------------------------------------------------------|
| Small animals           | no. consulting rooms  | 7                                  | 4                                                                    |
|                         | no. surgical suits    | 4 (plus endoscopy suite)           | 3 (including dental suite)                                           |
|                         |                       | EQUINE                             | FOOD                                                                 |
| Equine and food animals | no. examination areas | 5                                  | 1                                                                    |
|                         | no. surgical suites   | 2                                  | 1                                                                    |
| other <sup>1)</sup>     |                       | 1 – Student computer room (equine) | 5 - Cattle crushes for foot examination (taken on ambulatory visits) |

**Table 6.3: Premises for lecturing**

| Number of places per lecture hall        |       |       |       |       |       |       |       |       |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Hall                                     | No. 1 | No. 2 | No. 3 | No. 4 | No. 5 | No. 6 | No. 7 | No. 8 |
| Places                                   | 298   | 305   | 246   | 246   | 162   | 180   | 370   | 245   |
| Total number of places in lecture halls: |       |       |       |       |       |       |       | >2000 |

There are further lecture halls available that can be used at the University of Liverpool (including Leahurst Campus)

**Table 6.4: Premises for group work (Number of rooms that can be used for supervised group work)**

|                                                                                                           |       |       |        |        |        |       |        |
|-----------------------------------------------------------------------------------------------------------|-------|-------|--------|--------|--------|-------|--------|
| Room no. 1                                                                                                | no.2  | no.3  | no. 4  | no. 5  | no.6   | no. 7 | no.8   |
| Places 40                                                                                                 | 40    | 40    | 22     | 20     | 16     | 14    | 16     |
| Room no.9                                                                                                 | no.10 | no.11 | no. 12 | no. 13 | no. 14 | no.15 | no. 16 |
| Places 48                                                                                                 | 20    | 72    | 35     | 35     | 50     | 12    | 20     |
| Total number of places in rooms for group work                                                            |       |       |        | 500    |        |       |        |
| <b>Note:</b> Top line Leahurst rooms. Bottom line Liverpool rooms More available in Liverpool if required |       |       |        |        |        |       |        |

**Table 6.5: Premises for practical work (Number of laboratories for practical work by students)**

| Laboratory                              | no 1 | no 2 | no 3 | no 4 | no 5 | no 6 | no 7 | no 8 |
|-----------------------------------------|------|------|------|------|------|------|------|------|
| Places                                  | 20   | 80   | 70   | 60   | 80   | 70   | 200  | 200  |
| Total number of places in laboratories: |      |      |      | 780  |      |      |      |      |

### **SATH & PLEH (Hospital Laboratory Facilities)**

The hospital laboratory is available 24 hours a day for patient side investigations. Students receive a laboratory induction prior to starting their clinical rotations, in fourth year, by trained laboratory technicians. They also receive additional basic training at the start of their out of hours rotation, as revision. Instructions for use of all equipment is displayed on the laboratory walls. Local rules are displayed in the laboratory

The formal responsibility for safety and biosecurity In the Faculty of Health & Life Sciences falls to Departments/Schools and, particularly, Institutes. Heads are, accordingly, responsible for the management of safety and biosecurity, but are advised and assisted by site-based Committees: for the Veterinary School the most relevant of these are the Leahurst Safety and Biosecurity Committee, and the Liverpool-based Veterinary School Safety and Biosecurity Committee. Each of these is chaired by an Academic Lead, is representative of activities, management units, and students, and each takes advice from activity-specific subcommittees and the site-based Safety Coordinators. Each Site Safety Coordinator has a Deputy (or Deputies) to act in their absence and oversee particular areas of activity.

The Faculty and University is committed to maintain high standards of health and safety. It is our policy not only to comply with the Health and Safety at Work Act as required by law, but also to act positively to prevent injury, ill-health, damage and loss arising from our work, and to provide the financial and physical resources necessary to ensure high standards of health and safety. High standards of health and safety and of biosecurity are as important as high standards in teaching, research and other activities. Anything which cannot be carried out to an adequate safety standard, based on a risk assessment, should not be done.

Health, safety and biosecurity are an integral part of the duties of all members of staff, for which they are held accountable at all levels. The Faculty seeks to encourage all of its members to participate in and contribute to the establishment and observance of safe working practices. **However the Faculty expects all staff and students to recognise that equally there is a clear responsibility on them to exercise self-discipline and accept responsibility to do everything they can to prevent injury to themselves and others.** Thus every department, group leader and supervisor has specific responsibility for health, safety and biosecurity arrangements in their own area. Every individual has a duty to follow safe working procedures.

Safety and biosecurity matters are subject to (at least) annual review and updated accordingly in order to achieve progressive improvement in safety performance. Each area has to undertake a twice yearly safety monitoring and inspection, a report of which is sent not only to the local Safety and Biosecurity Committee, but to the University's Safety Advisor. In addition, the University undertakes regular Safety Audits. These are in-depth inspections that take place over several days: the Leahurst campus was last audited in the July 2012 (prior to that Leahurst and Liverpool were treated as one site, so earlier reports refer to the Veterinary Faculty).

The Leahurst Campus and Veterinary school in Liverpool have produced safety guidance, which is available to all staff and students through the [Veterinary School's Safety and Biosecurity website](#). These documents are also available in hard copy on appropriate notice boards. In addition students are given specific advice and training in health, safety and biosecurity at the appropriate stage of the curriculum: for example safety on farms and an introduction to zoonoses are covered in the first year prior to EMS and animal handling classes, while safety in the clinics is discussed at the beginning of the clinical courses (largely in the Introductory Clinical Course in Year 3, along with practical sessions in biosecurity, sharps, hand washing and animal handling. Advice is also given in the relevant student handbooks, and students undertake a risk assessment for their placements and EMS. All students working in laboratories undergo a safety induction and undertake a risk assessment before work can start.

Staff of the Veterinary School are strongly represented and heavily engaged in health and safety at a University level, through membership of Council's Committee on Safety and the University's Biohazards Subcommittee.

### **6.1.5 Diagnostic laboratories and clinical support services**

#### **Diagnostic laboratories - [Liverpool Site](#)**

##### **Test-a-Pet:**

This is part of the Veterinary Pathology Services Business Plan dealing principally with Parasitology samples from Leahurst and external Practices. It is based in the Science Park IC2 building, incorporated within the Infection Biology suite of offices and laboratories.

It offers a range of serology tests ,(Neospora, Toxoplasma, Borrelia, etc), faecal analysis, (Roundworm, Cryptosporidia, Giardia, etc), Ectoparasite Identifications and a "Travelling Pet" package.

The service covers Small and Companion animals, Large Animals, Exotic species and Environmental samples, (soil, etc).

The laboratory trains student EMS groups, approximately 3 times/year.

### ***Small Animal Practice:***

The practice laboratory is equipped with haematology, biochemistry and electrolyte analysers, urinalysis strips, refractometers, stains and microscopes. Hand held glucometers are available. Equipment is available for dermatological tests and microscopy is located in the laboratory area. It also has test kits for FeLV/FIV, T4, PLI, Cortisol and bile acid.

### **Central clinical support services**

#### ***Anaesthesia***

##### ***Small Animal Practice***

Anaesthesia is carried out by the veterinary surgeons in charge of the case, supported appropriately by nursing staff.

#### ***Diagnostic Imaging***

##### ***Small Animal Practice***

Imaging procedures are carried out by the veterinary surgeon in charge of the case, supported appropriately by nursing staff. Undergraduates are involved with positioning and interpretation of images and have the opportunity to perform ultrasound on appropriate cases.

#### ***SAP imaging facilities:***

- One Siemens Multix Pro X ray machine
- One Titan Sonosite Ultrasound machine

### **Diagnostic laboratories - [Leahurst Site](#)**

#### ***Clinical Pathology Laboratory – main building***

This is staffed by three technicians. The laboratory provides haematology and biochemistry analysis and selected immunoassays for the Hospitals and Farms on the Leahurst site. Undergraduates can also choose to carry out preclinical EMS in this laboratory.

#### ***Bacteriology service – main building***

This laboratory provides all standard bacterial culture services, sensitivity determination (disc and MIC), and also MRSA identification. The lab can also carry out PCR for mycobacterium examination.

The hospitals and farms also have “in house” clinical pathology diagnostic facilities, available 24 hours a day for patient side investigations.

#### ***Small Animal Teaching Hospital***

The hospital laboratory is equipped with haematology, biochemistry and electrolyte analysers, haematocrit centrifuge, statspin (Eppendorf centrifuge) blood typing cards, urinalysis strips, refractometers, stains, cell counters and microscopes. There are also test kits for Feline Immunodeficiency Virus (**FIV**), Feline Leukaemia Virus (**FeLV**) and pancreatic lipase immunoreactivity (**PLI**).

Equipment for dermatological tests and microscopy is housed in the dermatology suite.

Hand held blood gas analysers are available in theatre, ICU and wards.

#### ***Philip Leverhulme Equine Hospital and Equine Practice***

The hospital laboratories are equipped with haematology, biochemistry, electrolyte and blood gas analysers, haematocrit centrifuge, urinalysis strips, refractometers, stains and microscopes. There are also test kits for neonatal IgG testing.

#### ***Livestock, Health and Welfare:***

The Practice has microscopy and associated facilities for faecal egg counts, semen analysis and basic smear examination. A centrifuge and refractometer are available for estimation of serum Total Protein concentrations in calves. Extensive use is made of the diagnostic laboratories on-site and the AHVLA

#### ***Veterinary pathology:***

The post mortem rooms and trimming facilities are in the main building. They are equipped with all essential tools for the purpose. The Histology Laboratories are located in dedicated premises at the Leahurst site (Oxenhale and Jordan Building) where the entire equipment for light and electron microscopy processing (including immunohistology and in situ hybridisation) as well as a transmission electron microscope are based. All laboratories are open to students whenever appropriate, to work under supervision.

#### **Central clinical support services**

##### ***Anaesthesia***

##### ***Small Animal Teaching Hospital:***

Anaesthesia is provided by a team of anaesthetists, some of whom also have responsibilities in PLEH. The anaesthesia team is headed up by Briony Alderson (DipECVAA), supported by one other senior academic, two clinician teachers (a third in recruitment), two residents, three dedicated anaesthesia interns and rotating interns.

##### ***Philip Leverhulme Equine Hospital***

The team is lead by David Bardell (DipECVAA), supported by one senior academic, and by varying proportions of the clinician teachers and residents time. Generally, there will be five to six anaesthetists working in SATH, and two in PLEH. Briony and David work co-operatively to ensure clinical cover in both Hospitals is maintained.

The distribution of their clinical time is summarised below.

| Staff member                                                     | SATH          | PLEH          |
|------------------------------------------------------------------|---------------|---------------|
| <b>Dr Mark Senior (on research sabbatical from end Dec 2012)</b> | 50%           | 50%           |
| <b>CT cover for Dr Senior (from Oct 2012)</b>                    | 75%           | 25%           |
| <b>Dr Alex Dugdale</b>                                           | 50%           | 50%           |
| <b>Ms Briony Alderson</b>                                        | 100%          |               |
| <b>Mr David Bardell</b>                                          |               | 100%          |
| <b>Ms Ellie West (maternity leave until 2013)</b>                | 75%           | 25%           |
| <b>Ms Maria Amengual (locum cover for Ms West)</b>               | 75% (or more) | 25% (or less) |
| <b>Mr Carl Bradbook</b>                                          | 75%           | 25%           |
| <b>Ms Kate Thompson</b>                                          | 75%           | 25%           |
| <b>Ms Katherine Robson</b>                                       | 75%           | 25%           |
| <b>Ms Rebecca Smith</b>                                          | 100%          |               |
| <b>Ms Maja Drozdzyńska</b>                                       | 100%          |               |
| <b>Ms Aurora Zoff</b>                                            | 100%          |               |

### ***Livestock, Health and Welfare***

Anaesthesia is carried out by the veterinary surgeons in charge of the case. In all clinical areas, undergraduates are involved in anaesthesia and diagnostic imaging on their clinical rotations, under staff supervision.

### ***Diagnostic Imaging***

#### ***Small Animal Teaching Hospital***

Diagnostic imaging is staffed by one senior academic (Dip ECDVI), two clinician teachers (one DipACVR); three residents (one part time, one in recruitment at time of writing), plus rotating residents from other disciplines and interns; a fully qualified (BSc) diagnostic radiographer and one full time service specific nurse (DipAVN(Surg)). We also have a locum ultrasonographer who is employed when required, due to operational need.

In SATH, there is a formal reporting procedure for all imaging modalities, and these reports are available as part of the clinical records. In all other areas, the clinicians in charge of the cases interpret the images.

Undergraduate training focuses on day one skills and practice competencies, though students are also exposed to advance imaging. Images are accessible to students on all PCs within the hospital, on a PACS system.

### ***SATH imaging facilities***

- One Siemens Magnetom Harmony 1T MRI scanner.
- One Siemens Somatom Volume Zoom 4-slice CT scanner.
- Two ceiling-mounted X-ray suites (Siemens Multix Top) with shared computed radiography.
- Two general ultrasound rooms.
- One echocardiography room, fluoroscopy (C-arm)
- One GE DEXA scanner.

### ***Philip Leverhulme Equine Hospital***

Diagnostic imaging is overseen by one senior academic (Dip ECDVI) who works in SATH. CT is carried out by a clinician teacher (Cert ES (Soft Tissue Dip ECVS) and/or the Head Nurse (RVN REVN); MRI is manned by a senior animal technician and diagnostic reports written by a clinician teacher (Cert EP CertES (Orth) and a senior lecturer (PhD Cert EO DipECVS). The Head Nurse (RVN REVN) acts as the diagnostic radiographer and is also the local RPO, and Interns also cover in that area. She is also responsible for all gamma scintigraphy with assistance from other nursing staff. All clinical staff are fully trained in the use of all other diagnostic equipment and would interpret results themselves.

Undergraduate training focuses on day one skills and practice competencies, though students are also exposed to advance imaging. Images are accessible to students on all PCs within the hospital, on a PACS system.

- One Hallmarq MRI scanner
- One GE Lightspeed CT scanner
- One ceiling mounted x-ray machine in the radiography suite
- One gamma scintigraphy machine
- One Vivid 7 ultrasound, one Vivid i ultrasound
- One Handheld ECG, plus 2 x Kruuse Telemetric ECG
- One Olympus Keymed Endoscope tower and one Endomed Endoscope tower with a selection of fibre-optic scopes (2 x 1.2m, 1 x 2.2m, 2 x 3m), plus one overground endoscope for exercise endoscopy

### ***LEP imaging facilities***

- Portable digital x-ray machine
- Sonosite Micromax portable ultrasound
- Portable endoscope

### ***Livestock, Health and Welfare***

In all clinical areas, undergraduates are involved in anaesthesia and diagnostic imaging on their clinical rotations, under staff supervision.

### ***Veterinary pathology***

Undergraduate students are involved in post mortem examinations during their clinical rotations (both in the hospitals and in Public Health/Clinical Pathology), under staff supervision. Pathologists directly involved in teaching are 6 (senior) lecturers (one FRCPath, one further to be appointed) with support from a senior academic (DipIECVP), and 4 trainees (residents/senior clinical scholars/ECVP trainee) and 3 PhD students (veterinarians specialising in veterinary pathology research).

### **6.1.6 Slaughterhouse facilities**

The School does not own or have slaughtering facilities on site. During the past years we have used our contacts with the Food Standards Agency (FSA) and the Industry to gain access to local abattoirs. We are currently visiting two plants:

| <b>Plant</b>                                                                                                   | <b>Species</b> | <b>Throughput</b>  | <b>Distance</b> |
|----------------------------------------------------------------------------------------------------------------|----------------|--------------------|-----------------|
| <b>VION<br/>Sandycroft<br/>Glendale Avenue<br/>CH5 2QP Deeside</b>                                             | Chicken        | 180,000 per day    | 8.7<br>miles    |
| <b>VION Food Group –<br/>Welsh Country Foods (Gaerwen)<br/>Gaerwen Industrial Estate<br/>LL60 6HR Anglesey</b> | Sheep          | 2 to 6,000 per day | 68<br>miles     |

The visits are part of the Veterinary Public Health rotation in years 4 and 5 and students are observing the operations guided by one of the VPH lecturers and a member of FSA (Sandycroft) or plant (Anglesey) staff. They cover all aspects of operations (live animals to final product and animal by-products).

### **6.1.7 Foodstuff processing unit**

Both the above plants have cutting plants within the same premises. Because of local management rules and availability, access to them is not always possible so for the purposes of the teaching we do not consider having access to such facilities though given the opportunity we do guide the students through the cutting plants too.

### **6.1.8 Waste management**

Potentially infected waste from clinical or research laboratories or post-mortem rooms is disinfected, or, if necessary, autoclaved before leaving the site. This and other non-autoclaved infected waste such as soiled swabs and dressings, animal carcasses, viscera and tissue from treatment areas, are put into strong yellow bags (25 microns high density or 100 microns low density) with the tops sealed or well secured.

Contaminated needles, cartridges, disposable sharp instruments, microscope slides and pipettes are placed in properly designed sharps containers which are properly sealed. All potentially contaminated bedding, faecal material etc is double bagged into strong yellow bags. All bags and containers are then placed into large clinical waste skips which are strategically placed around the site, refrigerated if necessary, then collected on a twice weekly basis by a firm of clinical waste contractors for incineration.

Whole large animal carcasses not going for post mortem are collected routinely by a firm of fallen stock collectors.

*Purple lid sharps bin* are used for sharps and consumables contaminated with cytotoxic or cytostatic waste. *Purple indicated bags* are used in the chemotherapy room to dispose of non hazardous waste and PPE used whilst administering chemotherapy drugs.

*Out of date drugs doop bin* is a large bin that only contains pharmaceutical drugs and is not mixed with clinical waste. PHS group collect every 3 months for purple cytotoxic, yellow sharp bins and out of date drugs/ doop bins. Consignment notes are kept for 3 years along with the quarterly returns.

Cadavers for individual cremation are collected by Pet Funeral Services and Whitley Brook.

Waste bedding and manure from the PLEH is stored for suitable period (to ensure non-survival of potential pathogens) and spread on fields of Ness Heath Farm.

#### **Waste Chemicals**

Disposed of through the Department of Chemistry (solvents) and by SRCL, (others), on request.

#### **Recyclables**

There are banks of bins for separating recyclable from general waste. These are located in the main transit areas - the Entrance Hall, The Locker Room and Kitchen

General waste, cardboard and plastics via SITA.

Electrical and IT via Facilities Services, on request

#### **Confidential waste**

Paper is shredded before recycling. Hard Disks and similar are wiped before disposal via FM.

### **6.1.9 Future changes**

As mentioned the Livestock Health and Welfare building is being completely extended and re-built. When completed it will offer the following teaching facilities

- 3 seminar rooms –each capable of seating 15 – 20 students. Two of the rooms will have a sliding partition wall allowing them to be joined up to make a seminar room capable of taking ~ 40 students. All seminar room will be fully equipped with AV facilities and data points allowing them also to be used by groups of students for project work (either group or individual)
- Clinical skills laboratory with AV facilities
- Changing room with locker space for secure storage for 56 students when engaged in LHW learning.

