



**University of
Nottingham**

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School of Veterinary Medicine and Science



**Royal College of Veterinary Surgeons
Self Evaluation Report
2017**

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The School of Veterinary Medicine and Science, University of Nottingham was established in 2006. Our mission is to enhance society by carrying out research to tackle key issues in fundamental science, animal health and global sustainability, and to educate veterinary surgeons to enable them to have a broad impact on animal health and welfare and to public health, and to contribute significantly to the veterinary profession as a whole.

The School offers two undergraduate veterinary programmes, a 5-year course and a 6-year course including a Gateway / Preliminary Year (for widening participation and also high achieving non-science students). Our outcomes-based programmes are mapped to RCVS, EAEVE and AVMA competences and provide students with high-quality degrees in year 3 and year 5. Teaching delivery is innovative, maximising the student experience through early hands-on exposure to animals, clinical integration and the use of small group and facilitated learning, underpinned by e-learning and e-assessment. The curriculum is delivered in vertically (clinically) and horizontally (subject) integrated programmes and include a strong research component. The School uses a community-based lecture-free clinical year 5 teaching model, in which teaching is delivered at a number of Clinical Associates. Rotations are overseen by School staff and students are taught by both School and Clinical Associate staff. The rotations are providing an excellent clinical experience for our students, and include a range of first opinion and referral caseloads across all major species.

We take pride in our exceptional levels of student support, which has resulted in a high student retention rate, and our graduates are confident in their skills and competences that are immediately applicable to day one of employment. Our graduates are keenly sought after by employers, and graduates continue to engage with the School through a successful alumni programme.

The School has built a reputation as world-class in its research achievements and has established 4 Strategic Research Areas which act as foci for research excellence. Undergraduate and postgraduate students have demonstrable research outputs. Staff are recruited for both their research contribution and potential and their ability to teach on the veterinary course, ensuring that teaching is research-enriched and contemporary.

Our quality assurance and control processes around education, teaching and the wider School ensure the highest standards and implementation of best practice. Outcomes are constantly reviewed to ensure that appropriate enhancements are made to our strategy and operations. The School meets and commonly exceeds all ESEVT Indicators.

The School is autonomous, having strategic, operational and financial management responsibility, producing a £17.2m turnover, and meeting performance targets yearly. Investment has been made into bespoke facilities, resources and equipment at the 1000-acre Sutton Bonington campus, where we are also able to access to wider University facilities, including teaching, research and farm facilities. Making the strategic choice to have no hospital on site has provided the School with the benefit of utilising, and investing in, where appropriate, Clinical Associate facilities in order to maximise the value from the opportunity.



Gary W C England
Dean of School



0 INTRODUCTION

0 INTRODUCTION

0.1 MAIN DEVELOPMENTS SINCE THE 2014 VISITATION

Response to recommendations

There were no recommendations for improvement.

Main organisational changes

There have been no major organisational changes within the School, however a small number of administrative roles, and consequently School staff, are now managed by the central University and are no longer located in the School.

The School has made the following changes to roles of responsibility in the School. New or repositioned roles, providing further resource or focus are marked with a *

Major Roles

	2014	2017
Dean	Prof Gary England	Prof Gary England
Deputy Head of School	Prof Malcolm Cobb	Prof Malcolm Cobb
Head of Division of Animal Health and Welfare	Prof Jamie Leigh	Dr Tracey Coffey
Head of Division of Veterinary Surgery	Prof Jon Huxley	Dr Steve Dunham
Head of Division of Veterinary Medicine	Mrs Kate White	Prof Malcolm Bennett
Head of Operations	Dr Karen Braithwaite	Dr Karen Braithwaite
Research and Business Sub-Dean	Prof Paul Barrow	Prof Jamie Leigh
Research and Business Sub-Dean	Prof Martin Green	Dr Nigel Mongan
Teaching, Learning and Assessment Sub-Dean	Dr Liz Mossop	Prof Liz Mossop
Deputy Teaching, Learning and Assessment Sub-Dean	Mrs Kate Cobb	Dr Kate Cobb
Non Clinical Postgraduate Sub-Dean	Dr Paul Loughna	Prof David Haig
Clinical Postgraduate Sub-Dean	Dr Mark Bowen	Dr John Burford
Clinical Director	Prof Malcolm Cobb	Prof Kate White
Clinical Sub-Dean (Equine)*	Dr Mark Bowen	Prof Sarah Freeman
Clinical Sub-Dean (Small Animal)*	Dr Mike Targett	Prof Malcolm Cobb
Clinical Sub-Dean (Farm Animal)*	Mrs Kate White	Dr Chris Hudson
Admissions Sub-Dean	Dr Karen Braithwaite	Dr Ian Self
Deputy Admissions Sub-Dean*		Dr Neil Foster
CPD Sub-Dean	Dr Gayle Hallowell	Prof Rob White
EMS Sub-Dean	Dr Sarah Freeman	Dr Steve Brogden
Senior Tutor	Dr Alison Mostyn	Dr Sabine Totemeyer
Senior Tutor	Dr Robin Flynn	Ms Alison Curzon
Senior Tutor	Dr Stephen Dunham	Dr Mike Targett
Senior Tutor (Postgraduates)	Dr Julia Kydd	Dr Julia Kydd
Exams Officer	Dr Karen Braithwaite	Dr Karen Braithwaite
Student Progress Committee Chair	Dr Tracey Coffey	Dr Neil Foster
Student Progress Committee Chair	Dr Bob Robinson	Dr Bob Robinson
Equality, Diversity and Inclusion Lead*		Dr Jasmeet Kaler