## 6.2 Comments

Since 2003 there has been substantial investment in new buildings which is on-going and when complete will provide teaching facilities second to none for our students. In Liverpool, the new Veterinary Teaching suite will offer first class facilities for practical learning and will enable the acquisition of clinical skills by students throughout the course rather than in the later years only as has been the case. The new Home to the School will provide a pleasant central facility for students in Liverpool ensuring the continuation of the spirit of camaraderie that is such a marked feature of veterinary student life in Liverpool. The recently opened Small Animal Practice will enable first class hands-on learning in a pleasant environment. At Leahurst, both the Small Animal Teaching Hospital opened in 2007 and the Philip Leverhulme Hospital offers world class learning facilities in equine and small animal studies both in terms of clinical facilities and learning facilities such as seminar rooms. In the case of farm animal teaching facilities, the proposed Leahurst Learning Centre and renovated Surgical Training Unit, due for completion in May 2013, will provide first class facilities for learning with a clinical skills laboratory and fully equipped seminar rooms. This building will also house the Farm Animal Practice, a key part of the learning experience for Fourth and Final Year undergraduates. The major re-development of Wood Park Dairy Farm together with the construction of the Tesco Dairy Centre of Excellence Visitors Centre with its seminar rooms and changing room/lobby affords students with hands on experience with a dairy herd currently in the top 10% of UK herds. The availability of the fully equipped seminar rooms with full internet facilities (currently being upgraded) add to the learning experience offered by this facility, unparalleled amongst UK veterinary schools. Similarly Ness Heath Farm offers top quality learning with its commercial sheep flock, pedigree Hereford beef herd and small rare breed pig herd. Internet facilities to Ness Heath are currently being upgraded also which will add to the learning experience.

The major refurbishing of the post mortem suites at Leahurst with the addition of a second post mortem room will further improve the learning experience. The major investment in research facilities across both the Leahurst and Liverpool sites will further reinforce the principle of research led teaching so important to education of veterinary undergraduates and postgraduates. As part of the development of the veterinary estate there has been (and is on-going) considerable investment in equipment for teaching including internet based facilities, laboratory equipment such as teaching microscopes etc, and clinical skills teaching equipment including mannequins for simulated teaching of clinical skills e.g. Breeding Betsy for bovine reproductive learning.

### **6.3 Suggestions**

In summary, the recent and on-going developments will ensure that the University of Liverpool will continue to offer a first class veterinary education for future generations. The University must ensure that continued investment in upkeep and expansion of the Estate is aligned with student numbers.

## Chapter 7 Animals and Teaching Material of Animal Origin

### 7.1 Factual information

#### 7.1.1 Anatomy

**Table 7.1: Material used in practical anatomical training**

|                                   | dog      |          | ruminant |          | equine   |          | other    |             |
|-----------------------------------|----------|----------|----------|----------|----------|----------|----------|-------------|
|                                   | 2010/11  | 2009/10  | 2010/11  | 2009/10  | 2010/11  | 2009/10  | 2010/11  | 2009/10     |
| <b>live animals<sup>1)</sup></b>  | 7        | 7        | 180*     | 180*     | 4        | 4        | 50       | <b>50</b>   |
| <b>cadavers<sup>1)</sup></b>      | 200      | 200      | 5        | 5        | 0        | 0        | 90       | <b>90</b>   |
| <b>specimen<sup>1)</sup></b>      | 0        | 0        | 100      | 100      | 60       | 60       | 50       | <b>50</b>   |
| <b>other<sup>2)</sup></b>         |          |          |          |          |          |          |          |             |
| <b>preserved specimens</b>        | 50+      | 50+      | 50+      | 50+      | 50+      | 50+      | 50+      | <b>50+</b>  |
| <b>bones &amp; skeletons</b>      | 100+     | 100+     | 100+     | 100+     | 100+     | 100+     | 100+     | <b>100+</b> |
| <b>radiographs</b>                | 100+     | 100+     | 100+     | 100+     | 100+     | 100+     | 100+     | <b>100+</b> |
| <b>models</b>                     | 5        | N/A      | 1        | N/A      | 2        | N/A      | 4        | <b>N/A</b>  |
| <b>computer assisted teaching</b> | <b>9</b> | <b>9</b> | <b>0</b> | <b>0</b> | <b>1</b> | <b>1</b> | <b>0</b> | <b>0</b>    |

Live animals:

- Dog – these are staff dogs brought in for live anatomy classes and auscultation. These are stored at home.
- Ruminant – Animal handling classes are delivered on the university dairy and beef/sheep/pig farm in the first term of the first year of undergraduate studies. Please see below for a more detailed description in 7.1.3. These are stored at Leahurst, Woodpark Farm & Ness Heath Farm.
- Equine – Animal handling cases are delivered at PLEH and on site using hospital cases or farm animals belonging to both hospital clients. We do however keep horses specifically for student teaching
- Other – these are animal collections brought in for live anatomy and include numerous birds, small mammals and reptiles. These are stored externally and brought in by visiting lecturers.

#### Cadavers:

- Dog – we obtain fresh cadavers each week with student: cadaver ratio of 5:1. These are collected on a weekly basis from the authorised council dog pounds and stored at 4 deg C
- Ruminant – we use sheep cadavers for teaching abdominal anatomy. These are collected on a weekly basis from local abattoirs and stored at -20 deg C or 4 deg C.
- Equine - we use equine cadavers for teaching abdominal anatomy. These are collected on a weekly basis from local abattoirs and stored at -20 deg C or 4 deg C.
- Other – these include fish, rabbits and chickens with a student: cadaver ratio of 5:1. These are collected from butchers, pest control and ex-battery farms immediately prior to the relevant class and stored at 4 deg C.

#### Specimens (fresh parts of animals rather than the whole cadaver):

- Dog – figures for this have been included under ‘cadaver’ as almost all anatomy studied on the dog is done using whole fresh cadavers.
- Ruminant – this includes guts, limbs, eyes. These are collected from local abattoirs immediately prior to the relevant class and stored at 4 deg C.
- Equine – this includes guts, limbs, heads. These are collected from local abattoirs immediately prior to the relevant class and stored at 4 deg C.
- Other – this includes pig hearts and small mammal / reptile specimens. These are collected immediately prior to the relevant class and stored at 4 deg C.
- 

#### Preserved specimens:

- We have numerous preserved specimens of varied species in formalin pots. These tend to be prosections of complicated anatomical areas (eg nerves) or rare specimens.
- 

#### Radiographs:

- We have numerous radiographs of head, limbs, thorax and abdomen of numerous species, but mainly the dog.
- 

#### Models:

- We have various models to teach external anatomy of dog / horse, and specific anatomy of limbs / joints and clinical anatomy (surgical spaying, auscultation and endotracheal intubation).
- 

#### Computer assisted teaching:

- We have developed detailed high quality photographic interactive dissection guides to canine axial skeleton, abdomen, forelimb, head, hindlimb, perineal region, eye, and equine abdomen.

### 7.1.2 Pathology

**Table 7.2: Number of necropsies over the past 3 years**

|                          | species                                                    | Number of necropsies |         |         | Average |
|--------------------------|------------------------------------------------------------|----------------------|---------|---------|---------|
|                          |                                                            | 2010/11              | 2009/10 | 2008/09 |         |
| Food-producing animals;  | cattle                                                     | 112                  | 159     | 116     | } 218   |
|                          | small ruminants                                            | 71                   | 66      | 52      |         |
|                          | pigs                                                       | 29                   | 13      | 17      |         |
|                          | other farm animals                                         | 3                    | 7       | 9       |         |
| Equine                   |                                                            | 78                   | 61      | 92      | 77      |
| Poultry                  |                                                            | 105                  | 169     | 158     | } 168   |
| Rabbits                  |                                                            | 25                   | 25      | 23      |         |
| Companion animals/exotic | dogs                                                       | 134                  | 124     | 151     | } 354   |
|                          | cats                                                       | 36                   | 29      | 47      |         |
|                          | other**<br>(reptiles, amphibians, fish, primates, rodents) | 172                  | 233     | 137     |         |

Indicate the nature and extent of any additional sources of material for the teaching of necropsies and pathological anatomy, including slaughterhouse material.

### 7.1.3 Animal production

Indicate the availability of food-producing animals for the practical teaching of students

- a) On the site of the institution; The university has 2 commercial farms; One is a 180 milking cow dairy farm (Woodpark) run to modern dairy standards, with up to date parlour, housing and software (rumination and activity monitors worn by the cows , fertility data input and analysed using Interherd®).

During clinical rotations 3 groups of students are taught skills every week (fertility, herd monitoring and lameness), plus a fourth group will attend any call outs to emergencies as the Leahurst farm Practice is, of course, the primary care vets for the farm. Additionally, students may visit on an ad hoc basis to examine cows or inspect the housing and feed systems. This may be with or without a veterinary surgeon as long as the farm manager is aware of their presence for health and safety compliance. Animal handling classes are carried out during pre clinical teaching of first year undergraduates.

The second farm has our flock of 590 breeding ewes (plus lambs), 15 breeding sows (plus piglets), 24 pedigree Hereford suckler cows (plus calves). Again, rotation groups visit the farm every week during teaching time and animal handling classes are carried out there during preclinical teaching.

Both farms take students for preclinical EMS.

Invasive procedures may not be performed on any of the farm animals unless clinically necessary for the investigation or treatment of that animal, in line with home Office licensing regulations and, most importantly, on the grounds of animal welfare.

b) On other sites to which the institution has access.

The Leahurst Farm Practice is a commercial practice serving local dairy, beef, sheep and pig farms and small holders. The client list comprises around 30 commercial farms and 100 small holders. All our rotation teaching is based on work carried out on these farms and the university farms. The practice offers a competitively priced and expert service to our clients, therefore the students are constantly taught the basis of high quality first opinion work. Students carry out all clinical procedures under veterinary supervision and it is rare for time constraints to inhibit our ability to allow the students to do everything. Our clients are rewarded for their tolerance of the student groups, with a high quality veterinary service.

We regularly take referral cases from other practices, particularly surgical cases, those for radiography and some medical cases. Students participate in all in-patient care and are expected to deliver this to a high standard (including the keeping of clinical records).

#### **7.1.4 Food hygiene/Public health**

Indicate the availability of farm animals and products of animal origin for the practical teaching of students in veterinary public health, food hygiene, inspection and technology.

Practical teaching includes practical classes in meat inspection, in food microbiology and technology.

*Meat Inspection* - For the meat inspection practical classes we use organs and carcasses collected after rejection during regular meat inspection at local abattoirs. The collection for red meat is carried out throughout the year by a meat inspector who also assists us in teaching the class too. These are frozen and archived. In addition we collect fresh specimens on the day before the class. Poultry specimens are collected from a local poultry abattoir with high throughput. Due to the fast spoilage of the carcasses we use only fresh specimens. There is ample availability and because of the year-round collection a very good variety of conditions.

For classes in food hygiene and technology we use material that depending on the subject we buy fresh, allow to get spoiled or we keep stored. For example for the egg practical we buy eggs which we allow to age, duck eggs that are easier to candle, we destroy enough eggs to find defects for demonstration purposes and buy different types of eggs to discuss labelling and traceability. For the different packaging methods we have an archive of different long life products and buy some fresh product closer to the time of the class. For the milk practical we collect milk from the farm before heat treatment and we allow it to

get spoiled. We also buy different types of milk and use it in the different tests. We buy fish from local wholesalers and honey from local producers and shops.

## 7.1.5 Consultations and patient flow services

### 7.1.5.1 Consultation

State the number of weeks, in the course of the year, during which the clinics are open.

- PLEH: 52 weeks, but emergencies only during Bank Holidays and University closure days
- SATH: 52 weeks including Bank Holidays and University Closure days
- SAP: 52 weeks of the year.
- FAP: 52 weeks, but emergencies only (i.e. call outs by clients) during Bank Holidays and University closure days

State the number of consultation days each week.

- PLEH: 5 days
- FAP : 5 days routine and emergency work + 2 days (weekends) on call outs designated by clients as necessary, or emergency referrals
- SATH: 5 days
- SAP: 5.5 days. (This equates to 300 consult slots in a week, 120 of these can also be double booked. The non Bank Holiday days between Christmas and New Year we operate a clinic each day with slightly reduced hours)

State the consultation hours.

- PLEH: 9am to 5pm
- SATH:
- SAP: Mon to Fri - 9.00-13.00 then 14.30-18.30.Saturday 9.00-13.00.
- FAP 9am-5pm + overnight on call vet (1st opinion and referrals seen as deemed routine or emergency)

### 7.1.5.2 Patient flow

The number of animals to be stated are for all disciplines combined (medicine, surgery, reproduction, etc.). In Table 7.3 only animals coming into the Faculty should be included. Animals studied in practical teaching outside the Faculty should be entered in the section entitled "Ambulatory Clinic" (Table 7.4).

The term "consultation" refers to those patients which come in and go out during daily consultation hours. "Hospitalisation" refers to those patients which are retained in the clinic as "in patients" following presentation.

**Table 7.3: Number of cases: a) received for consultation, and b) hospitalised in the Faculty clinics, in the past three years**

| Species                   |                | Number of cases |      |         |      |         |       | Average                                      |
|---------------------------|----------------|-----------------|------|---------|------|---------|-------|----------------------------------------------|
|                           |                | 2010/11         |      | 2009/10 |      | 2008/09 |       |                                              |
|                           |                | a               | b    | a       | b    | a       | b     |                                              |
| Food                      | Bovine         | 41              | 62   | 71      | 62   | 43      | 82    | a)137<br>b)120                               |
|                           | Ovine, caprine | 45              | 40   | 67      | 39   | 48      | 32    |                                              |
|                           | Porcine        | 20              | 3    | 26      | 6    | 23      | 20    |                                              |
|                           | Farm poultry   | 11              | 0    | 10      | 0    | 5       | 0     |                                              |
|                           | Camelids (FAP) | 0               | 0    | 2       | 6    | 1       | 9     |                                              |
| Poultry                   |                |                 |      |         |      |         | } 184 |                                              |
| Rabbits                   | 132            |                 | 170  |         | 250  |         |       |                                              |
| Equine                    |                | 1904            | 1262 | 1938    | 1133 | 2028    | 1140  | a (1956)<br>b (1178)                         |
| Companion animals/exotics | Canine         | 18822           | 2152 | 13670   | 2782 | 12830   | 3449  | a (18617)<br>b (2794)<br>a (6259)<br>b (632) |
|                           | Feline         | 3435            | 326  | 3656    | 614  | 3704    | 957   |                                              |
|                           | other**        | 126             | 0    | 173     | 0    | 303     | 0     |                                              |
|                           | Rabbits        | 195             | 0    | 84      | 0    | 269     | 0     |                                              |
|                           | Rodents        | 45              | 0    | 15      | 0    | 37      | 0     |                                              |

\*year prior to evaluation, \*\*Indicate species

### 7.1.6 Vehicles for animal transport

State the number and nature of the Faculty vehicles that can be used to bring sick animals to the clinics.

- PLEH : None
- LEP: None
- SATH: None
- SAP: None
- FAP: 1 cattle trailer (3 vans equipped with tow bars to use trailer)

### 7.1.7 On-call emergency service

Outline what emergency service is available (full-time, 24 h service, ON-CALL or 8-22 h duty) and discriminate for species.

- PLEH: Emergency cases are accepted 24 hours per day, 365 days a year
- LEP: Emergency cases are responded to 24 hours per day, 365 days a year
- SATH: Emergency cases are responded to 24 hours per day, 365 days a year
- SAP: Outside of normal working hours we have an arrangement with a dedicated 24 hours Emergency Hospital (Alder Veterinary Hospital) who cater for our clients and patients.
- FAP: Emergency calls to our clients and referrals accepted 24 hours per day, 365 days a year.
- 

### 7.1.8 On farm teaching and outside patient care

#### 7.1.8.1 Ambulatory (Mobile) clinic

The Ambulatory (Mobile) Clinic is defined as a unit which provides on-call outside services to farms and other institutions and is generally operated on a commercial basis.

State the number of hours of operation per week. Is emergency service provided 24 h/day, 365 days per year? What is the degree of student participation (include duties)?

- LEP: 24 hr/day. 365 days a year Student involvement is during normal office hours in normal term times
- SATH: None
- SAP: None
- FAP: routine and emergency calls to our clients carried out 24 hours a day, 365 days a year. Students attend all calls both office hours and out of hours during teaching time and we take up to 3 students on EMS every week...again they attend all daytime calls and OOH calls and are deemed not to have satisfied our rotation or EMS requirements if they fail to fulfil their OOH rota.

State the number, the type and the seating capacity of the vehicles used to transport students working in the ambulatory (mobile) clinic.

- LEP: 4 vehicles (4x4), which can accommodate 2 – 3 students (depending on whether x-ray machine is being transported to the call)
- SATH: None
- SAP: None
- FAP: 5 minibuses, each seating 8 passengers plus driver

State the approximate number of sick animals (specify cattle, swine, equine, poultry or small ruminants, others) seen by the ambulatory clinic per year during the past three years (Table 7.4).

- FAP: 11,462

State the average number of visits in a year made by the ambulatory clinic to farms and other institutions.

- LEP: None
- SATH: None
- SAP: None
- FAP: 1,821

**Table 7.4a: Number of cases seen by the Ambulatory (mobile clinics) in the past three years**

|                         | Species         | Number of patients |         |         | Average  |
|-------------------------|-----------------|--------------------|---------|---------|----------|
|                         |                 | 2010/11            | 2009/10 | 2008/09 |          |
| Food-producing animals  | cattle          | 12,452             | 11,497  | 9455    | } 11,462 |
|                         | small ruminants | 194                | 419     | 288     |          |
|                         | pigs            | 24                 | 31      | 21      |          |
|                         | camelids        | 2                  | 4       | 0       |          |
| Poultry (no of flocks)  | Smallholder     | 13                 | 6       | 8       | }        |
| Rabbits (no production) |                 | 0                  | 0       | 0       |          |
| Equine                  |                 | 3661               | 3786    | 3349    |          |
| other                   |                 | N/A                | N/A     | N/A     |          |

\*year prior to visitation, \*\*Indicate species

### 7.1.8.2 Other on farm services and outside teaching

If there is no on duty Ambulatory (Mobile) clinic, a Faculty may have defined contracts with farms or other institutions to allow for outside teaching and patient care. Similarly, a Faculty may provide herd-health services.

Please indicate if and to what extent this applies to your Faculty. If applicable please provide no. of patients seen on outside teaching

FAP: during electives we take approximately 30 students to 4-8 farms outside the client base of our own practice for case workup on a herd / flock basis

**Table 7.4b: Number of patients seen on outside teaching in the past three years**

|                | Species              | Number of patients |          |          | Average |
|----------------|----------------------|--------------------|----------|----------|---------|
|                |                      | 2010/11            | 2009/10  | 2008/09  |         |
| Food-producing | cattle               | 6 herds            | 6 herds  | 6 herds  | } 6     |
|                | small ruminants      | 2 flocks           | 2 flocks | 2 flocks |         |
|                | pigs                 | 0                  | 0        | 0        |         |
|                | other farm animals** | 0                  | 0        | 0        |         |
| Equine         |                      | N/A                | N/A      | N/A      | } 2     |
| other          |                      | N/A                | N/A      | N/A      |         |

\*year prior to visitation, \*\*Indicate species

### 7.1.9 Other information

SAP: The University Veterinary Practice has recently located to a new purpose built facility. This offers in house blood machines, ultrasound, digital radiography, ECG, Doppler blood pressure monitoring. We have separate dog, cat and isolation wards. The surgical facilities have a dedicated preparation zone, dental theatre, neutering theatre and main operating theatre with a purpose built recovery ward for post operative monitoring. Our hours of service are typical for a first opinion private practice however we offer a greater number of consultations each day than the majority of the local practices. In addition to the delivery of Undergraduate teaching we deliver a high quality clinical service from preventatives through to emergencies.

Charities such as Liverpool Cat Welfare, Cats Protection League and Dogs Trust use the University Veterinary Practice. This provides an excellent source of neutering cases for the clinical rotation students to assist with/perform. In return we offer a competitive price for these charities.

Proportion of cases that are primary and referral:

- Equine:                      66% Primary      34% referral
- Canine:                      38% Primary      62% referral
- Feline:                      72% Primary      28% referral
- Other:                      100% Primary    0% referral
- Farm species:              90% Primary      10% referral

Areas of clinical specialisation:

PLEH: Areas of clinical specialisation- Internal Medicine (including dermatology, cardiology, neurology, oncology, ophthalmology), Soft Tissue Surgery, Orthopaedics, Reproduction & Diagnostic Imaging. All services are covered for 5 days a week, plus emergency cases OOH (full 24hr/365 day coverage)

SATH: Areas of clinical specialisation- Internal Medicine (including dermatology, cardiology, neurology, oncology, ophthalmology), Soft Tissue Surgery, Orthopaedics, Diagnostic Imaging. All services are covered for 5 days a week, plus emergency cases OOH (full 24hr/365 day coverage)

SAP: All of our 4 veterinary surgeons are general practitioners each confident in all fields of primary care work.

FAP: Our 5 fulltime practice veterinary surgeons are farm animal practitioners (2 with backgrounds in mixed practice), one is a recognised European specialist in bovine health management, one holds the RCVS CertCHP and the DBR, a third holds the DBR. The practice vets are supported by two diploma or certificate holding foot trimmers who teach bovine lameness (herd management and individual treatments) to all students. The division also has 5 clinically active academic members (two of which are RCVS recognised specialists) who are available for additional consultancy work within the practice client base and to offer their expertise to referral cases whenever necessary.

### **Relationship with outside organisations:**

The Faculty enjoys strong relationships with external practitioners across the UK and indeed on a local level.

PLEH: We have referral cases sent to us by approximately 750 vets in 400 practices.

SATH: We have had referral cases sent to us by over 3000 vets in approx 830 practices.

SAP: We have an excellent professional relationship with our out of /hour's provider. They also take students on their EMS in addition to many of the local practices supporting students with EMS placements.

FAP: We have referral cases sent to us from a small group of practices, mainly local; we have excellent relationships with these practices inasmuch as we also offer telephone support and advice and a consultancy service. Several practices have welcomed our students onto their clients' farms for the aforementioned elective work.

### **Administrative systems used for patients:**

PLEH: Tristan is used for hospital & practice management. PC's are located throughout the hospital with a central file server and back-up system, and students have read-only access to most case information. They can read clinical notes, see costs, lab results, letters and discharge instructions. Data can be retrieved either by using the Research module integral within Tristan, or by using the Metrics & Reports (which are more standardised reports based on common requirements, e.g. cases by selected dates, cases by clinician/date, income by service/clinician/hospital by selected date etc.

SATH/SAP: Tristan is a joint resource shared with PLEH and is used for hospital & practice management. PC's are located throughout the hospital with a central file server and back-up system, and students have read-only access to most case information. They can read clinical notes, see costs, lab results, letters and discharge instructions. Data can be retrieved either by using the Research module integral within Tristan, or by using the Metrics & Reports (which are more standardised reports based on common requirements, e.g. cases by selected dates, cases by clinician/date, income by service/clinician/hospital by selected date etc

FAP: all ambulatory cases seen are individually identified in the contemporaneous clinical notes, which are kept in hard copy, which can be correlated with all drugs sales and invoices kept on Tristan. We intend to move case recording completely to Tristan, although on-farm notes will still be taken and stored until a fully electronic system is in use. In-patient records (referral or first opinion) are kept in hard copy although we are in the process of transferring these onto Tristan. Lab reports, advisory reports and letters are all attached to the clients' Tristan accounts. Herd data from routine visits to most dairy clients is kept on Interherd software on behalf of the client, from which herd data analysis can be performed and we have access to our dairy clients' milk recording data.

### 7.1.10 Ratios

**Table 7.5: Animals available for clinical training (in the clinics of the Faculty or seen through the Ambulatory clinic) as ratio to the number of students in last full year of clinical training**

|              |                                                                                                                                                                         |         |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| <b>R 11:</b> | $\frac{\text{no. of students graduating annually}}{\text{no. of food-producing animals seen at the Faculty}^{1)}} = \frac{109}{257} = \frac{1}{2.35}$                   | 0.43    |
| <b>R 12:</b> | $\frac{\text{no. of students graduating annually}}{\text{no. of individual food-animals consultations outside the Faculty}^{2)3)}} = \frac{109}{11462} = \frac{1}{105}$ | 0.009   |
| <b>R 13:</b> | $\frac{\text{no. of students graduating annually}}{\text{number of herd health visits}^{3),4)}} = \frac{109}{1821} = \frac{1}{16.7}$                                    | 0.06    |
| <b>R 14:</b> | $\frac{\text{no. of students graduating annually}}{\text{no. of equine cases}^{1)}} = \frac{109}{5554} = \frac{1}{51}$                                                  | 0.02    |
| <b>R 15:</b> | $\frac{\text{no. of students graduating annually}^a)}{\text{no. of poultry/rabbit cases}^{1)}} = \frac{109}{184} = \frac{1}{1.7}$                                       | 0.6     |
| <b>R 16:</b> | $\frac{\text{no. of students graduating annually}^a)}{\text{no. of companion animals}^{1)} \text{ seen at Faculty}} = \frac{109}{24876} = \frac{1}{228}$                | 0.00005 |
| <b>R 17:</b> | $\frac{\text{no. of students graduating annually}^a)}{\text{Poultry (flocks)/rabbits seen}^{2)3)}} = \frac{109}{9} = \frac{1}{0.8}$                                     | 1.25    |

**Table 7.6: Animals available for necropsy**

|              |                                                                                                                                                     |      |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------|
| <b>R 18:</b> | $\frac{\text{no. of students graduating annually}}{\text{no. necropsies food producing animals + equines}} = \frac{109}{295} = \frac{1}{2.71}$      | 0.37 |
| <b>R 19:</b> | $\frac{\text{no. of students graduating annually}^{\text{a)}}}{\text{no. poultry/rabbits}^{\text{1)}}} = \frac{109}{168} = \frac{1}{1.54}$          | 0.65 |
| <b>R 20:</b> | $\frac{\text{no. of students graduating annually}^{\text{a)}}}{\text{necropsies companion animals}^{\text{1)}}} = \frac{109}{354} = \frac{1}{3.25}$ | 0.31 |

### 7.1.11 Other Species

Indicate how the Faculty deals with fish and other food producing species

Students have access to a wide range of fish and other food producing species, brought in for live anatomy classes. Anatomy classes include the dissection of rabbits, fish and chickens.

Third year students conduct a significant amount of practical classes on fish, rabbits, game, honey, milk, eggs and poultry as examples of other food producing species.

All these animals are stored externally and brought in by visiting lecturers.

## 7.2 Comments

This data clearly demonstrates that the number of cases/ material, available for teaching is good if not excellent. The quantity and quality of material available for preclinical teaching when combined with the new teaching facilities provides an excellent resource for high quality teaching in anatomy and associated subjects.

The numbers and ratios for necropsies undertaken within the Pathology department would also appear to be at the required level. It is also apparent, that the range of necropsies across the species is also in keeping with a high standard of teaching. This area of teaching is in a similar position to the preclinical teaching, in that it also has the benefit of new facilities, which complements the material available for necropsy so maximising the student experience.

The Data also shows that all three areas of clinical activity are strong, with no one area appearing to be substandard or below what is required to teach. The data also shows that reasonable amount of resilience exists in generating the numbers, as they are not dependant on one source.

Comment on major developments in the clinical services, now and in the near future.

The clinical services provided by the School, have continued to develop over the past few years and now provide an excellent multi species resource for teaching and research. This development is as a consequence of the investment into facilities and staff associated with the clinical services.

The new SATH became operational in 2008, following its move from Liverpool to Leahurst. This move was also associated with a major development and investment in new technologies and clinical services, with a dramatic increase in case numbers and associated staff levels. This rapid expansion has allowed the development of a multi disciplinary clinical service, with 50 vets and over 110 staff being employed and engaged in its provision.

As a consequence of the SATH move to Leahurst, the SAP was able to develop and expand into some of the space vacated by SATH. This development and expansion has led to a significant increase in case numbers seen by the SAP which was one of the driving forces for the construction of a new practice facility, capable of sustaining the expanding case load. This new facility has also allowed a significant up grading of the clinical facilities and equipment employed to take place, as well as improving the student experience.

The Philip Leverhulme Equine Hospital have experienced a long period of sustained development and growth, with the introduction of standing MRI and CT, as well as upgrades to examination area, diagnostic facilities and teaching facilities. Two main areas of development within the equine hospital have been the building of a new Equine hospital reception (£800,000) with the addition of client waiting areas and consultation facilities, with access to PACS and electronics clinical records. The other major development is the creation of a new Equine intensive care unit (£2.1million), capable of dealing with up to 11 acutely sick horses and foals. It is planned that this phased development in facilities and investment in high quality staff will continue in line with a ten year development plan.

The Leahurst Equine Practice (LEP) continues to invest in high calibre equipment and personnel, in order to maintain and improve its market share within the local area. This strategy for development has allowed the practice to expand its case load and improve the student teaching at the same time. LEP will continue to investigate all avenues to develop its clinical service.

The Farm Animal Practice has also experienced a sustained period of growth and development, with investment in the farm facilities at Wood Park. This was also supported by investment in extra personnel and the purchase of a local farm animal practice several years ago. In the near future the FAP will experience a major investment of £1.8 million, with the creation of a new offices and client facilities, as well as facilities and equipment designed to improve the clinical service, as well as the student experience.

The Pathology clinical service continues to have investment in it to continue its development. £500,000 has recently been spent on upgrading the PM room with more investment imminent in a new small animal PM room and associated facilities. The clinical pathology laboratory has also had recent investment to upgrade its equipment.

Comment on local conditions or circumstances that might influence the ratios in tables 7.5 and 7.6.

The ratios, in these tables are generally good. However the figures for poultry and rabbits could be better. This is reflected in the fact that locally, there are no large scale poultry enterprises to source material from. The number of rabbits seen, is also limited, although it is increasing in line with the average across the country.

### **7.3 Suggestions**

With the increase in student number, and the extension of the number of rotation week, it is apparent that this might well have an impact on the ratios in the future. In order to alleviate this possible problem, local farms and farm practices have been approached to see if they would consider engaging with the school to avoid this problem happening.

The school will continue to monitor all the data and statistics provided in this document. The School will be proactive in making sure that all figures are maintained and improved on, so as to safeguard the student experience at the highest level.

## Chapter 8 Library and Learning Resources

### 8.1.1 Library and other Information Technology services

At the University of Liverpool there are the two main Libraries on the Liverpool campus,(the Sydney Jones and the Harold Cohen) and the Leahurst library. Together they contain a total of 1,860,000 volumes, receive around 3,000 periodicals in printed format and subscribes to over 19,000 electronic journals. Our veterinary and bioveterinary students have access to all of these.

The University Library contains an impressive collection of approximately 1.9 million books and periodicals including extensive and important special collections of rare books and archives.

The Library provides access to around 520,000 electronic books, 40,000 electronic journals and online access to most major databases. The Library is located on two main sites, the Sydney Jones Library and the Harold Cohen Library. The libraries provide about 1,830 computer and study spaces, zoned areas for group and quiet study and staffed helpdesks. The entire stock of the Library is included in its online catalogue and all electronic resources can be accessed in the library or via the web. The two main libraries are open 24 hours Monday to Friday throughout the academic year and there is a 24/7 renewal line for loans.

The Sydney Jones currently has seating for 615 readers and approximately 400 PCs. Bookable study rooms are available for your use. The Sydney Jones also has a 'walk-in' short loan collection and a cafe. The Special Collections and Archives Department is located in the Sydney Jones Library and includes rare books, manuscripts and the library of the Science Fiction Foundation.

The Harold Cohen Library, with 295 PCs and seating for 500 readers, contains the main collections in Dentistry, Engineering, Science, Medicine, Veterinary Science and Mathematics. Facilities for both group and quiet study are available. There is also a branch library at the Veterinary Teaching Hospital on the Wirral.

The Leahurst departmental library is stocked specifically for the veterinary school. All UoL library staff must have library qualifications and staff can train or specialise in a specific area. The post holder must hold relevant skills and qualifications attained from CILIP recognised institutions. There is training for both medical librarianship and veterinary library studies. Our current librarian at Leahurst is trained in medical librarianship.

Staffing levels can vary but we ensure that there is always one librarian on-site at Leahurst, with Line management in Liverpool. This librarian is a full time employee.

For details of the number of journals received each year as hard copies, please see attached appendix. In reality there are many more titles that are medical but still relevant to vet science. In addition, there are those titles that come as part of big publisher deals and are "bundles" of

mixed subjects and are not itemised on journal lists as they are too numerous.

The LibGuide (<http://libguides.liv.ac.uk/content.php?pid=141843&sid=1209168>) details databases for Veterinary Science – namely Agricola, Biosis, along with the more popularly used Scopus, Medline, WoK and Veterinary Science Database.

Because of the on-going work the library are doing on reading lists, the titles of the recommended texts for all modules/years can also be found on the LibGuide. They have copies of all these titles in the Library (and as e-books wherever possible since our university policy is to purchase this format in preference to print if available)

For numbers of full access electronic journals (see appendix 1)

We strive to ensure our students and staff have excellent availability to online literature searches. OPAC is available for searching material held in the library. The library has an online system that allows literature search from databases and datasets as well.

The library collection stocks a range of study materials- textbooks, DVDs, CD-ROMs etc. Of course, textbooks still form the majority of study material. Our library stock covers the subject area specific to relevant topics covered in module programmes based on recommended reading by tutors or lecturers. The collection covers all aspects of veterinary science, medicine and surgery, public health, animal husbandry, animal science, animal health, animal welfare, biosciences, environmental and agricultural studies, food sciences and technologies.

#### [Leahurst library in detail:](#)

The Leahurst Library has eight study carrels, eight desktop computers, thirteen places in quiet study area and twenty one places in the group-session area. The library has a networked IT system and WIFI access. There is networked OPAC and a self-issue terminal. The library is used for study purposes and borrowing books using the self-issue terminal or by consulting staff at the helpdesk. It is popular for group discussion, seminars and some parts are used for private reading and self-study. During exam times, the library is booked for exams, meetings, and group tutorials. Students use it for quiet reading as well as information retrieval, information searches, IT usage for presentations, course work, printing, photocopying and scanning.

The library is currently being refurbished, with a continued emphasis on providing a suitable and inviting place to study.

Opening Hours: 24/7

Open but unstaffed at weekends.

Staffed hours:

09.00-18.00 Mon-Wed

09.00-16.00 Thur-Fri

## Chapter 9 Admission and Enrolment

### 9.1 Undergraduate courses

#### 9.1.1 Undergraduate student numbers

Undergraduate entrants MNY = 5 years

Graduate entrants MNY = 4 years

**Table 9.1: Undergraduate student composition (2011-12)**

|                                               |            |
|-----------------------------------------------|------------|
| <b>Total number of undergraduate students</b> | <b>608</b> |
| <b>Total number of male students</b>          | <b>130</b> |
| <b>Total number of female students</b>        | <b>478</b> |
| <b>Foreign students</b>                       | <b>23</b>  |
| - from EU countries                           | 17         |
| - from non-EU countries                       | 6          |

#### 9.1.2 Student admission

The minimum admissions requirements are:

##### **GCSE:**

A minimum of 10 points at GCSE (where A\*/A = 2 points, B = 1 point, C = 0 points) in at least 7 different subjects, to include a minimum of grade B in English, Mathematics and Physics (or dual science including Physics).

##### **A Level:**

3 subjects at A2-level:

- Biology or Human Biology
- An academic science-related subject (e.g. Chemistry, Physics, Mathematics, Geography, Geology, Psychology)
- Any other subject excluding General Studies or Critical Thinking

plus a fourth subject (including General Studies or Critical Thinking) at AS-level.

If Chemistry is not offered at A2-level, it must be offered at AS-level.

The standard offer is grades AAA at A2-level, plus a further grade B in a fourth subject at AS-level.

##### **Equivalent Qualifications:**

Access - kitemarked level 3 Access to Medicine at pre-approved colleges is required with a minimum of 15 credits in Biology and 15 credits in Chemistry. Approval MUST be obtained prior to application. Please contact the Admissions Office for further information.

*BTEC National Diploma* - DDD in Animal Care, Animal Science or Animal Management, plus grade B in Chemistry at AS-level.

*International Baccalaureate* - three subjects at Higher Level to include Biology and Chemistry. Minimum total score of 36 with grades of 6 or 7 in the Higher Level Subjects.

*Irish Leaving Certificate* - six subjects at Higher level to include Biology and Chemistry, plus one of Physics or Mathematics. The standard offer is 4 grade As and 2 grade Bs.

*Scottish Qualifications* - three subjects at Advanced Higher level to include Biology and Chemistry. Advanced Higher equates with A2-level and the standard offer is AAA. If only 2 Advanced Highers are studied, an additional new Higher in an academic subject may be offered.

*Advanced Welsh Diploma* - accepted along with 2 grade As at A2-level comprising Biology and one other academic science-related subject, plus grade B in a fourth subject at AS-level. If Chemistry is not offered at A2-level then it must be offered at AS-level.

The limit to the number of students admitted each year is 160. This limit is determined by resources, in particular staff and teaching space.

The number of government-funded places is determined at faculty level. This year in particular has had to address the halving of the student cap at grades ABB and below. Consequently faculty have requested we increase our target number of veterinary students (all with grades AAB or above) from 105 to 115.

Academic ability is the first of three stages of our selection process and is non-competitive i.e. all applicants meeting our minimum academic requirements progress to stage 2.

Stage 2 is competitive and is used to select for interview. We have approximately 500 interview slots, and 1000 applicants proceeding from stage 1. To select for this stage we send applicants a work experience questionnaire for them to detail all relevant work experience completed so far. We rank this work experience and invite the top 500 scores to interview. The work experience is rated according to quality rather than quantity, and work experience appropriate for a UK-based veterinary career.

The third and final stage of our admissions process is the interview. We operate a multiple mini-interview process, with candidates rotating around 9 stations. A total of 5 minutes is spent at each station and the station topics are:

1. Preparation for station 2 (by reading a short scientific abstract & graph)
2. Scientific paper
3. Knowledge of the veterinary profession
4. Motivation / extra-curricular activities
5. Rest station (and an opportunity to ask questions to current students)
6. Discussion of a case seen in practice
7. Discussion of an ethical scenario
8. Welfare
9. Stress in the profession

We believe our interview process to be much fairer than a traditional panel interview for a number of reasons:

- Each candidate will experience the same interview
- A total of 7 staff are making a judgement on each candidate
- Should performance at one station not go well the candidate can move on

Interviews are conducted by a mixture of veterinary research staff, clinicians and members of the profession. We are also proud to state that our interview system is being adopted by other clinical programmes within the University, and also other veterinary schools.