New policies related to teaching

There are no major policies changes that have adversely affected the programme. Organisational changes include:

- Student Evaluation of Teaching scores and Student Evaluation of Modules scores are now hosted by the online system Bluecastle. This gives line managers and the Teaching, Learning and Assessment Sub-Dean a very current view of excellent and poor performance, allowing speedy mitigation where required. We can also access our scores relative to the Faculty and University, which allows us to benchmark performance effectively
- Whilst the university has new Academic Progression rules in place, the Veterinary School has been given exemption for implementation of these due to Professional Body requirements

- The School has implemented a formal Peer Observation of Teaching system. All teachers are required to have an annual observation, with structured feedback, by either a Veterinary School colleague, a trained student observer, or a member of the University Peer Observation College
- Calculation of pass marks for OSPE/OSCE assessments has changed to using the borderline regression model. Assessment recording now takes place using iPads and bespoke software
- Faculty re-organisation has meant a revised structure to the Faculty Education and Student Experience Board. This Committee now has decision making powers around policies relating to teaching and learning at School level. We have representation on this Committee (Sub-Dean and TLA Manager) and it is acting as an excellent way to share best practice and develop faculty-wide teaching initiatives such as Teaching and Learning grants
- All lectures are recorded with Echo 360 lecture capture software unless the lecturer opts out for a specific reason, usually relating to sensitive content
- The University has changed policies relating to module credit size, removing the option of 5 credit divisions; modules have been merged but no content has been altered
- A University-wide policy requires 75% staff involved in teaching to have a recognised teaching qualification by 2020, rising to 100% in 2025
- The University extenuating circumstances policy has been extensively reviewed since 2014 and a number of changes have been made. The process has been streamlined with an all online process being introduced; the evidence requirements for illness reporting has been clarified to allow evidence to be provided by members of University staff, rather than seeking GP evidence for minor short term illnesses. Both of these processes are aimed at simplifying the process for students
- A formal process for changing learning objectives has been introduced. Whilst changes were always made previously via module reviews, in order to keep the curriculum map current a separate process is now undertaken, which ensures all stakeholders are kept informed. Changes are considered by the Teaching, Learning and Assessment (TLA) committee and rejected if inappropriate

New buildings and equipment

There have been no new buildings developed for the School, however a large (200-seat) teaching laboratory has been developed on campus, and within the School remodelling of room space has resulted in 6 new small group teaching rooms, a year 5 teaching hub, new Cadaver Skills Centre, a larger Clinical Skills Centre and Dissection room.

A variety of small items of teaching and research equipment has been procured (portable radiography, several ultrasound machines, ultracentrifuge, gel imaging system).