We believe that our minimum A-level (or equivalent) academic requirements ensure new entrants have an equal knowledge base in:

- Biology at A2-level
- Chemistry at AS-level or above
- Physics at GCSE or above
- Mathematics at GCSE or above
- English at GCSE or above

We believe that allowing candidates to choose any subject as their third A2-level provides not only a degree of flexibility, but also a wider variety of transferrable skills that will benefit the veterinary profession in the long term.

Extra students (i.e. additional to our government-funded target, but not exceeding 160 total) can be admitted via the following routes:

- Graduate entrants with an upper second class (2.i) honours degree. Candidates with an overlapping discipline are eligible for the accelerated fast-track 4-year programme. Other science degrees are only eligible for the 5-year programme. If a candidate offers an arts / humanities degree they must also have grades AA in Biology and Chemistry at A2-level (or equivalent).
- A pass in the Royal Veterinary College's 'Gateway' programme.
- A pass (70% average) in the University of Liverpool's 'Foundation to Health and Veterinary Studies' (year zero) programme.
- International qualifications that have been deemed to be equivalent by our own International team and/or NARIC.
- On an individual basis we will occasionally accept transfers from other UK veterinary schools.

We do not anticipate much change in applicant numbers with the recent increase in tuition fees. In order to maintain a high staff:student ratio and to fit with our current Liverpool campus and Leahurst campus teaching spaces, we will not increase our intake number above 160 students.

**Table 9.2: Intake of veterinary students in the past 5 years**

| Year    | Number applying | Number admitted |               |                              |                              | TOTALS |
|---------|-----------------|-----------------|---------------|------------------------------|------------------------------|--------|
|         |                 | Standard intake | Rising year 0 | Full cost (5 year programme) | Full cost (4 year programme) |        |
| 2011-12 | 1318            | 107             | 4             | 3                            | 23                           | 137    |
| 2010-11 | 1343            | 102             | 0             | 12                           | 19                           | 133    |
| 2009-10 | 1247            | 90              | 0             | 5                            | 16                           | 111    |
| 2008-09 | 1096            | 99              | 0             | 1                            | 27                           | 127    |
| 2007-08 | 1114            | 89              | 0             | 3                            | 23                           | 115    |

**Table 9.3: Student flow and total number of undergraduate veterinary students**

| Students present after admitted year 1 | Number |
|----------------------------------------|--------|
| 1 <sup>st</sup> year                   | 137    |
| 2 <sup>nd</sup> year                   | 131    |
| 3 <sup>rd</sup> year                   | 109    |
| 4 <sup>th</sup> year                   | 119    |
| 5 <sup>th</sup> year                   | 89     |
| 6 <sup>th</sup> year                   | 19     |
| >6 <sup>th</sup> year                  | 4      |
| TOTAL                                  | 608    |

**Table 9.4: Number of students graduating annually over the past 5 years**

| Year    | Number graduating |
|---------|-------------------|
| 2011-12 | 115               |
| 2010-11 | 115               |
| 2009-10 | 102               |
| 2008-09 | 124               |
| 2007-08 | 91                |
| AVERAGE | 109               |

**Table 9.5: Average duration of studies (graduates of 2011-12)**

| Duration of attendance            | Number | Percentage |
|-----------------------------------|--------|------------|
| 4 years (accelerated programme)   | 12     | 11%        |
| 5 years (including intercalaters) | 100    | 89%        |
| 6 years                           | 0      | 0%         |

Students must pass all modular examinations (theory and practical) with a minimum mark of 50%. Students can progress to a subsequent year with a single module mark of 45-49% provided their overall average is 50% or above.

Students failing to achieve the above are automatically entitled a second attempt in each modular examination below 50%, but the mark achieved will be capped at 50%.

Students failing to achieve 50% or above at second attempt would normally be obliged to leave the course, unless there were accepted mitigating circumstances. In these cases students would be permitted to repeat the year, with or without attendance (depending on various factors) in the modules they failed.

## 9.2 Comments

We believe that students starting the course are of a very high standard as regards to their academic ability, work experience and communication skills.

We believe the faculty can satisfactorily decide the number of students it accepts. In particular we strive to maintain high staff:student ratios in both the pre-clinical and clinical years of the programme.

There is traditionally an excessive abundance of candidates wanting to be veterinary surgeons. Our main aim is to ensure that we select the most appropriate candidates for both our veterinary programme and also the profession as a whole.

We believe our facilities to be excellent. With the University's recent refurbishment of the Liverpool facilities, we have a state of the art dissection room / practical teaching facility, clinical skills laboratory, microscope laboratories and student facilities. We have also recently undergone curriculum development to meet the demands of increased year sizes, and the modern veterinary practitioner.

In the vast majority of situations, progress made by our students in their studies is very good. Our drop-out rate is negligible, and is usually down to personal or financial reasons rather than academic failure. In particular there is an extremely good relationship between staff and students, that is maintained long after our students have graduated.

The percentage of students that will eventually graduate is very high. We are particularly proud of the support that exists within the school to ensure that students admitted onto the course from any background can successfully complete their studies and do the veterinary school and profession proud.

The school of veterinary science is committed to widening participation and social mobility, and has a wide variety of access routes to encompass this:

Non-traditional learners:

- Vocational students on animal-related courses: This group of learners have well-developed animal handling skills, and with appropriate academic support they have the potential to make very competent veterinary surgeons. We accept the BTEC extended

diploma in 'Animal Management' for entry onto year one of our BVSc programme. In addition to a triple distinction applicants are also required to have a grade B at AS-level chemistry, in order to ensure that their knowledge of chemistry is at a similar level to traditional applicants, as well as providing evidence they can cope with traditional exams. We appreciate this is a barrier to some students as their colleges do not have the facilities and/or time to teach this, and we are currently trying to persuade Edexcel to develop exam-style assessments within their existing chemistry modules to remove this potential barrier. In addition, to support these students, often from under-represented learning groups, we have run an annual Easter school that gives these students a taster of higher education in the veterinary field, as well as constructive admissions advice.

- Foundation Studies in Health & Veterinary Sciences: We have also developed a foundation year zero, taught at Carmel College, St. Helens, but overseen by the University of Liverpool. This is an intensive 1-year programme equivalent to A-levels, aimed at students with no level-3 qualifications, or students without the appropriate subject base at level 3. These students will often not have had the opportunity to build up an extensive work experience portfolio compared to traditional entrants, therefore the year 0 programme incorporates an animal husbandry module, delivered by Reaseheath College. Successful completion of this programme guarantees a place on year one of the BVSc programme.
- RVC's foundation year ('Gateway' programme) is also accepted as a route of entry.

Mature students:

- We accept a range of pre-approved 'Access to HE' programmes for entry onto year 1 of the BVSc programme, as well as graduate entrants with an upper second class honours degree. Mature students are also eligible for the year zero programme if they meet that programme's criteria.

Disabled students:

- We encourage applications from disabled students, and though there are some disabilities that preclude a career as a veterinary surgeon, we provide intensive support for physical, learning and mental disabilities. The University has a strong 'Disability Support Team', and within the school both staff and students are involved in providing disability support.

Potential areas that we wish to pursue to promote widening participation:

- We are actively developing a policy to promote applications from non-high-achieving schools. This policy is being co-developed with staff and students in order to be able to identify and provide admissions support to applicants from such schools.

- Another hugely under-represented group in the veterinary profession is males. We believe the only way of recruiting this group is by targeting them at or just before GCSE level. We are currently working on a strategy to achieve this.

### 9.3 Suggestions

Due to the recent government changes to the University's student cap, in particular the removal of a cap for students with AAB or above, we are particularly aware of increased pressure from the University to increase our intake. We are determined not to do this in order to provide the best student experience possible, in particular relation to staff:student ratios. This pressure should be alleviated next year as the cap is being removed from all students with ABB or above.

The drop-out rate for 2011/12 graduates was 0.03% (2 students in 1<sup>st</sup> year, and 1 student in 3<sup>rd</sup> year). I do not have the precise reasons for these 3 individuals, but they are largely due to personal or financial reasons rather than academic failure.

The average duration of studies is 5 years for the undergraduate entrants, and 4 years for most of the graduate entrants, and is in keeping with the planned programme duration.

## Chapter 10 Academic and Support Staff

### 10.1 Factual information

**Table 10.1:** Personnel in the establishment provided for veterinary training

|                          |                                                                       | Budgeted Posts (FTE) |             | Non-budgeted Posts (FTE) |            | Total (FTE)   |             |
|--------------------------|-----------------------------------------------------------------------|----------------------|-------------|--------------------------|------------|---------------|-------------|
|                          |                                                                       | VS                   | NVS         | VS                       | NVS        | VS            | NVS         |
| <b>1. Academic Staff</b> |                                                                       |                      |             |                          |            |               |             |
|                          | Teaching staff (total FTE)                                            | 105.98               | 25.2        | 6.9                      | 0.2        | 112.88        | 25.4        |
|                          | Research staff (total FTE)**                                          | 0                    | 6           | 0                        | 0          | 0             | 6           |
|                          | <b>Total FTE</b>                                                      | <b>105.98</b>        | <b>31.2</b> | <b>6.9</b>               | <b>0.2</b> | <b>112.88</b> | <b>31.4</b> |
|                          | <b>Total FTE (VS + NVS)</b>                                           | <b>137.18</b>        |             | <b>7.1</b>               |            | <b>144.28</b> |             |
|                          | <b>FTE providing last year teaching*</b>                              | <b>131.78</b>        |             | <b>7.1</b>               |            | <b>138.88</b> |             |
| <b>2. Support Staff</b>  |                                                                       |                      |             |                          |            |               |             |
|                          | a) Responsible for care & treatment of animals                        | 79.99                |             | 1                        |            | 80.99         |             |
|                          | b) Responsible for the preparation of practical and clinical teaching | 25.95                |             | 0                        |            | 25.95         |             |
|                          | c) Responsible for administration, general services, maintenance etc  | 34.32                |             | 0                        |            | 34.32         |             |
|                          | d) Engaged in research work                                           | 3.4                  |             | 8.28                     |            | 11.68         |             |
|                          | e) Others                                                             |                      |             |                          |            |               |             |
|                          | <b>Total support staff</b>                                            | <b>143.66</b>        |             | <b>9.28</b>              |            | <b>152.94</b> |             |
| <b>3. Total staff</b>    |                                                                       |                      |             |                          |            | <b>297.22</b> |             |

\*10% time commitment from research staff

\*\*Externally funded research staff are not included in this document as they are rarely involved in teaching.

**Table 10.2 Allocation of academic (veterinary surgeon and non veterinary surgeon) teaching staff – expressed as FTE – and support staff to the various departments**

| Department Name                  | Academic teaching staff |     |                            |     |          |      |       |     | Support staff (See table 10.1) |               |               |
|----------------------------------|-------------------------|-----|----------------------------|-----|----------|------|-------|-----|--------------------------------|---------------|---------------|
|                                  | Professor               |     | Reader/<br>Senior Lecturer |     | Lecturer |      | Other |     | Technical                      | Animal Carers | Admin<br>17.8 |
|                                  | VS                      | NVS | VS                         | NVS | VS       | NVS  | VS    | NVS |                                |               |               |
| School & Veterinary Education    |                         |     |                            |     | 3        | 2    |       |     | 17.95                          | 0             |               |
| Epidemiology & Population Health | 3                       | 2.5 | 2                          | 1   | 0        | 1.4  | 0     | 0   | 0                              | 0             | 3.9           |
| Equine Division                  | 2.5                     | 0   | 5                          | 0   | 11       | 0    | 8     | 0   | 4.71                           | 11.9          | 12.08         |
| Infection Biology                | 0.02                    | 4.5 | 3                          | 2   | 1        | 3    | 0     | 1   | 7.63                           | 0             | 2.8           |
| Livestock Health, Welfare, Farms | 0                       | 0   | 4                          | 1   | 5        | 0    | 3     | 0   | 1.83                           | 7.51          | 0             |
| Musculoskeletal Biology          | 0                       | 0   | 1                          | 2   | 0        | 3    | 0     | 0   | 1                              |               | 1.5           |
| Public Health                    | 0.25                    | 0   | 0                          | 0   | 4        | 0    | 0     | 0   | *                              | *             | *             |
| Small Animal Division            | 2                       | 0   | 8                          | 0   | 16.89    | 0    | 22.9  | 0   | 0                              | 29.24         | 16.77         |
| Integrative Biology              | 0                       | 2   | 0                          | 2   | 0        | 2    | 0     | 0   | 3                              | 1.74          | 0             |
| Veterinary Pathology             | 0.5                     | 0   | 1                          | 0   | 4.8      | 0    | 3     | 0   | 9.8*                           | 0             | 1.78*         |
| <b>TOTALS</b>                    | 8.27                    | 9   | 24                         | 8   | 45.49    | 11.4 | 36.9  | 1   | 45.92                          | 50.39         | 56.63         |

\* For support staff Public Health & Veterinary Pathology are together

| <b>Number of American, European and RCVS Diplomas held by staff in the School of Veterinary Science (UoL)</b> |           |
|---------------------------------------------------------------------------------------------------------------|-----------|
| Diploma from the American College of Veterinary Surgeons (DipACVS)                                            | 1         |
| Diploma from the American College of Veterinary Radiology (DipACVR)                                           | 1         |
| Diploma from the European College of Animal Reproduction (DipECAR)                                            | 3         |
| Diploma from the European College of Bovine Health Management (DipECBHM)                                      | 4         |
| Diploma from the European College of Equine Internal Medicine (DipECEIM)                                      | 3         |
| Diploma from the European College of Poultry Veterinary Science (DipECVPS)                                    | 1         |
| Diploma from the European College of Veterinary Anaesthesia & Analgesia (DipECVAA)                            | 4         |
| Diploma from the European College of Veterinary Dermatology (DipECVD)                                         | 1         |
| Diploma from the European College of Veterinary Diagnostic Imaging (DipECVDI)                                 | 1         |
| Diploma from the European College of Veterinary Internal Medicine – Companion Animal (DipECVIM-CA Cardio)     | 1         |
| Diploma from the European College of Veterinary Internal Medicine – Companion Animal (DipECVIM-CA Int Med)    | 2         |
| Diploma from the European College of Veterinary Internal Medicine – Companion Animal (DipECVIM-CA Onc)        | 2         |
| Diploma from the European College of Veterinary Neurology (DipECVN)                                           | 1         |
| Diploma from the European College of Veterinary Pathology (DipECVP)                                           | 1         |
| Diploma from the European College of Veterinary Public Health (DipECVPH)                                      | 3         |
| Diploma from the European College of Veterinary Surgery (DipECVS)                                             | 5         |
| Diploma from the Royal College of Pathologists (DipRCPath)                                                    | 1         |
| Fellow of the Royal College of Pathologists (FRCPath)                                                         | 1         |
| Fellow of the Royal College of Veterinary Surgeons (FRCVS)                                                    | 2         |
| FTA Pathologie                                                                                                | 1         |
| RCVS Diploma in Equine Internal Medicine (DEIM)                                                               | 1         |
| RCVS Diploma in Poultry Medicine and Production (DPMP)                                                        | 1         |
| RCVS Diploma in Veterinary Anaesthesia (DVA)                                                                  | 1         |
| RCVS Diploma in Veterinary Cardiology (DVC)                                                                   | 1         |
| RCVS Diploma in Small Animal Surgery (Orthopaedics) (DSAS)                                                    | 2         |
| RCVS Diploma in Small Animal Surgery (Soft Tissue) (DSAS)                                                     | 1         |
| RCVS Diploma in Veterinary Dermatology (DVD)                                                                  | 1         |
| RCVS Diploma in Veterinary Radiology (DVDI)                                                                   | 1         |
|                                                                                                               |           |
| Diploma in Bovine Reproduction (DBR)                                                                          | 4         |
| <b>Total</b>                                                                                                  | <b>52</b> |

**Table 10.3: Ratios students/staff**

|            |                                                                                                                                                                         |       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>R1:</b> | $\frac{\text{no. total academic FTE in veterinary training}}{\text{no. undergraduate veterinary students}} = \frac{138.88}{608} = \frac{1}{0.228}$                      | 4.385 |
| <b>R2:</b> | $\frac{\text{no. of total FTE at Faculty}}{\text{no. undergraduate students at Faculty}} = \frac{144.28}{714} = \frac{1}{0.202}$                                        | 4.95  |
| <b>R3:</b> | $\frac{\text{no. total VS FTE in veterinary training}}{\text{no. undergraduate veterinary students}} = \frac{112.88}{608} = \frac{1}{0.186}$                            | 5.376 |
| <b>R4:</b> | $\frac{\text{no. total VS FTE in veterinary training}}{\text{no. students graduating annually}} = \frac{112.88}{109} = \frac{1}{0.966}$                                 | 1.035 |
|            | $\frac{\text{no. total FTE academic staff in veterinary training}}{\text{no. total FTE support staff in veterinary training}} = \frac{138.88}{152.94} = \frac{1}{1.10}$ | 0.9   |

The allocation of staff to the school is part of the planning cycle (see chapter 3). Requirements for additional staff are determined by the senior management group and allocation to divisions is made by areas of need, based on new or increased activity. For research posts allocation is determined in consultation between the relevant research institute and the School.

Over the last decade many additional posts have been filled in particular in the small animal division but also across other areas of the school. This has been alongside the significant investment and development in facilities such as the small animal teaching hospital at Leahurst, the veterinary teaching suite with clinical skills lab., new veterinary practice premises in Liverpool and the Leahurst Learning Centre which is underway and due for completion in May 2013. Our veterinary undergraduate numbers have also risen over this period of time and the strategy for further development has a ceiling based on the retention of a maximum student clinical group size of five. The budget plans for the following three years include further new posts to accommodate increased student numbers.

Retention and recruitment of staff is problematic in certain areas and disciplines, most usually the clinical or paraclinical areas. To address this an exercise has taken place during 2012 to identify a clear pathway for progression for academics in the veterinary disciplines. This is a three phase exercise with phase 1 given University approval in July 2012. Phase 1 outlines a pathway for clinical staff where achieving an RCVS Diploma or equivalent allows them to move to grade 8 and RCVS specialist status allows consideration for promotion to senior lectureship with the specialist status being used to score their scholarly and knowledge exchange activity). Phase 2, consideration of a salary supplement for staff in areas difficult to recruit, is still under consideration, as is Phase 3, the payment of stipends for managerial and other specific roles within the School.

The total business plan income for the school is over £10M per annum and a large proportion of this goes towards salaries. Previously staff on business plan funds were on three year contracts but starting in 2012 staff are being moved to permanent contracts (apart from a small number of fixed term roles such as residency training posts). This will allow posts to continue even if there is a deficit in the business plan as the costs will be covered by the core school budget. FTEs for these staff are included in the calculations in this document.

For vets in clinical areas an annual CPD budget is provided (£1,100). For staff in other areas provision is made for scientific and education meetings through application to head of division/department. In addition there are several endowed travel awards and grants available within the school.

Academic staff can apply for sabbatical leave which is considered on a case by case basis. Three members of staff will be taking a two year clinical sabbatical funded by Wellcome Trust starting at the end of 2012. These posts will be replaced by three additional clinical posts (three year posts in the first instance).

## **10.2 Comments**

Some posts remain unfilled despite several recruitment rounds, for example in small animal oncology. This puts additional burdens on the staff in the service area. The salary review which is underway will address the competitiveness of salaries although it is unlikely we will match those of private referral practice. Where additional support staff or other more junior clinicians would benefit those areas of stress then these roles are recruited. Time off clinics is supported to allow academics to undertake research and knowledge exchange. Where possible senior academic staff will not work more than 50% of time on clinics and will be 'paired' with another senior academic.

Eighty per cent of academic staff are veterinary surgeons. This reflects a high proportion of the academic staff working in clinical and paraclinical areas, although several staff in the pre-clinical teaching are also veterinary surgeons. For many posts advertised MRCVS would be an essential criteria.

### 10.3 Suggestions

The School should build on the improvements made in 2012 to the veterinary career pathway and continue to seek improvements in salaries to make UoL competitive in the current veterinary academic climate. Where possible depth of cover should be present in all areas providing a service to allow adequate academic time for research and scholarly activity. Research sabbaticals should continue to be supported with recruitment of additional clinical staff to cover the teaching requirements. Research mentoring for all academic staff is crucial in particular for junior posts and should be carried out through research institutes. Succession planning should be part of the school strategy with less reliance on individuals for onerous management roles.

## Chapter 11 Continuing education

The School of Veterinary Science has a dedicated CPD unit which delivers high quality CPD for veterinarians in the form of day and evening courses and online taught modules. The taught modules each have assessment approved by the RCVS as part of their CertAVP programme.

The aims of veterinary CPD are to promote the School's referral hospitals and practices as well as the clinicians within them.

Veterinary CPD is also an important part of the University of Liverpool's strategic plan to enhance Knowledge Exchange (KE). CPD is designed to provide opportunities for individuals and organisations alike to gain maximum benefit from professional courses and training programmes enabling them to remain at the top of their game in today's fast changing and competitive working environment.

The University's research-led approach to CPD ensures that whatever the format of the programme, it will be informed by leading edge knowledge on the subject and introduce the latest high level skills.

### During the academic Year 2011-12

- 354 veterinary surgeons attended 183 hours of equine CPD practical course days
- 354 veterinary surgeons attended 115 hours of small animal CPD practical course days or evening meetings
- 213 veterinary surgeons enrolled on 9 CertAVP modules in CPD semester 1
- 241 veterinary surgeons enrolled on 14 CertAVP modules in CPD semester 2
- 299 veterinary surgeons enrolled on 20 CertAVP modules in CPD semester 3

The veterinary CPD unit also delivers a smaller programme consisting of evening courses for veterinary nurses.

### During the academic Year 2011-12

- 329 veterinary nurses attended 39 hours of evening meetings

Over 35 clinical academics from the School or Faculty institutes have contributed to CPD in the past 12 months and there is a dedicated team of academics (2.2 FTE) who contribute entirely to the provision of veterinary CPD.

Veterinary CPD falls under the umbrella of the University's KE strategy and is supported centrally by the University of Liverpool's CPD unit. There is no legal requirement to produce CPD, but it is an important part of the University of Liverpool's current strategic plan and all staff are encouraged to contribute. It is linked to portfolios of activity for all academic staff.

All University CPD activity is monitored by the respective units and returned for HEFCE/HESA via central pathways.

Academic processes for taught CPD whether credit bearing or non credit bearing are controlled by Faculty academic standards and quality assurance (FASQC). All taught modules must undergo approvals via the FASQC committees . and abide by the central ordinances and codes of practice on assessment (specific for this form of teaching – i.e. there are specific CPD codes of practice). Approval starts locally in the Schools post graduate taught board and the School of Veterinary Science’s Board of Studies; both committees must sign off the module before it progresses to the Faculty’s FASQC.

The taught modules are moderated following the University’s external examiner systems and formalised module review boards occur at the end of each module again.

The moderated and review board approved assessments are then fed back to the RCVS who are the awarding body for the CertAVP.

The synoptic examinations for the different species and subject designations are run as per final examination boards according to University protocol. They are always externally moderated and a final examination board occurs following these examinations to approve the award (or not) of the designation. The moderated and exam board approved assessments are then fed back to the RCVS who are the awarding body for the CertAVP.

Delegates undertaking modules have the opportunity for anonymous online feedback for each module via the survey function. This feedback is reviewed each CPD semester allowing for development and improvements of the modules. We have had very good participation in module feedback with over 50% delegates usually responding.

Day and evening courses do not require FASQC approvals but follow the centrally developed feedback protocols with both paper and online feedback methods offered to all delegates participating. Feedback has at times been limited, but responses are collated and sent back to the course co-ordinator for future development and improvements of the CPD course.

| MODULE / COURSE TITLE                        | MODULE / COURSE DATE | INFORMATION              | Delegates | Hours |
|----------------------------------------------|----------------------|--------------------------|-----------|-------|
| Communication Skills                         | 02.11.11             | A Module workshop        | 14        | 7     |
| Business and Personnel W'shop                | 14.12.11             | A Module workshop        | 14        | 7     |
| Welfare & Ethics W'shop                      | 21.09.11             | A Module workshop        | 14        | 7     |
| Ethics, Team building & Communication Skills | 21+22.05.12          | A Module workshop        | 12        | 15    |
| Medical & Ortho Ultrasound                   | 10.11.11             | equine CPD day           | 23        | 7     |
| Equine Endocrine & Liver                     | 16.11.11             | equine CPD day           | 25        | 7     |
| Equine Clinical Pathol                       | 17.11.11             | equine CPD day           | 23        | 7     |
| Equine Wound Management                      | 23.11.11             | equine CPD day           | 26        | 7     |
| Equine Heads & Tales of Woe                  | 24.11.11             | equine CPD day           | 18        | 7     |
| Equine GI Disease 2 days                     | 15.2.12              | equine CPD day           | 17        | 14    |
| Equine Dental Care                           | 22.2.12              | equine CPD day           | 19        | 7     |
| Lameness Diagnosis 2 days                    | 6.3.12               | equine CPD day           | 17        | 14    |
| Med & Surgery of Foal                        | 21.3.12              | equine CPD day           | 13        | 14    |
| Ophthalmology Panel                          | 25.4.12              | equine CPD day           | 12        | 7     |
| Neurology Panel                              | 26.4.12              | equine CPD day           | 12        | 7     |
| Medical & Ortho Ultrasound                   | 17.5.12              | equine CPD day           | 22        | 7     |
| Equine Field Anaesthesia                     | 13.6.12              | equine CPD day           | 11        | 7     |
| Equine Hospital Anaesthesia                  | 14.6.12              | equine CPD day           | 11        | 7     |
| Respiratory Panel                            | 20.6.12              | equine CPD day           | 14        | 7     |
| Cardiology Panel                             | 21.6.12              | equine CPD day           | 17        | 7     |
| The Equine Foot                              | 25.7.12              | equine CPD day           | 10        | 7     |
| The Equine Axial Skeleton                    | 26.7.12              | equine CPD day           | 10        | 7     |
| Mini Symposium 2 day                         | 5.10.11              | SAL                      | 12        | 14    |
| Behavioural medicine                         | 30.11.11             | SAL                      | 6         | 7     |
| Prac Appr to Comon Fractures                 | 21.9.11              | SAP                      | 12        | 7     |
| Urethros. & Urethrot in the dog              | 26.11.11             | SAP                      | 5         | 5     |
| Tibial Tuberosity Advancement                | 01.02.12             | SAP                      | 16        | 7     |
| Perineal hernia                              | 05.05.12             | SAP                      | 10        | 5     |
| Stifle Surgery                               | 16.05.12             | SAP                      | 16        | 7     |
| Gastric Dilatation                           | 02.06.12             | SAP                      | 8         | 5     |
| Cutting edge articular surgery               | 19+20.07.12          | SAP                      | 12        | 14    |
| Total ear canal...                           | 21.07.12             | SAP                      | 9         | 5     |
| Is it Spinal?                                | 19.10.11             | Small Animal Vet Evening | 17        | 3     |
| Local Anaesthesia Techniques                 | 26.10.11             | Small Animal Vet Evening | 22        | 3     |
| Glaucoma                                     | 09.11.11             | Small Animal Vet Evening | 19        | 3     |
| CPR                                          | 30.11.11             | Small Animal Vet Evening | 17        | 3     |
| Small Animal GI Disease                      | 14.12.11             | Small Animal Vet Evening | 34        | 3     |

|                                            |          |                          |    |   |
|--------------------------------------------|----------|--------------------------|----|---|
| Acute pain managements & local anaesthesia | 08.03.12 | Small Animal Vet Evening | 12 | 3 |
| CPR Practical                              | 09.05.12 | Small Animal Vet Evening | 16 | 3 |
| Radiology Refresher 1                      | 17.05.12 | Small Animal Vet Evening | 19 | 3 |
| Interpreting Haematology                   | 23.05.12 | Small Animal Vet Evening | 24 | 3 |
| Investigating Vestibular Disease           | 30.05.12 | Small Animal Vet Evening | 21 | 3 |
| Acute pain managements & local anaesthesia | 20.06.12 | Small Animal Vet Evening | 13 | 3 |
| Chronic pain                               | 18.07.12 | Small Animal Vet Evening | 9  | 3 |
| Radiology Refresher 2                      | 26.07.12 | Small Animal Vet Evening | 25 | 3 |
| Nursing Upper GI Patient                   | 22.9.11  | Vet Nurse Evening        | 24 | 3 |
| Nursing Respiratory Patient                | 29.9.11  | Vet Nurse Evening        | 34 | 3 |
| Nursing Lower GI Problems                  | 13.10.11 | Vet Nurse Evening        | 13 | 3 |
| Nursing Post Op Patient                    | 18.10.11 | Vet Nurse Evening        | 13 | 3 |
| Theatre Nursing                            | 03.11.11 | Vet Nurse Evening        | 45 | 3 |
| Preparing puppies for life                 | 07.11.11 | Vet Nurse Evening        | 36 | 3 |
| Advising cat owners on stress              | 15.12.11 | Vet Nurse Evening        | 18 | 3 |
| Top tips for dealing with <b>Cats</b>      | 26.01.12 | Vet Nurse Evening        | 13 | 3 |
| Pancreatitis                               | 16.02.12 | Vet Nurse Evening        | 30 | 3 |
| Nursing the seizing patient                | 23.02.12 | Vet Nurse Evening        | 20 | 3 |
| Top tips for dealing with <b>Dogs</b>      | 01.03.12 | Vet Nurse Evening        | 29 | 3 |
| The importance of emotion...               | 03.05.12 | Vet Nurse Evening        | 24 | 3 |
| Nursing the diabetic patient               | 12.07.12 | Vet Nurse Evening        | 25 | 3 |

## Suggestions

Considerable expansion in CPD delivery has taken place over recent years under the leadership of Dr Cathy McGowan. This CPD delivery is in line with the Faculty and University strategy and the veterinary CPD delivery contributes significantly to the Faculty targets. The School should continue this level of CPD but should be aware of the need to consider staffing levels in line with expansions.

## Chapter 12 Postgraduate education

### 12.1 Factual information

#### 12.1.1 Clinical specialty training (interns and residents)

**Table 12.1.1: Clinical specialty training**

| Clinical discipline                   | Number of interns | Number of residents | Diploma or title anticipated            |
|---------------------------------------|-------------------|---------------------|-----------------------------------------|
| <b>Equine medicine and surgery</b>    | 4                 |                     | N/A                                     |
| <b>Equine surgery</b>                 |                   | 4                   | DiplECVS                                |
| <b>Equine medicine</b>                |                   | 2                   | DiplECVIM                               |
| <b>Farm animal</b>                    | 1                 | 2                   | Resident is also PT MSc                 |
| <b>Small animal studies</b>           | 4                 |                     | N/A                                     |
| <b>Small animal cardiology</b>        |                   | 2                   | DiplECVIM (CA)                          |
| <b>Small animal oncology</b>          |                   | 4                   | DiplECVIM (onc)                         |
| <b>Small animal internal medicine</b> |                   | 2                   | DiplECVIM                               |
| <b>Small animal surgery</b>           |                   | 2                   | DiplECVS                                |
| <b>Dermatology</b>                    |                   | 1                   | DiplECVD                                |
| <b>Imaging</b>                        |                   | 3                   | DiplECVDI                               |
| <b>Neurology</b>                      | 1                 | 2                   | Residents DiplECVN                      |
| <b>Anaesthesia</b>                    | 3                 | 2                   | Residents DiplECVAA                     |
| <b>Pathology</b>                      |                   | 4                   | DiplECVP (one also considering MRCPATH) |

### 12.1.2 Research education programmes

**Table 12.2: Number of research students enrolled in different programmes\***

| Type of degree       | Fulltime                                         | Part time               | Duration |
|----------------------|--------------------------------------------------|-------------------------|----------|
| PhD                  | 79 (10 EU veterinarians, 4 non-EU veterinarians) | 2 (1 EU veterinarian)   |          |
| Other doctoral level | 0                                                | 0                       | N/A      |
| MPhil                | 1                                                | 3 (3 EU veterinarians)* |          |
| MRes**               | 1 intercalating veterinary student               |                         | 1 year   |

\* Residents

\*\*A Faculty-level MRes in Clinical Sciences, currently with 29 students (postgrads and intercalating medical students)

### 12.1.3 Postgraduate taught programmes

| Type of degree                           | Full time                                                                                | Part time                                                    | Duration                                        |
|------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------|
| MSc Veterinary Science                   | 16 (4 EU veterinarians, 5 intercalating UK veterinary students, 2 non-EU veterinarians ) | 2 (both veterinarians, 1 also included in list of residents) | 1 year (12 months) fulltime, 2 years part time. |
| Diploma of Bovine Reproduction (M-level) |                                                                                          | 15 (all veterinarians)                                       | 2 years                                         |
| PG Diploma/MSc Veterinary Physiotherapy* |                                                                                          | 11 (no veterinarians – all qualified human physiotherapists) | 2 years (Diploma) or 3 years (MSc)              |

\*See Chapter 11 - CPD

## 12.2 Comments

Interns and residents are largely funded from clinical income, and are paid salaries to include tax, NI and a pension contribution. This is a deliberate policy of the clinics and hospitals. There are two externally-funded (HBLB) studentships for equine residents, and two part externally-funded small animal residents (one funded by industry and one by Petsavers), both of which are topped up to full salaries. All residents are expected to work towards a formal clinical qualification, such as RCVS, European or American diplomas. In addition, residents can register for the PGCert, PGDip or MSc through the MSc Veterinary Science programme (and, through APL, count University-accredited CPD towards the MSc). Some residents register part time for a MPhil (research) degree. Many interns will be registered for RCVS-accredited modules, for example working towards the Cert AVP, but these have not been included in the above table as, although encouraged, they are not formally part of the training programme.

The numbers given for research students are based on students supervised by academic staff associated with the Veterinary School (ie academic staff who deliver significant teaching in the Veterinary School and are included in the School's staff list). Technically the Veterinary School does not have any research students as all research is undertaken through the Research Institutes of the Faculty of Health and Life Sciences in order that all researchers can benefit from shared facilities and critical mass. Veterinary research has always been collaborative with other disciplines across the University, with PhD students shared between departments and faculties. Thus the data presented here are comparable to those in past years.

The current Diploma in Bovine Reproduction continues the tradition started when the programme commenced in the 1980's and is recognised as an external postgraduate qualification for part fulfillment of specialist status by the RCVS and European College of Animal Reproduction. All current DBR students are employed in private practice in the UK and self-funded. Clinical training forms a large part of the DBR. The duration of the DBR course is for 2 years; there have been approximately 6 -15 awards every two years for the past 30 years.

The MSc Veterinary Science is currently in its third year. It combines the MSc Veterinary Parasitology (which used to be run through the Liverpool School of Tropical Medicine), the MSc Veterinary Infection and Disease Control (originally set up as part of the Liverpool VTRI programme) and the intercalated BSc in Veterinary Conservation Medicine (which ran for around 10 years). It takes intercalating veterinary students, veterinarians (EU and from further afield) and postgraduates with good Honours degrees in appropriate biosciences subjects. Students choose between modules in order to create a themed programme appropriate to their interests: for example epidemiology, parasitology, infection and disease control and conservation science.

## 12.3 Suggestions

New clinical modules are being introduced into the MSc Veterinary Science to enable more residents to work towards the MSc in addition to an external clinical qualification. Two Residents (one in farm animal and one based at Chester Zoo) are currently following this route. We aim gradually to make the MSc modules available for distance learning online, and also as CPD. CPD modules are also undergoing review and accreditation by the University such that these too can count towards postgraduate Certificate, Diploma and Masters degrees. Thus, in line with the University's strategy, we are aiming to integrate postgraduate taught with CPD programmes.

Past University regulations for Professional Doctorates made it difficult to see a role for these potentially valuable programmes within the Veterinary School. However, these regulations are currently under review, with input from the Veterinary School, and we hope to be able to offer a Professional Doctorate in Veterinary Science within a year or so.

## Chapter 13 Research

The details requested under this heading relate only to research experience offered to students during their undergraduate training, for example through project work

### 13.1 FACTUAL INFORMATION

Veterinary research at the University of Liverpool is carried out in the 5 research institutes of the Faculty of Health and Life Sciences, which integrate research across the medical, veterinary and biological sciences. The research institutes are: Ageing and Chronic Disease; Infection and Global Health; Integrative Biology; Psychology, Health and Society; and Translational Medicine. Substantial amounts of veterinary research are carried out in the Institutes of Ageing and Chronic Disease; Infection and Global Health and Integrative Biology, and many academics in the veterinary school are allied to these institutes.

#### Current BVSc curriculum:

All BVSc students undertake a 15-credit research project (VETS362) in year three, which is designed to give them an insight into the research process. In particular, this module seeks to develop critical thinking skills, effective literature searching and scientific writing. The students also gain experience of the development of a practical research question, project design and answering the research question. The project results in a report of up to 4000 words that is assessed by both the supervisor (for the process element) and by an independent second marker (for project content). The projects can involve either wet laboratory projects, analysis of existing datasets or literature reviews.

A clinical case report, which must demonstrate the use of evidence-based medicine, is completed in year five, and marked on a pass/fail basis as part of the required coursework for eligibility to sit final examinations. Part of the marking criteria for this element is the use of current and relevant literature in the chosen clinical area. The case report is marked by a suitable subject expert.

#### New BVSc curriculum:

The plans for the new curriculum place a very strong emphasis on the acquisition of research skills, from year one. Study skills sessions on effective and efficient literature search strategies are planned for early in the first semester of the course. The second year includes a substantial literature review as an element of the required coursework. The third year will contain the research project in much the same format as currently, but with an emphasis on primary research, or the use of existing datasets. The case report will also be retained but will be moved into fourth year. This will give a coherent theme of research skills, which runs throughout the five years of the programme. There are also plans for regular plenary research lectures, given by invited researchers, to foster enthusiasm for the research that is taking place in the School of Veterinary Science and relevant research institutes.

Electives are offered in many clinical areas, and most involve some form of clinical research task, or the use of evidence based approaches to investigate aspects of clinical disease and presentation of findings. With the moving of the elective period to after final examinations (from 2014), and therefore its separation from the clinical course, this will allow the offering of more diverse elective topics. A purely research elective is possible, although the short timespan may preclude the possibility of undertaking primary research.

All students have the opportunity to intercalate for a BSc or MSc/MRes degree with their associated substantial research projects. Most intercalating students undertake these studies at Liverpool, but a number each year move to other veterinary schools, or even other science based universities. Examples include Marine Biology at the University of Newcastle, developmental biology at the University of Bath, and Control of Infectious Diseases at the London School of Hygiene and tropical medicine. We also host a number of students from other veterinary schools who intercalate on to courses at the University of Liverpool, particularly on the MSc in Conservation Medicine.