Main changes to the study programme

There are no major changes to our study programme; rather organisational changes have been made to improve the student experience and our assessment validity:

- Term 1 of year 1 has been adjusted to increase the length of Lymphoreticular Cell Biology (LCB1) to three weeks, allowing more time for delivery and consolidation of an area students were finding challenging. Musculoskeletal 1 was therefore reduced by one week, this was managed by moving some material to other modules and no learning objectives have been lost
- Veterinary Public Health (VPH), formerly taught as a long module in Year 4, has been moved to a two week block module in year 3. This has been accommodated in year 3 by the movement of some material and the merging of Personal and Professional Skills 3 with Practical Techniques to form a new Clinical and Professional Skills module. Some VPH material has been reintegrated into the year 4 systems modules to ensure no learning objectives have been lost. The credit rating of the research projects has been slightly reduced
- A compulsory introductory week prior to rotations starting has been restructured to offer all the health and safety information and pastoral support for the final year. The week has surgical, and anaesthesia refresher practical's timetabled, advice about DOPS and assessment, plus CV and financial planning sessions, and a visit from an RCVS representative
- Students no longer attend Dogs Trust Loughborough during their small animal PDSA rotation, instead they attend a newly established small animal practice (Pinfold Vets) as part of the PDSA Nottingham rotation
- Students are now able to choose to either spend 2 weeks at Dick White Referrals, or 2 weeks at the first opinion small animal department at Oakham Veterinary Hospital
- The small animal rotations at Pride Veterinary Centre have significantly changed to further improve the student experience. Students now spend 2 weeks on a primary care rotation which is split

between the Pride Centre and a branch practice (Shelton Lock), where the case load is a mix of private and Blue Cross clients. The Pride hospital is also the site for the 2-week small animal referral rotation, which now consists of medicine, anaesthesia (and pain clinics) and diagnostic imaging. Students can also spend time with other referral disciplines

- Students now undertake a 2-week equine skills rotation based at the School instead of at the Scarsdale Farm and Equine practice. Within this students also spend 2 days undertaking ambulatory work at Scarsdale equine practice, 1 day performing dentistry at the Defence Animal Centre (DAC), and clinical pathology teaching at Pride laboratory
- Students with a particular interest in equine work can opt to spend some of their 4-week Oakham-based equine practice rotation at the DAC
- The Farm skills rotation has evolved since the last visit to include more teaching around the non-dairy species (sheep and pigs)
- The Zoo/exotics rotation has been reduced from 8 days to 5 days. Additional staffing at the zoo and the construction of a new purpose built veterinary facility has further improved this rotation. Students no longer spend a day at the Chine House practice
- All students now undertake a compulsory week of out of hours/emergency work at Pride in groups of 2 or 3 under close supervision of the out of hours' clinicians
- We have introduced the use of learning objective based individual feedback for MCQ papers delivered through our eAssessment system Rogo.
- Following a review of practical assessment, the following changes have occurred: formative DOPS introduced to year 4, short formative OSPE in year 1 replaced with a large formative OSPE in year 1, synoptic summative credit bearing OSPE introduced in year 2 covering year 1 and 2 skills
- MCQ examination removed from Animal Health and Welfare 2 and replaced with a longer short answer paper in order to test higher level learning objectives. Within several other year 1 and 2 modules SPOT tests have been replaced with online short answer papers
- VPH short answer paper changed to a Clinical Reasoning assessment, to better align with clinical modules
- Finals year species examinations now consist of a Clinical Reasoning paper (40%) and an MCQ paper (60%)

Important decisions made by the University or School

There are no substantive decisions that have an impact on our programme.

The University has decided to centralise aspects of student and academic support, with consequential movement of staff and activities from the School.

Changes in funding and major staffing changes

There have been no major changes in funding to the School, albeit there have been in-year requests for savings relating to the UK's economic position and pension modelling. Staffing changes associated with administrative staff have been previously discussed, and there has been normal turnover of staff.

Problems encountered by the School

There have been no major problems encountered by the School.

0.2 OBJECTIVES

0.2.1 FACTUAL INFORMATION

The School of Veterinary Medicine and Science contributes to University strategy as set out in <http://www.nottingham.ac.uk/about/strategy/index.aspx>. The School develops its own objectives (see School plan in the Supplementary Information pack), with consideration and challenge by the Faculty Pro Vice-Chancellor; these objectives may be further broken down into detailed yearly actions to be met to deliver objectives. The plan is devised on a 3 year basis, with quarterly School and Faculty review of objectives/actions. The plan is revised on a yearly basis – this is 'light touch' within planning cycles.

Mission: We will enhance society by carrying out research to tackle key issues in fundamental science, animal health and global sustainability. We will educate veterinary surgeons to enable them to have a broad impact on animal health and welfare and to public health, and to contribute significantly to the veterinary profession as a whole.

Vision for Education: All members of staff of the School and our Clinical Associates will have pride and confidence in every graduate that we produce. Our graduates will be world-leading in their practical and professional approach to veterinary medicine.