Many of our intercalating students receive support from the Wellcome Trust through the Clinical Veterinary Research Training award, for which the University of Liverpool is the administering institution

The numbers of intercalating students in the last 5 years is given below:

|                             | 2008-2009 | 2009-2010 | 2010-2011 | 2011-2012 | 2012-2013 |
|-----------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Number intercalating</b> | 12        | 9         | 7         | 11        | 7         |

**Table 13.1.4: Numbers of students intercalating between 2008 and 2013**

We encourage students to intercalate by putting on an introductory session relating to opportunities in veterinary research, veterinary research careers, and specifically opportunities for undergraduates in research. These sessions are offered to first and second year students, as most intercalation takes place between years 3 and 4.

The School offers a number of vacation studentships for veterinary undergraduates, which are extremely popular and are always oversubscribed. These studentships (funded by the Wellcome Trust, BBSRC, charities and industry) provide the students with a funded period of 8-10 weeks undertaking a laboratory or data analysis project in a research environment. These projects provide the students with the experience of undertaking a defined research project and writing up the results from these studies. Such summer studentships can provide data for publications and conference presentations, and it is not unusual for students to present their data at national or international conferences. Vacation studentships are managed centrally by two members of academic staff, who organise the application process and awarding of the studentships.

The numbers of vacation studentships in the last 5 years is given below:

|                        | 2008 | 2009 | 2010 | 2011 | 2012 |
|------------------------|------|------|------|------|------|
| Number of studentships | 16   | 15   | 16   | 10   | 11   |

**Table 13.1.5: Number of vacation research studentships 2008-2012**

### 13.2 COMMENTS

The Liverpool Veterinary student gains exposure to a research culture and obtains valuable experience relating to the research process. There are excellent opportunities for interested and motivated students to gain further research experience and training through intercalation, elective projects and vacation studentships. We have developed a discrete cohort of students who have become enthused with research as undergraduates, and then moved forward to undertake PhDs after graduating. They see veterinary research as a viable career.

However, with the new curriculum, we will be developing this even further, with Research Skills as a clearly recognizable but fully integrated spiral theme. It is one of the underpinning nine themes that are revisited in each of the five years, and assessment of this theme progresses to a higher level in each year. This will ensure that all our graduates have a well-developed ability in essential research skills, which will stand them in good stead no matter what their eventual career.

### 13.3 SUGGESTIONS

Veterinary research funding at undergraduate level is going to come under severe pressure with the end of Wellcome Trust support in 2013. This support has been vital for both intercalation and vacation studentships, and we fear this lack of financial support, coupled with the new fee structure, will act as a major disincentive for veterinary students to engage in research opportunities. We would welcome discussion on methods to encourage student engagement in research under the new financial structure.

Research funding is now being focused on large multidisciplinary basic sciences projects, to the detriment of clinical research funding. Without clinical research, the principle of teaching and assessing evidence-based medicine may be a hollow one. We hope that there may be a mechanism to encourage more practice-based or translational research that will provide the evidence that we train our graduates to use. In turn, they will hopefully become members of the profession with a deep commitment to contributing to clinical research, in whatever way that they can.

## Chapter 14 Extramural studies (EMS)

### INTRODUCTION

The teaching our students will receive at the University of Liverpool aims to allow them to undertake the day one competences. EMS allows them the opportunity to practice these skills. In the same way the care and welfare of their patients is their responsibility on graduation, the acquisition of experience at various placements as a student, is also their responsibility.

The organisation and monitoring of EMS is overseen by the EMS office. This consists of two members of academic staff and two administrative staff who are involved in authorising and logging placements respectively. At present we have two separate but similar databases to monitor PCEMS and CEMS student activities. However, we hope to move to the RCVS 'Skillwise' system as soon as possible.

EMS, by its nature is unpredictable and not everyone will get the same opportunities or experiences handed to them. However, it is noticeable that those students who work hard and engage with the placements get to do more practical (and in clinical placements, more clinical) procedures than those students who stand back in silence.

For this reason we have moved away from monitoring procedures which concentrate on strict requirements for placements (such as number of animals etc). This was a very 'front-ended' approach. We now monitor post-placement in a much more reflective and supportive manner. Students are encouraged to reflect, evaluate and critique the learning experiences they achieved at each placement, with guidance from their tutor and the EMS co-ordinators.

From September 2012, Professional Development Planning (PDP) tutors are to be involved in discussing placements.

We have timetabled group sessions in second and fourth years where students present and discuss cases they have seen in practice and we have a specific EMS panel that reviews any poor placement feedback reports or any causes of concern raised by tutors about a student and their EMS.

### 14.1 Factual Information

#### Objectives and Learning Outcomes

##### Students should aim:

- To undertake a broad range of EMS in a variety of veterinary and husbandry placements
- To link theory with practice- recognise when an animal is normal and when it is 'ill'.
- To practice the ability to identify and treat a range of diseases
- To develop interpersonal skills
- To gain an appreciation of the organisation and management of animal enterprises and veterinary practices
- To gain insight into aspects of professional life and career development

- To understand the role of a veterinary surgeon in public health

Apart from gaining experience in practical skills, students should also notice and understand the:

- Different approaches to husbandry and welfare
- Variety between establishment type and location
- Different animal management, medical and surgical techniques employed by staff

### EMS REQUIREMENTS

EMS constitutes 38 weeks over the five years of the degree course. They must have completed this to register as a Member of the RCVS immediately after graduation. They will not be able to become an MRCVS until this mandatory requirement has been met.

The 38 weeks will be subdivided into;

- 12 weeks animal husbandry experience also called Preclinical Extra Mural Studies - PCEMS. They must complete 6 weeks compulsory PCEMS, that is one week in each of six different sectors and 6 weeks further work in sector(s) of their choice.
- 2 weeks public health
- 24 weeks clinical practical experience

### Timing of placements

This table is intended as a guide. Students are free to attend placements that they think will match their learning objectives throughout the degree course. These plans are discussed plans with their tutor during their PDP meetings. Any very unusual patterns of EMS will be picked up by staff and the student may be asked to discuss their objectives with EMS staff.

|                            | Compulsory Husbandry | Choice husbandry | Public health | Clinical | Total    |
|----------------------------|----------------------|------------------|---------------|----------|----------|
| <b>1<sup>st</sup> year</b> | 6 weeks              |                  |               | 2 weeks  | 8 weeks  |
| <b>2<sup>nd</sup> year</b> |                      | 2 weeks          | 1 week        | 5 weeks  | 8 weeks  |
| <b>3<sup>rd</sup> year</b> |                      | 2 weeks          | 1 week        | 5 weeks  | 8 weeks  |
| <b>4<sup>th</sup> year</b> |                      | 2 weeks          |               | 6 weeks  | 8 weeks  |
| <b>5<sup>th</sup> year</b> |                      |                  |               | 6 weeks  | 6 weeks  |
|                            |                      |                  |               |          | 38 weeks |

For fast track students the following table is the guide

|                      | Compulsory Husbandry | Choice husbandry | Public health | Clinical | Total    |
|----------------------|----------------------|------------------|---------------|----------|----------|
| Fast track year      | 6 weeks              | 1 week           |               | 2 weeks  | 9 weeks  |
| 3 <sup>rd</sup> year |                      | 3 weeks          | 1 week        | 6 weeks  | 10 weeks |
| 4 <sup>th</sup> year |                      | 2 weeks          | 1 week        | 7 weeks  | 10 weeks |
| 5 <sup>th</sup> year |                      |                  |               | 9 weeks  | 9 weeks  |
|                      |                      |                  |               |          | 38 weeks |

## Rules

- A week counts as the working week of the placement they are on, with a minimum of 5 days. This includes out-of-hours' work during lambing/calving periods and on placements in veterinary practices providing 24 hours/weekend/public holiday cover for their clients. They may work part weeks in Public Health and choice PCEMS to make up the total time in that sector.
- Each student will be limited to a maximum of ONE week working at his or her own home as a placement. If they do choose to spend time at home they will be asked to justify what learning outcomes they met whilst working at home. If these outcomes are not sufficient, then the placement will not count. The student may be interviewed by the EMS panel after the placement.
- A maximum of TWO weeks lambing can count towards husbandry placements. They may, of course, choose to undertake further lambing experience in their own time and are strongly encouraged to do so.
- There will be no stipulation regarding numbers of animals kept on any farm/breeding/husbandry placement. It is their responsibility to organize placements that will be of benefit to them.
- Normally, there are no restrictions on the number of Liverpool veterinary students that can attend any particular farm placement. If the placement provider requires more than one student then more than one student can attend – even concurrently. However, many smaller veterinary practice providers do not usually take more than one student from any University at a time: larger practices may take several but that is by negotiation.
- All EMS MUST be carried out during published University vacations – i.e. not during term time weekends, days or evenings.
- If they are working on a mixed farm or practice they must only list one species per placement but they can do more than one placement there: if a farm has a dairy herd and sheep flock they can do one week as a dairy placement followed by another as a sheep placement.
- For the first four weeks in a veterinary clinical placement, they are expected to work in a NON-SPECIALIST/NON-REFERRAL practice, gaining experience of its work ethic and organisation. Most providers wish them to attend for more than one week at any one

time: the more time they spend with a provider, the more they will gain from that placement. We ask them to try and establish a 'base' practice as soon as they can. A broad basis of clinical experience with ALL species is expected though, and they will not be permitted to spend all their clinical EMS experience at one practice.

- Public health Placements may not be undertaken until 3<sup>rd</sup> year.

#### 14.1.1 Compulsory PCEMS

These SIX weeks must be worked as a full week at one placement, except for poultry where they may work at a maximum of two establishments. They are strongly advised to complete these placements within the first TWO years of the course.

The compulsory husbandry EMS they must complete are:

|                         |                                          |
|-------------------------|------------------------------------------|
| Sheep (must be lambing) | 1 week                                   |
| Dairy cattle            | 1 week                                   |
| Horse                   | 1 week                                   |
| Pigs                    | 1 week                                   |
| Dogs and/or cats        | 1 week                                   |
| Poultry                 | 1 week but can be in two establishments. |

#### Choice Husbandry

They must carry out a further SIX weeks of husbandry placements, the choice of species being theirs. They can work with any species, any number of animals, at any placement within the UK or Eire. They are advised to complete most of these placements during years 2, 3 and 4. For example, if they wish to work in a farm practice eventually, it would make sense for them to spend two weeks on a large dairy farm and another two in a large pig unit towards the end of their degree course, for them to understand the industry that they wish to support professionally in the future.

#### 14.1.2 Clinical EMS

**The 24 weeks clinical EMS weeks may also include:**

- Either up to 6 weeks in an appropriate veterinary activity other than practice (e.g. working in a veterinary research institution, or with the Animal Health service). This counts as clinical EMS.
- In exceptional circumstances up to 12 weeks may be spent in relevant practice overseas. This must be with the approval of the EMS Co-ordinator and is aimed to help students whose families live overseas. The EMS coordinators must see any proposals for overseas working and have the authority to veto any proposed placements that are not relevant to veterinary practice in the UK and Eire.

- attendance at the SPVS Final Year Seminar (counts as 4 days EMS). Time spent at other conferences/meetings/shows will not be considered to be clinical EMS.
- Historically the students have been expected to spend two weeks in our hospitals and have counted this as EMS as the hospitals wished to ensure day one competences were covered adequately for each student. However, the hospitals realise that this shouldn't be considered EMS and there are plans, from the start of the academic year 2012 to bring this into the formal taught course.

The EMS Co-ordinators have ultimate responsibility for the approval and administration of all placements.

### Monitoring of EMS

At set times every academic year an EMS academic panel will randomly select and interview a number of students on their placements. These interviews will last for about 15 minutes and they will be asked to provide evidence of their proposed learning outcomes and how they met them. The student will also be expected to bring their Placement Journal with them.

Students who receive poor feedback from their placement provider will, in the first instance, have this discussed with them in their PDP sessions. However, serious performance issues or repeatedly poor feedback will lead to them being flagged by our School 'cause for concern' system and the student being interviewed by the EMS panel.

If a student chooses either a placement that appears unusual e.g. a week at home with just one cat, or with an unusual pattern of placements e.g. no placements undertaken in first year, they should also expect to be asked detailed questions about that placement either by their tutor and/or the EMS academic panel.

EMS staff will also be making regular random checks with placement providers to check on student attendance and performance.

If, after any of these procedures staff feel that the placement was not meeting desired learning outcomes for the course the placement will be disregarded and they will need to make up that time again.

### Support

We provide a comprehensive guide to help our students plan their EMS throughout our undergraduate course. They are expected to refer back to this (our EMS handbook and EMS website [https://vocal.liv.ac.uk/sites/vet\\_education\\_students/EMS/Wiki%20Pages/Home.aspx](https://vocal.liv.ac.uk/sites/vet_education_students/EMS/Wiki%20Pages/Home.aspx)) when considering booking each placement.

It is expected that they will ask the advice of their peers, fellow students, PDP tutor, the EMS co-ordinators and staff regarding their choice of placement.

Each placement should provide both the student and the school with feedback, via our feedback form, about their performance. Any oral feedback given by the provider to the EMS office, is also recorded and acted upon, if necessary. The forms are recorded by the EMS office and attached to the student record. A copy is sent to their PDP tutor.

We ask the students to consider this feedback carefully (positive or negative) and discuss it with their tutor at each PDP meeting. Good feedback is always gratifying, bad feedback can also be useful. We advise them not to get upset if they get poor feedback from a placement. We encourage and support them to learn from it and alter their behaviour accordingly.

For example: If it is noticed that they are quiet or unwilling to participate and answer questions, their tutor will help them practice being more assertive.

They are encouraged to revise what they know before the next placement and to go armed with questions. We want our students to be confident, enthusiastic, interested and helpful.

By experiencing what happens at a variety of husbandry placements, vet surgeries, labs and other premises, it is expected that they will assimilate theory and reality with the aim of becoming a well rounded veterinary professional.

EMS sits outside the University course (being an RCVS requirement) but is an integral part of it. Non-completion of EMS will mean they will not gain the background knowledge and understanding of life in practice. We ensure they realise that they will not be able to register with the RCVS and therefore will not become an MRCVS and be able to work as a veterinary surgeon at the end of the course if they haven't completed the requirement.

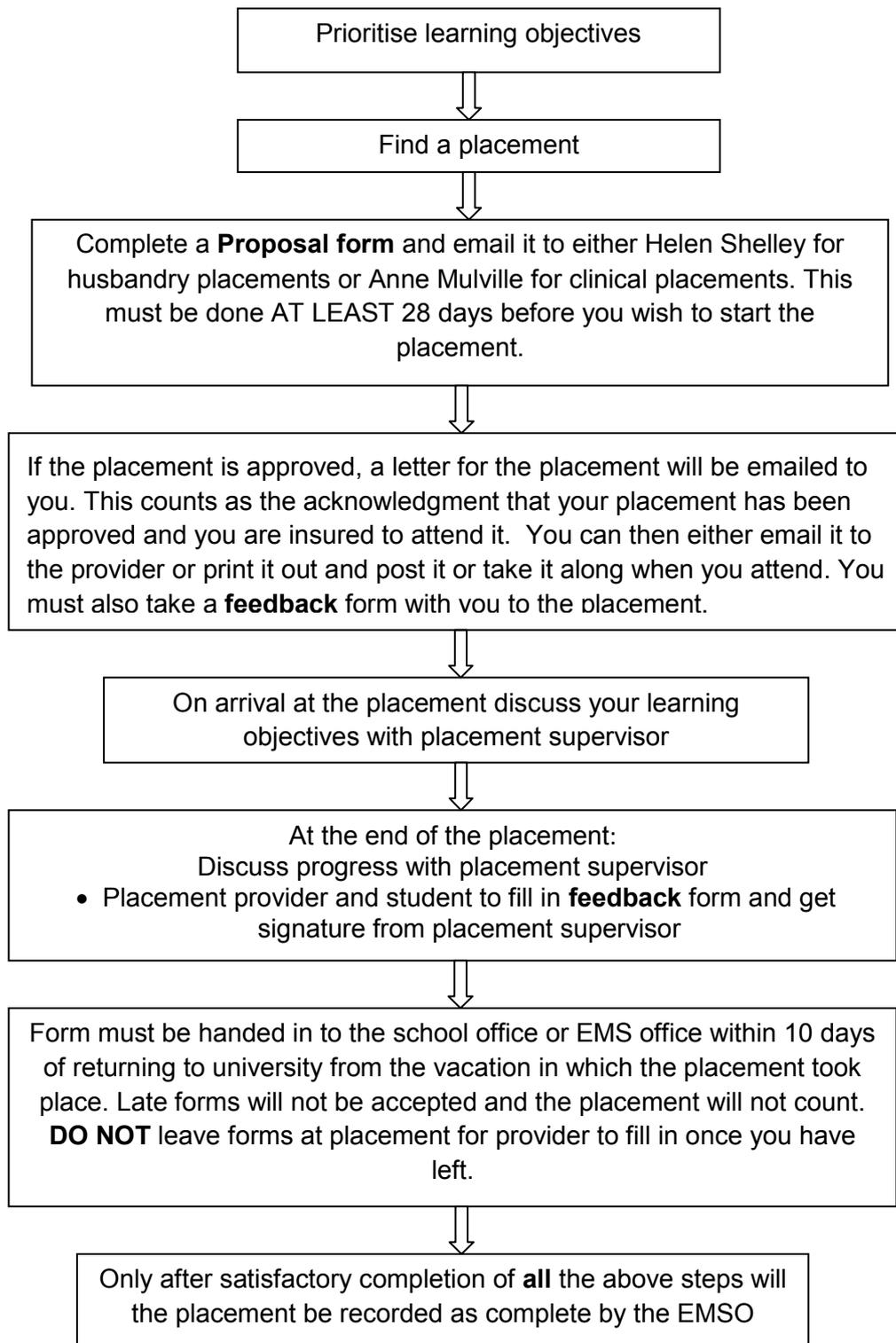
### **Certification**

Students are expected to make their own arrangements with placement providers after discussions with their PDP tutor and/or the EMS office. A proposal form is submitted electronically by the student to the EMS office. Once this is approved, it is entered onto the relevant database as 'proposed placement.' The student will then receive, electronically, a letter (including a photo of the student) for them to take with them to the placement (see appendix1). They also download a feedback form (see appendix2).

Prior to attending their first placement, students are thoroughly briefed on health and safety issues. There is comprehensive guidance on the EMS website.

At the start of the placement the student is required to speak to the provider to discuss their aspirations and learning objectives for the placement. At the end the provider is expected to certify attendance and performance. The Feedback form must be returned to the EMS office within 10 days of the end of the vacation. The form must not be left with the provider to fill in once the student has left. Failure to submit the feedback form within the required time will result in the placement not being counted on the student record.

Below is an overview of the process to be carried out when securing and undertaking an EMS placement.



**Falsification of these forms in any way is a serious breach of University regulations. You will be asked to account for such action by the Faculty. The most serious consequence is that you will be considered unsuitable to practice as a Veterinary Surgeon in the future, and asked to leave the course without graduation.**

## EMS ASSESSMENT

### Placement journal

Every student is expected to keep a placement journal. This is expected for every placement and is used as a basis for the discussion sessions in 2<sup>nd</sup> and 4<sup>th</sup> yr. They are expected to be prepared to share it with their tutor and the ems staff when asked to do so. It can be in any format they wish to use but they cannot use any social media sites to host it and any practice/client specific data must not be recorded, for data protection purposes.