Vision for Research: The School will be recognised internationally for research excellence in our four major strategic research areas, impacting on animal and human health worldwide.

Strategic aims:

Education

- To educate and train veterinary students, providing them with the knowledge, intellectual, practical and professional skills to fulfil the demands required of them to succeed and develop as accomplished and well-rounded veterinary professionals. They will be equipped with a thorough preparation in all aspects of basic, applied and clinical veterinary science, together with a capacity for deductive thought, ethical reasoning, problem solving, business skills, and research and committed to continued professional development
- To provide a dynamic environment which will deliver an inspirational learning experience drawing upon internationally renowned leading-edge pedagogic methods and latest research advances
- To provide an excellent student experience, whilst ensuring that the veterinary profession maximises the potential contribution from all facets of society by attracting and recruiting outstanding students from a diverse range of backgrounds
- To communicate new advances and ensure lifelong learning through the provision of Continuing Professional Education (CPD) to the veterinary community

Research:

- To initiate and conduct world-leading basic, applied and clinical research to improve animal and public health and welfare, enhance clinical practice, improve economic efficiency and safety of animal production, and deliver research-led veterinary education
- To apply and transfer knowledge, concepts and technology to improve society and the economy, ensuring our research is relevant to our stakeholders; veterinarians, the scientific community, UK and world animal industries, government and their agencies and bodies, non-governmental organisations, students and the public at large

Fundamental aims:

- To champion equality and diversity
- To operate with openness and fairness
- To ensure facilities and a financial model that is appropriate and sustainable for a modern veterinary school.

0.2.2 COMMENTS

We believe that we are progressing well against our objectives.

Strengths

- Pioneering, talented, and committed School staff who share an ambition to deliver excellence in teaching and research, with staff recognised within the University, nationally and internationally for their teaching, research, clinical, administrative and technical expertise
- An engaging outcomes-based student-centred curriculum that combines a clinically focussed basic science curriculum with providing clinical learning opportunities and appropriate cases, as to ensure our students develop professionally and practically and so have true 'Day One' skills
- Evidence-based and innovative teaching methods including a community-based clinical model with supportive Clinical Associates who value our mutual relationship

- An integrated research programme produces research-literate veterinarians with a penchant for life-long learning
- Rated second in UK for research power in the most recent Research Excellence Framework assessment, with 37% of our work assessed as world-leading and 80% of internationally excellent quality. Research in the School is strengthened by a dynamic community of postgraduates
- The School is continually rated top of the UK's National Student Survey and the Association of Veterinary Students Survey for student experience suggesting that our students appreciate their experience, both in their teaching and learning and through support mechanisms
- Highly popular Veterinary School as measured by undergraduate applications, with novel student recruitment processes leading to a wide diversity of students, with over 30% of students from disadvantaged backgrounds
- High employment rates and salaries for graduates who are sought-after in the profession
- The School takes pride in our students, who are engaged and committed, and work in partnership with staff and the local community, adding to their educational and wider University experience. The School's exceptional level of student engagement was recognised with an ASPIRE award, the first veterinary school to be awarded this international accolade in clinical education excellence
- The School is financially robust, efficient and effective with substantial ongoing investment in facilities and resources supported by the University
- Quality assurance and control is integral to all aspects of the Schools activities such that it has become engrained in School culture

Weaknesses

- As is common to all Veterinary Schools, recruitment and retention of clinical staff continues to be an issue
- Few senior research leaders and the high teaching load of existing staff reduces potential for research
- The School is reaching physical capacity for research and staff office facilities
- The University has recently moved to centralise some aspects of student services, which has led to challenges to our model of student and academic support. The school is working hard to ensure this does not impact on student experience

0.2.3 SUGGESTIONS FOR IMPROVEMENT

The School has a clear strategy and is confident that it has support from the Faculty and University to implement this.

The School intends to look at different models of staff recruitment, including a postgraduate qualification which leads to a guaranteed academic position.