PCEMS placements should consider;

- Number of animals kept
- Species and breed of animals kept and for what purpose
- Feeding and housing regimes
- Health checks and routine veterinary visits
- Breeding policies
- Welfare
- Record keeping
- Economics
- Performance management systems
- Costs
- Reflection on the premises as a complete 'unit'

Clinical EMS placements should consider;

- patient signalment, reason for consultation and history.
- clinical findings, including TPR and other relevant findings.
- aids to diagnosis and full results from these.
- diagnosis and appropriate differential diagnosis.
- therapeutic strategy: if drugs are used, their generic names and dosage administered.
- outcomes
- where appropriate, reflection on the case/procedure.

In the Second Semester of both 2<sup>nd</sup> and 4<sup>th</sup> yr, the students will meet with their tutor group for a peer review session. In the week prior to this they will;

- post their latest journal extracts electronically on a message board named and viewed by their tutor.
- prepare to discuss specific cases which they select from their journal extract.

This session lasts two hours and is chaired by their tutor.

## Case Reports

Students are required to submit two case reports. Although these are not limited to cases that they see on EMS, they may wish to use a case that they have been involved in, and been able to monitor its progress, while on EMS. Guidelines for the case report are in the BVSc Programme Handbook. They submit a formative case in 3<sup>rd</sup> yr that is peer reviewed and marked. They submit a summative case report in final year, although this may be changed to 4<sup>th</sup> yr in the new curriculum.

Currently the final year case must be submitted to the EMS Office by 9th December in final year. The EMS coordinator will distribute cases to relevant clinicians for marking, along with marking guidelines. Case reports will be marked and returned with by the 31st January of final year, allowing for a single resubmission if the initial case report is considered inadequate. Resubmission will have the deadline of 14th March with marking by relevant clinicians and mark collection by 18th April. A satisfactory case report must be produced in order to complete the EMS requirements of the course.

Summary of key strengths in operation of Extra-mural Studies (EMS) within University of Liverpool School of Veterinary Science and some reflections on any weaknesses.

- students are able to access the EMS Office at any time, during both term-time and the vacation periods, to discuss problems associated with or changes to agreed placements. When administrative staff are not available, issues are dealt with and decisions made by either Fay Penrose (preclinical placement co-ordinator) or Richard Murray (clinical placement co-ordinator): copies of such emails are always sent to the Office so that all staff are kept informed.
- there is constant interaction between Office administrative staff and co-ordinators appointed to organise EMS, on an 'as needs be' basis or more formally through the EMS sub-committee. Both forms of dialogue are face-to-face, so that policies and decisions can be discussed and agreed upon, rather than arbitrary judgements made in isolation. This has created an excellent team who can implement changes to EMS organisation that will compliment delivery of a new curriculum within the BVSc degree course.
- co-ordinators responsible for administering EMS prepare students for organising their placements by formal contact with years 1 and 3 by means of a lecture, at the start of the respective academic year. Before arranging their clinical placements, students are informed of the RCVS guidelines and their responsibilities for carrying out this mandatory activity: this presentation is made available to students permanently through the University's education support system accessible via computer (Vital). Copies of this same presentation have been sent to the RCVS; also, to practice providers who wish to know what instructions this School has given to students prior to them undertaking clinical placements. In this way, the School ensures that both students and providers have the same information so that a more meaningful student learning experience can result.

- feedback from providers to students following a placement is at two levels. Whilst some providers comment 'face-to face' at the end of a placement, others prefer written feedback on the forms provided especially when the student concerned has not achieved a standard of professional ability expected of them at this stage of their veterinary education. In the latter case, EMS Office staff extracts the feedback form: it is copied and sent to the student's tutor but a note goes to the student asking them to contact their tutor to discuss the placement and its outcome. When a provider has written an excellent report on a student, a copy is sent in its entirety to both student and tutor.
- facilitated discussion groups in fourth year have been devised that allows tutors to listen to their tutees presenting a case report from EMS. Students are required to prepare two cases, and the group itself decides which case a student will present. By this means, the application of clinical theory into mainstream veterinary practice can be shown, using EMS to illustrate the importance of students having a sound, critical veterinary scientific training.
- if a placement provider contacts the EMS Office either by phone, letter or email, identifying issues concerning a student's agreed placement, the correspondence is discussed and the appropriate co-ordinator contacts the provider by phone. Resolution of such problems is confirmed usually by letter. In this way, the School maintains direct contact with providers in support of the current RCVS policy on EMS.

On reflection, our organisation of EMS is less effective in several ways:

- currently, this School does not have the means and structure within the student/tutor support system to provide feedback for all students on all of their EMS placements. Whilst this failure will be addressed during the academic year 2012/13, by training tutors appropriately in methods of student support, the benefits of providing better feedback will not be discernible for several years.
- this School needs to work harder to establish more robust, pro-active links with EMS providers. This is particularly important in the current economic and social climate where veterinary practices are very critical of new veterinary graduates and their Day 1 competence level, particularly were the expectation of animal owners for a good professional veterinary service is so high.
- the method for students identifying their placements and the EMS Office agreeing them needs to be changed, from a paper-based system to computer. This would allow EMS Office staff time to interrogate student EMS records more effectively, provide students with better feedback on the balance of their EMS between the different species, and develop better links between the School and EMS providers.
- students need to keep an EMS portfolio of achievement, which they do not at present. If constructed on a web site, accessible only to the student and their tutor, this may be used to show progress in learning and acquiring practical Day 1 skills, a record of cases encountered and reflections on the way they were treated, and to a prospective employer at a job interview.

It will also prepare a student for maintaining a Portfolio of Professional Development required by the RCVS of all new graduates.

# STAFF LISTS

| <b>Position</b>                                        | <b>Incumbent</b>                                                          |
|--------------------------------------------------------|---------------------------------------------------------------------------|
| Head of School                                         | Professor Susan Dawson, BVMS PhD MRCVS                                    |
| School Administrator                                   | Mrs Rachael Atkins, BA (Hons) PGDip                                       |
|                                                        |                                                                           |
| Head of Small Animal Division                          | Professor Laura Blackwood, BVMS PhD MVM<br>CertVR DipECVIM-CA (Onc) MRCVS |
| Head of Equine Division/School Finance Lead            | Mr Peter Bowling, BSc BVSc MRCVS                                          |
| Head of Livestock, Health & Welfare and Farms Division | Dr Dai Grove-White, BVSc MSc PhD FRCVS                                    |
| Head of Veterinary Pathology                           | Professor Anja Kipar, Dr.med.vet.habil<br>DiplECVP, MRCVS                 |
| Head of Veterinary Public Health                       | Professor Jim Scudamore, BVSc BSc DipECVPH<br>MRCVS                       |
| School Research Lead                                   | Professor Peter Clegg, MA VetMB PhD CertES<br>DipEVCS MRCVS               |
|                                                        |                                                                           |
| Head of Infection Biology                              | Professor Jonathan Wastling, BSc PhD CBiol<br>MIBiol                      |
| Head of Epidemiology & Population Health               | Professor Matthew Baylis, BA DPhil (Oxon)                                 |
| Head of Musculoskeletal Biology I                      | Professor John Innes, BVSc PhD CertVR<br>DSAS(Orth) MRCVS                 |
|                                                        |                                                                           |
| BVSc Programme Director                                | Ms Carol Gray, BVMS MRCVS                                                 |
| Director of Admissions and Disability Support Officer  | Dr Kieron Salmon, BVSc PhD MRCVS                                          |
| Director of Student Experience                         | Ms Margaret Hannigan, BSc MSc PGCE                                        |
| Director of CPD                                        | Dr Cathy McGowan, BVSc MACVSc PhD DEIM<br>DipECEIM MRCVS FHEA             |
| Assessment Officer                                     | Dr Tim Nuttall, BSc BVSc CertVD PhD CBiol MSB<br>MRCVS                    |
| Senior Tutor                                           | Dr Richard Barrett-Jolley, BSc (Hons) DPhil<br>(Oxon) FHEA FBPharmacols   |
| Senior Tutor                                           | Ms Avril Senior, BVSc, MRCVS                                              |
|                                                        |                                                                           |
| Head Vet (Equine Practice)                             | Mrs Angela Holland, BVSc BSc, CertAVP(EP)<br>MRCVS                        |
| Head Vet (Farm Animal Practice)                        | Mrs Jo Oultram, BVSc CertCHP MRCVS                                        |

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|-----------------------------------------------------------------------|-----------------------------------------|-------|
| Head Vet (Farm Animal Practice)                                       | Miss Helen Williams, BVSc CertCHP MRCVS |       |
| Head Vet (Small Animal Practice)                                      | Mrs Katherine Linney, BVSc MRCVS        |       |
| Farm Manager (Ness Heath)                                             | Mr Nigel Jones, BSc                     |       |
| Farm Manager (Wood Park)                                              | Mr John Cameron, OND HNC                |       |
|                                                                       |                                         |       |
| Site Manager (Leahurst)                                               | Mrs Jean Wheeler, C.Biol M.I.Biol       |       |
| Site Manager (Liverpool)                                              | Mr James Trafford, IMLS                 |       |
| <b>School of Veterinary Science/Veterinary Education</b>              |                                         |       |
| Senior Lecturer (Veterinary Education)                                | Dr Camille Vaillant                     |       |
| Director of Student Experience                                        | Ms Margaret Hannigan                    |       |
| Lecturer (Communication Skills) and BVSc Programme Director           | Ms Carol Gray                           | MRCVS |
| Lecturer (Veterinary Biology)                                         | Ms Fay Penrose                          |       |
| Lecturer (Veterinary Biology & Clinical Skills)                       | Dr Kieron Salmon                        | MRCVS |
| Senior clinical tutor/E-learning manager and PDR co-ordinator         | Mrs Avril Senior                        |       |
| <b>Technical Staff</b>                                                |                                         |       |
| IT Support Officer                                                    | Mr Denis Duret                          |       |
| Technical Manager                                                     | Mr James Trafford                       |       |
| Technical Manager                                                     | Mrs Jean Wheeler                        |       |
| Technician (Diagnostic)                                               | Mr David Cleary                         |       |
| Technician (Diagnostic)                                               | Ms Susan Quinn                          |       |
| Technician (Diagnostic)                                               | Mr Peter Taylor                         |       |
| Technician (Handyman)                                                 | Mr Anthony Southall                     |       |
| Technician (IT)                                                       | Mr Alan Bannister                       |       |
| Technician (IT)                                                       | Mr Paul Blackhurst                      |       |
| Technician (IT)                                                       | Mr Robert Pearson                       |       |
| Technician (IT)                                                       | Miss Elizabeth Rees                     |       |
| Technician (Services)                                                 | Mrs Gill Hutchinson                     |       |
| Technician (Teaching)                                                 | Mr Gerard Gilligan                      |       |
| Technician (Teaching)                                                 | Mr Paul Gilmore                         |       |
| Technician (Teaching)                                                 | Mr Ben Jones                            |       |
| Technician (Teaching)                                                 | Mr Michael Jones                        |       |
| Technician (Teaching)                                                 | Mr Lee Moore                            |       |
| Technician (Teaching)                                                 | Mr Alan Roberts                         |       |
| Technician (Teaching)                                                 | Mrs Jean Routly                         |       |
| <b>Clerical/Administrative Staff</b>                                  |                                         |       |
| School Administrator                                                  | Mrs Rachael Atkins                      |       |
| PA to the Head of School/ Management Services & Student Administrator | Mrs Sylvia Yang                         |       |
| Admin Assistant (CPD)                                                 | Miss Nicky Chambers                     |       |
| Admin Assistant (CPD)                                                 | Mr Andrew Shields                       |       |
| Admin Assistant (CPD)                                                 | Miss Charlie Whelan                     |       |
| Admin Assistant (EMS)                                                 | Mrs Anne Mulville                       |       |

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|--------------------------------------------------------|--------------------------------|-------|
| Admin Assistant (EMS)                                  | Mrs Helen Shelley              |       |
| Administrator (Admissions)                             | Miss Vivien Jump               |       |
| Administrator (CPD)                                    | Mrs Gill Beckett               |       |
| Administrator (CPD)                                    | Miss Jennie Daulby             |       |
| Administrator (Finance)                                | Mrs Elsie Doyle                |       |
| Administrator (Finance)                                | Mrs Jane Hart                  |       |
| Administrator (Student Experience)                     | Ms Helen Barry                 |       |
| Administrator (Student Experience)                     | Mrs Chris Broadbent            |       |
| Administrator (Student Experience)                     | Mrs Julie Fitzsimmons          |       |
| Administrator (Student Experience)                     | Mrs Pauline Redmond            |       |
| Administrator (Student Experience)                     | Mrs Karen Wood                 |       |
| Administrator (Student Experience)                     | Mrs Nicky Wylie                |       |
| Administrator (Student Experience)                     | Miss Judi Young                |       |
| Administrator (Student Experience)                     | Vacant position                |       |
| Administrator (Student Experience)                     | Vacant position                |       |
| Administrator (Student Experience/Management Services) | Mrs Gill Barker                |       |
| Finance Co-ordinator                                   | Ms Clare Kenny                 |       |
| Receptionist                                           | Mrs Ruth Harvey                |       |
| <b>Equine Division</b>                                 |                                |       |
| Head of Equine Division                                | Mr Peter Bowling               | MRCVS |
| Professor of Equine Medicine                           | Professor Derek Knottenbelt    | MRCVS |
| Professor of Equine Orthopaedics                       | Professor Peter Clegg          | MRCVS |
| Professor of Equine Studies                            | Professor Christopher Proudman | MRCVS |
| Senior Lecturer (Equine Division)/Director of CPD      | Dr Cathy McGowan               | MRCVS |
| Senior Lecturer (Equine Orthopaedics)                  | Dr Ellen Singer                | MRCVS |
| Senior Lecturer (Equine Reproduction & Animal Science) | Dr Caroline Argo               | MRCVS |
| Senior Lecturer (Equine Surgery)                       | Dr Debbie Archer               | MRCVS |
| Lecturer (Equine Medicine)                             | Mr Fernando Malalana-Martinez  | MRCVS |
| Lecturer (Equine Orthopaedics)                         | Dr Peter Milner                | MRCVS |
| Lecturer (Equine Orthopaedics)                         | Miss Alison Talbot             | MRCVS |
| Lecturer (Equine Practice)                             | Mr Sam Bescoby                 | MRCVS |
| Lecturer (Equine Practice)                             | Mrs Sarah Gasper               | MRCVS |
| Lecturer (Equine Practice)                             | Mrs Angela Holland             | MRCVS |
| Lecturer (Equine Practice)                             | Miss Dale Hughes               | MRCVS |
| Lecturer (Equine Practice)                             | Miss Rebecca Kent              | MRCVS |
| Lecturer (Equine Surgery)                              | Mr Neil Townsend               | MRCVS |
| Lecturer (Veterinary Anaesthesia)                      | Mr David Bardell               | MRCVS |
| Lecturer (Veterinary Anaesthesia)                      | Mr Carl Bradbrook              | MRCVS |
| Resident                                               | Mr Matthew De Bont             | MRCVS |
| Resident                                               | Miss Judith Findley            | MRCVS |
| Resident                                               | Mr Simon Hennessy              | MRCVS |
| Resident                                               | Miss Sarah Mack                | MRCVS |
| Intern (Equine)                                        | Miss Kirsty Barron             | MRCVS |
| Intern (Equine)                                        | Miss Rachel Burgess            | MRCVS |
| Intern (Equine)                                        | Mr James Horner                | MRCVS |
| Intern (Equine)                                        | Mr Alexander Young             | MRCVS |

| Technical Staff                               |                              |       |
|-----------------------------------------------|------------------------------|-------|
| IT Support Officer                            | Mr Philip Stratford          |       |
| Nurse (Auxilliary)                            | Miss Keri Hunt               |       |
| Nurse (Auxilliary)                            | Miss Claire Magee            |       |
| Nurse                                         | Mrs Sarah Clark              |       |
| Nurse                                         | Ms Elizabeth Grieve          |       |
| Nurse                                         | Mrs Susan Littler            |       |
| Technician (Animal)                           | Miss Zoe Hill                |       |
| Technician (Animal)                           | Mrs Rachel Hirst             |       |
| Technician (Animal)                           | Mr Anthony Jopson            |       |
| Technician (Animal)                           | Miss Jennifer Knight         |       |
| Technician (Animal)                           | Miss Sophie Neil             |       |
| Technician (Animal)                           | Miss Leanne Robinson         |       |
| Technician (Animal)                           | Miss Anna Sharp              |       |
| Technician (Animal)                           | Ms Jayne Tansey              |       |
| Technician (Facilities)                       | Ms Helen Braid               |       |
| IT Support Officer                            | Mr David Richardson          |       |
| Technician (Services)                         | Mrs Buddhini Bandara Athauda |       |
| Technician (Services)                         | Mr Mark Dowling              |       |
| Technician (Services)                         | Mr John Kane                 |       |
| Technician (Services)                         | Miss Fiona Thompson          |       |
| Clerical/Administrative Staff                 |                              |       |
| Senior Clinical Services Manager              | Mrs Trish Gill               |       |
| Clinical Services Manager                     | Miss Lisa Beaudoin           |       |
| Admin Assistant                               | Mrs Adele Benbow             |       |
| Admin Assistant                               | Mrs Janet Smith              |       |
| Admin Assistant                               | Ms Denise Thomas             |       |
| Admin Assistant (Services)                    | Miss Jenny Walker            |       |
| Client Services (Finance)                     | Mrs Jane Barnes              |       |
| Client Services (Finance)                     | Mrs Janet Rae                |       |
| Client Services (Receptionist)                | Miss Claire Burdett          |       |
| Client Services (Receptionist)                | Miss Sally Burgess           |       |
| Client Services (Receptionist)                | Mrs Lorraine Robinson        |       |
| Practice Manager                              | Miss Nicky Clarke            |       |
| Practice Administrator                        | Mrs Siobhan Whitehead        |       |
| Practice Administrator                        | Mrs Jane Wilson              |       |
| Livestock, Health & Welfare and Farms         |                              |       |
| Senior Lecturer (Animal Science)              | Dr Mel Royal                 |       |
| Senior Lecturer (Epidemiology)                | Dr Peter Cripps              | MRCVS |
| Senior Lecturer (Livestock, Health & Welfare) | Dr Dai Grove-White           | MRCVS |
| Senior Lecturer (Livestock, Health & Welfare) | Dr Richard Murray            | MRCVS |
| Senior Lecturer (Livestock, Health & Welfare) | Dr Rob Smith                 | MRCVS |
| Lecturer (Farm Animal Practice)               | Mrs Jo Oultram               | MRCVS |
| Lecturer (Farm Animal Practice)               | Miss Helen Williams          | MRCVS |
| Lecturer (Livestock, Health & Welfare)        | Dr Jennifer Duncan           | MRCVS |
| Lecturer (Livestock, Health & Welfare)        | Dr Jan Van Dijk              | MRCVS |
| Lecturer (Livestock, Health & Welfare)        | Miss Amy Holman              | MRCVS |
| Resident                                      | Miss Amy Gillespie           | MRCVS |

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|------------------------------------------------------------------------------------|---------------------------|-------|
| Resident (Farm Animal Practice)                                                    | Miss Lorien Waterer       | MRCVS |
| Intern                                                                             | Ms Nicole Fisher          | MRCVS |
| <b>Technical Staff</b>                                                             |                           |       |
| Farm Manager (Ness Heath)                                                          | Mr Nigel Jones            |       |
| Farm Manager (Wood Park)                                                           | Mr John Cameron           |       |
| Deputy Farm Manager (Wood Park)                                                    | Mr Andrew Parkinson       |       |
| Herdsman                                                                           | Mr Alistair Tollett       |       |
| Technician (Animal)                                                                | Mrs Amanda Dennis         |       |
| Technician (Animal)                                                                | Mr Ray Ellis              |       |
| Technician (Animal)                                                                | Mr Jason Mutch            |       |
| Technician (Animal)                                                                | Mr Gary Prance            |       |
| Technician (Teaching)                                                              | Mrs Catherine Astbury     |       |
| Technician (Teaching)                                                              | Mrs Rachel Atkinson       |       |
| Technician (Teaching)                                                              | Mrs Johanna Sutherst      |       |
| <b>Small Animal Division</b>                                                       |                           |       |
| Professor of Small Animal Oncology & Head of Small Animal Division                 | Professor Laura Blackwood | MRCVS |
| Professor of Small Animal Studies and Head of Department (Musculoskeletal Biology) | Professor John Innes      | MRCVS |
| Royal Canin Senior Lecturer (Small Animal Medicine & Clinical Nutrition)           | Dr Alex German            | MRCVS |
| Senior Lecturer (Small Animal Neurology)                                           | Miss Rita Goncalves       | MRCVS |
| Senior Lecturer (Small Animal Orthopaedics)                                        | Dr Eithne Comerford       | MRCVS |
| Senior Lecturer (Veterinary Anaesthesia)                                           | Dr Alex Dugdale           | MRCVS |
| Senior Lecturer (Veterinary Cardiology)                                            | Dr Joanna Dukes-McEwan    | MRCVS |
| Senior Lecturer (Veterinary Dermatology)                                           | Dr Neil McEwan            | MRCVS |
| Senior Lecturer (Veterinary Dermatology)                                           | Dr Tim Nuttall            | MRCVS |
| Senior Lecturer (Veterinary Diagnostic Imaging)                                    | Mr Fraser McConnell       | MRCVS |
| Lecturer (Internal Medicine)                                                       | Dr Dan Batchelor          | MRCVS |
| Lecturer (Internal Medicine)                                                       | Miss Aran Mas             | MRCVS |
| Lecturer (Oncology)                                                                | Mr James Elliott          | MRCVS |
| Lecturer (Orthopaedics)                                                            | Mr Henrique da Silva      | MRCVS |
| Lecturer (Orthopaedics)                                                            | Mr Ben Walton             | MRCVS |
| Lecturer (Small Animal Cardiology)                                                 | Mrs Hannah Stephenson     | MRCVS |
| Lecturer (Small Animal Diagnostic Imaging)                                         | Ms Annette Kerins         | MRCVS |
| Lecturer (Small Animal Diagnostic Imaging)                                         | Ms Susannah Lillis        | MRCVS |
| Lecturer (Small Animal Internal Medicine)                                          | Mr Peter-John Noble       | MRCVS |
| Lecturer (Small Animal Oncology)                                                   | Mrs Mary Marrington       | MRCVS |
| Lecturer (Small Animal Orthopaedics)                                               | Mr Rob Pettitt            | MRCVS |
| Lecturer (Small Animal Soft Tissue Surgery)                                        | Miss Rachel Burrow        | MRCVS |
| Lecturer (Small Animal Soft Tissue Surgery)                                        | Dr Alistair Freeman       | MRCVS |
| Lecturer (Small Animal Veterinary Anaesthesia)                                     | Miss Briony Alderson      | MRCVS |
| Lecturer (Veterinary Anaesthesia)                                                  | Ms Ellie West             | MRCVS |
| Head Veterinary Surgeon (Primary Care)                                             | Mrs Katherine Linney      | MRCVS |
| Veterinary Surgeon (Primary Care)                                                  | Mrs Sarah Batchelor       | MRCVS |
| Veterinary Surgeon (Primary Care)                                                  | Mr Anthony Buxton         | MRCVS |
| Veterinary Surgeon (Primary Care)                                                  | Mrs Amy Leather           | MRCVS |
| Resident (Cardiology)                                                              | Ms Bridgette Pedro        | MRCVS |
| Resident (Small Animal Cardiology)                                                 | Mr Chris Linney           | MRCVS |
| Resident (Small Animal Diagnostic Imaging)                                         | Mr Luis Mesquita          | MRCVS |

|                                             |                                |       |
|---------------------------------------------|--------------------------------|-------|
| Resident (Small Animal Internal Medicine)   | Mr Kevin Murtagh               | MRCVS |
| Resident (Small Animal Internal Medicine)   | Miss Mary Trehy                | MRCVS |
| Resident (Small Animal Neurology)           | Miss Erika Bersan              | MRCVS |
| Resident (Small Animal Oncology)            | Miss Isabel Amores-Fuster      | MRCVS |
| Resident (Small Animal Oncology)            | Dr Riccardo Finotello          | MRCVS |
| Resident (Small Animal Clinical Cardiology) | Dr Elisabetta Treggiari        | MRCVS |
| Resident (Small Animal Surgery)             | Miss Kate Forster              | MRCVS |
| Resident (Small Animal Surgery)             | Dr Nina Lorenz                 | MRCVS |
| Resident (Small Animal Surgery)             | Mr Brandan Wustefeld-Janssens  | MRCVS |
| Resident (Veterinary Anaesthesia)           | Miss Katherine Robson          | MRCVS |
| Resident (Veterinary Anaesthesia)           | Mrs Kate Thompson              | MRCVS |
| Resident (Veterinary Dermatology)           | Miss Laura Buckley             | MRCVS |
| Resident (Veterinary Diagnostic Imaging)    | Dr Tom Maddox                  | MRCVS |
| Resident (Veterinary Oncology)              | Dr Sarah Mason                 | MRCVS |
| Intern (Anaesthesia)                        | Miss Maja Drozdrynska          | MRCVS |
| Intern (Anaesthesia)                        | Miss Rebecca Smith             | MRCVS |
| Intern (Anaesthesia)                        | Ms Aurora Zoff                 | MRCVS |
| Intern (Small Animal Studies)               | Miss Judith Bradbury           | MRCVS |
| Small Animal Division (continued)           |                                |       |
| Intern (Small Animal Studies)               | Miss Camilla Cooper            | MRCVS |
| Intern (Small Animal Studies)               | Ms Ana Serras                  | MRCVS |
| Intern (Small Animal Studies)               | Ms Andrea Wahle                | MRCVS |
| Technical Staff                             |                                |       |
| Head Nurse                                  | Ms Rachel Rankin               |       |
| Head Theatre Nurse                          | Ms Louise Purchase             |       |
| Senior Medical Nurse                        | Ms Elizabeth Sweeney           |       |
| Nurse                                       | Miss Louise Hutchins           |       |
| Nurse                                       | Mrs Nancy Taylor               |       |
| Nurse                                       | Miss Gemma Wall                |       |
| Nurse (Auxillary)                           | Mr John Blagbrough             |       |
| Nurse (Auxillary)                           | Ms Joan Critchley              |       |
| Nurse (Auxillary)                           | Mrs Pamela Heron               |       |
| Nurse (Auxillary)                           | Mrs Julia Marsden              |       |
| Nurse (Auxillary)                           | Mrs Carol Mills                |       |
| Nurse (Dermatology)                         | Ms Clara McFarlane             |       |
| Nurse (Imaging)                             | Miss Alisa Dean                |       |
| Nurse (Internal Medicine)                   | Miss Stephanie Worsley         |       |
| Nurse (Neurological)                        | Miss Lucy Burrows              |       |
| Nurse (Oncology)                            | Miss Heidi O'Toole             |       |
| Nurse (Oncology)                            | Mrs Josephine Jones            |       |
| Nurse (Orthopaedics)                        | Ms Tracy Maffitt               |       |
| Nurse (Pharmacy)                            | Mrs Paula Wynne                |       |
| Nurse (Primary Care)                        | Mrs Rachael Jones              |       |
| Nurse (Primary Care)                        | Miss Helen Parrish             |       |
| Nurse (Soft Tissue)                         | Miss Lucy Gott                 |       |
| Nurse (Surgical)                            | Miss Anna Reeves               |       |
| Nurse (Surgical)                            | Mrs Claire Rynberk             |       |
| Nurse (Surgical)                            | Mrs Zerelda Wustefeld-Janssens |       |
| Nurse (Ward)                                | Miss Sarah Charlton            |       |
| Nurse (Ward)                                | Miss Liza Ebeck                |       |

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|----------------------------------------------------------------------------|-----------------------------|-------|
| Nurse (Ward)                                                               | Miss Natalie Greenhalgh     |       |
| Nurse (Ward)                                                               | Miss Francesca Pleavin      |       |
| Nurse (Ward)                                                               | Miss Victoria Smyth         |       |
| Radiographer                                                               | Mr Martin Baker             |       |
| Radiographer                                                               | Miss Tracy Graham           |       |
| Technician (Theatre)                                                       | Mrs Shelagh Roberts         |       |
| <b>Clerical/Administrative Staff</b>                                       |                             |       |
| Senior Hospital Administrator                                              | Mr Sam Kennedy              |       |
| Assistant Client Services Manager                                          | Mr Phil Wood                |       |
| Admin Support                                                              | Mr Nicholas Dath            |       |
| Admin Support                                                              | Miss Sharon Duckers         |       |
| Admin Support                                                              | Mrs Ruth Hardy              |       |
| Admin Support                                                              | Miss Gaynor Lloyd           |       |
| Admin Support                                                              | Ms Niki McKeown             |       |
| Admin Support                                                              | Mr Gareth Quinn             |       |
| Admin Support                                                              | Ms Cara Slowey              |       |
| Admin Support                                                              | Mrs Susan Ward              |       |
| Client Services (Appointments Clerk)                                       | Mrs Susan Cawsey            |       |
| Client Services (Appointments Clerk)                                       | Mrs Joan Toohey             |       |
| Client Services (Administrator)                                            | Ms Teresa Dake              |       |
| Client Services (Finance)                                                  | Ms Hannah Wilkinson         |       |
| <b>Small Animal Division<br/>Clerical/Administrative Staff (continued)</b> |                             |       |
| Client Services (Procurement)                                              | Mrs Elizabeth Bygrave       |       |
| Client Services (Receptionist)                                             | Miss Claire Davies          |       |
| Practice Manager                                                           | Mrs Jane Chance             |       |
| Secretary                                                                  | Mss Sally Lacey             |       |
| <b>Epidemiology &amp; Population Health</b>                                |                             |       |
| Professor of Epidemiology and Head of Department                           | Professor Matthew Baylis    |       |
| Professor of Veterinary Science and Head of School                         | Professor Susan Dawson      | MRCVS |
| Professor of Epidemiology                                                  | Professor Peter Diggle      |       |
| Professor of Epidemiology                                                  | Professor Kenton Morgan     | MRCVS |
| Professor of Epidemiology/Public Health                                    | Professor Sarah O'Brien     |       |
| Professor of Veterinary Pathology                                          | Professor Malcolm Bennett   | MRCVS |
| Reader (Epidemiology)                                                      | Dr Rob Christley            | MRCVS |
| Senior Lecturer (Epidemiology)                                             | Dr Gina Pinchbeck           | MRCVS |
| Senior Lecturer (Epidemiology)                                             | Dr Nicola Williams          |       |
| Lecturer (Epidemiology)                                                    | Dr Sophia Latham            |       |
| Lecturer (Epidemiology)                                                    | Dr Jonathan Read            |       |
| <b>Clerical/Administrative Staff</b>                                       |                             |       |
| Admin Support (Research)                                                   | Mrs Jenny Brown             |       |
| Admin Support (Research)                                                   | Mrs Angela Cucchi           |       |
| Admin Support (Research)                                                   | Dr Caroline Harcourt        |       |
| Admin Support (Research)                                                   | Ms Kathryn Jackson          |       |
| Admin Support (Research)                                                   | Mrs Sue McCall              |       |
| Admin Support (Research)                                                   | Ms Janis Paine              |       |
| <b>Infection Biology</b>                                                   |                             |       |
| Professor of Proteomics and Head of Dept                                   | Professor Jonathan Wastling |       |

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|--------------------------------------------------------------------------------|----------------------------------|-------|
| Professor of Food Safety & Science                                             | Professor Tom Humphrey           |       |
| Professor of Infection Biology                                                 | Professor Stuart Carter          |       |
| Professor of Infection Biology                                                 | Professor James Stewart          |       |
| Professor of Infection Biology (Small Animal)                                  | Professor Rosalind Gaskell       | MRCVS |
| Professor of Veterinary Parasitology                                           | Professor Diana Williams         |       |
| Reader (Infection Biology)                                                     | Dr Zerai Woldehiwet              | MRCVS |
| Reader (Infection Biology (Poultry))                                           | Dr Paul Wigley                   |       |
| Senior Lecturer (Infection Biology (Poultry))                                  | Dr Clive Naylor                  |       |
| Senior Lecturer (Infection Biology (Small Animal))                             | Dr Alan Radford                  | MRCVS |
| Senior Lecturer (Infection Biology/Veterinary Anaesthesia)                     | Dr Mark Senior                   | MRCVS |
| Senior Lecturer (Veterinary Pathology)                                         | Dr Jane Hodgkinson               |       |
| Lecturer (Infection Biology)                                                   | Dr Nicholas Evans                |       |
| Lecturer (Infection Biology)                                                   | Dr Andrew Jackson                |       |
| Lecturer (Infection Biology (Poultry))                                         | Dr Kannan Ganapathy              | MRCVS |
| Lecturer in Veterinary Parasitology                                            | Dr John McGarry                  |       |
| <b>Technical Staff</b>                                                         |                                  |       |
| Technical Supervisor (Research)                                                | Ms Janet Harries                 |       |
| Technician (Research)                                                          | Ms Erin Coulter                  |       |
| Technician (Research)                                                          | Mrs Cynthia Dare                 |       |
| Technician (Research)                                                          | Mrs Anne Forrester               |       |
| Technician (Research)                                                          | Mrs Catherine Glover             |       |
| Technician (Research)                                                          | Ms Catherine Hartley             |       |
| Technician (Research)                                                          | Dr Trevor Jones                  |       |
| Technician (Research)                                                          | Mrs Ruth Ryvar                   |       |
| Technician (Research)                                                          | Dr Christine Yavari              |       |
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| Admin Support (Research)                                                       | Mrs Jackie Lee                   |       |
| Admin Support (Research)                                                       | Miss Adele Maggs                 |       |
| <b>Integrative Biology</b>                                                     |                                  |       |
| Professor of Animal Science                                                    | Professor Jane Hurst             |       |
| Professor of Integrative Biology                                               | Professor Soraya Shirazi-Beechey |       |
| Reader (Mammalian Behaviour & Evolution)                                       | Dr Paula Stockley                |       |
| Senior Lecturer (Integrative Biology)                                          | Dr Iain Young                    |       |
| Lecturer (Integrative Biology)                                                 | Dr Andy Jones                    |       |
| Research Fellow (Mammalian Behaviour & Evolution)                              | Dr Jakob Bro-Jorgensen           |       |
| <b>Technical Staff</b>                                                         |                                  |       |
| Technician (Animal)                                                            | Mrs Susan Jopson                 |       |
| Technician (Animal)                                                            | Mr John Waters                   |       |
| Technician (Research)                                                          | Mr Josh Beeston                  |       |
| Technician (Research)                                                          | Miss Amanda Davidson             |       |
| Technician (Research)                                                          | Miss Rachel Spencer              |       |
| <b>Musculoskeletal Biology I</b>                                               |                                  |       |
| Senior Lecturer (Musculoskeletal Biology)                                      | Dr Swamy Thippeswamy             |       |
| Senior Lecturer (Veterinary Neuroscience & Neuropharmacology) and Senior Tutor | Dr Richard Barrett-Jolley        |       |
| Lecturer (Molecular Biology)                                                   | Dr Lesley Iwanejko               |       |

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|---------------------------------------------------------------------------|---------------------------|-------|
| Lecturer (Musculoskeletal Biology)                                        | Dr Elizabeth Laird        |       |
| Lecturer (Musculoskeletal Biology)                                        | Dr Simon Tew              |       |
| Lecturer (Obesity & Endocrinology)                                        | Dr Lucy Pickavance        |       |
| <b>Technical Staff</b>                                                    |                           |       |
| Technician (Research)                                                     | Mr David Jones            |       |
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| Admin support (Research)                                                  | Ms Diane Ashton           |       |
| Admin support (Research)                                                  | Ms Alison Beamond         |       |
| <b>Veterinary Pathology and Public Health</b>                             |                           |       |
| Professor of Veterinary Pathology/Head of Division (Veterinary Pathology) | Professor Anja Kipar      |       |
| Professor of Veterinary Public Health & Head of Division                  | Professor Jim Scudamore   | MRCVS |
| Senior Lecturer (Veterinary Pathology)                                    | Dr Julian Chantrey        | MRCVS |
| Lecturer (Diagnostic Bacteriology)                                        | Dr Dorina Timofte         | MRCVS |
| Lecturer (Epidemiology/Public Health)                                     | Dr Philip Jones           | MRCVS |
| Lecturer (Public Health)                                                  | Dr Eleni Michalopoulou    | MRCVS |
| Lecturer (Public Health)                                                  | Miss Rita Papoula Pereira | MRCVS |
| Lecturer (Public Health (Veterinary Surveillance))                        | Miss Ann Courtenay        | MRCVS |
| Lecturer (Veterinary Pathology)                                           | Dr Richard Blundell       | MRCVS |
| Lecturer (Veterinary Pathology)                                           | Dr Gail Leeming           | MRCVS |
| Lecturer (Veterinary Pathology)                                           | Dr Lorenzo Ressel         | MRCVS |
| Lecturer (Veterinary Pathology)                                           | Dr Emanuele Ricci         | MRCVS |
| Resident (Veterinary Pathology)                                           | Miss Alex Malbon          | MRCVS |
| Resident (Veterinary Pathology)                                           | Mr Georgios Nikolaou      | MRCVS |
| Resident (Veterinary Pathology)                                           | Dr Theodore Soare         | MRCVS |
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| Technical Supervisor                                                      | Mr Anthony Brandwood      |       |
| Technician (Diagnostic)                                                   | Miss Jennifer Fick        |       |
| Technician (Diagnostic)                                                   | Mr Andrew Wattrett        |       |
| Technician (Diagnostic)                                                   | Mr Sean Williams          |       |
| Technician (Electron Microscopist)                                        | Miss Marion Pope          |       |
| Technician (Mortuary)                                                     | Miss Hollie Oakley        |       |
| Technician (Mortuary)                                                     | Mrs Helen Smith           |       |
| Technician (Services)                                                     | Mr Adam Bertram           |       |
| Technician (Services)                                                     | Ms Shirley Smith          |       |
| Technician (Services)                                                     | Miss Valerie Tilston      |       |
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| Administrator (VLS)                                                       | Mrs Carolynne Graham      |       |
| Administrator (VLS)                                                       | Mrs Emma Rygielska        |       |