1 ORGANIZATION

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1.1 FACTUAL INFORMATION

1.1.1 Contact information

School of Veterinary Medicine and Science
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Dean of School: Professor Gary C.W. England, BVetMed PhD DVetMed CertVA DVR DipVRep DipECAR
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Foundation Dean and Professor of Comparative Veterinary Reproduction

The School of Veterinary Medicine and Science is part of the University of Nottingham, which has contact details as follows:

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Email: communications@nottingham.ac.uk
Website: www.nottingham.ac.uk

Vice-Chancellor: Professor Sir David Greenaway BSc MCom DLitt¹

1.1.2 University organisation and governance

University College, Nottingham, was founded in 1881. It was awarded its Royal Charter in 1948, becoming The University of Nottingham. The Quality Assurance Agency for Higher Education (QAA) works with Higher Education institutions to define, safeguard and improve academic standards and the quality of Higher Education in the UK. In the 2016 QAA Institutional Audit the University was recognised as a provider of high quality and standards with the award of the Quality Mark, and awarded Gold in the 2017 Teaching Excellence Framework.

Two main bodies are involved in the governance of the University, the Council and Senate, which include representatives from staff and students. The day-to-day management of the University is the responsibility of University Executive Board (UEB). Senior Officers directly relevant to the School are:

¹ Prof Sir David Greenaway will be succeeded by Prof Shearer West BA PhD on 1 October 2017

- Vice-Chancellor: Professor Sir David Greenaway
- Pro-Vice-Chancellor, Education and Student Experience: Professor Sarah O'Hara
- Pro-Vice-Chancellor, Research and Knowledge Exchange: Professor Dame Jessica Corner
- Pro-Vice-Chancellor, Global Engagement: Professor Nick Miles OBE
- Pro-Vice-Chancellor, Faculty of Medicine and Health Sciences: Professor John Atherton
- Registrar: Dr Paul Greatrix
- Chief Financial Officer: Mrs Margaret Monckton
- Chief Estates and Facilities Officer: Mr Chris Jagger
- Chief Marketing and Communications Officer: Ms Kerry Law
- Director of Human Resources: Mrs Jaspal Kaur
- Chief Student Management Officer: Ms Breda Walls

The School is part of the Faculty of Medicine and Health Sciences (see Appendix 1), which also comprises the School of Medicine, School of Health Sciences and School of Life Sciences. The primary decision-making Committees are the weekly Faculty Executive (the Dean is a member along with other School Heads, the Faculty PVC, Faculty Associate PVC for Education and Student Experience, Faculty Associate PVC for Research, Faculty Finance Manager) and monthly Faculty Board (membership as per Executive together with Head of Operations for all schools, Faculty Associate PVC for Equality, Diversity and Inclusion, Faculty Global Engagement Lead and Faculty HR Manager). A number of University Committees provide strategic oversight and governance; these Committees have either Faculty or cross-University representation from academic Schools. (<http://www.nottingham.ac.uk/governance/universitycommittees/index.aspx>).

The School is supported by administrative staff in the School and in the University's central Professional Services teams, e.g. Student Services, Human Resources, Finance etc.

The School of Veterinary Medicine and Science (SVMS), established in 2006, has the same recognition, status and autonomy as other University Schools. The veterinary programme is owned and operated entirely by the School, with some aspects of the curriculum taught and overseen by our academics in a community-based model in partner Clinical Associates organisations. The Dean of School, Deputy Head of School, Clinical Director and Teaching, Learning and Assessment Sub-Dean are qualified veterinary surgeons and members of the Royal College of Veterinary Surgeons. The School is recognised by the Royal College of Veterinary Surgeons, with the last accreditation visit in 2014. The School has also achieved full stage 2 accreditation by the European Association of Establishments for Veterinary Education (EAEVE).

1.1.3 School strategic and operating plan

The School strategic and operating plan and an updated SWOT analysis is provided as a separate document in the Supplementary Information pack.

1.1.4 How the School obtains and directs resources to achieve its mission

The University allows Faculties significant freedom to run their operations as they see fit and as directed by the Faculty Pro-Vice-Chancellor. The University budget model assigns budget based on an assumed contribution level which relates to the costs within a School. This model incentivises Faculties to broaden their income base, as this gives them more control over how resources are spent (see section 2.1.1). Future budget is therefore a function of student fee income, Higher Education Funding Council England (HEFCE) grants, research margin and services margin. All income associated with clinical work by our staff, Residents or Interns is retained by the Clinical Associate.

Budget for all aspects of the School's operations (except for research grants) is administered and managed centrally in the School by the Head of Operations, and allocated to individual project budgets on a yearly basis, based on prior year and forecast future spend. Budgets are locally directed and utilised as required within the relevant budget envelope, by for example, technical staff for consumables, Research Manager for school-funded research, with procurement supported by a campus Finance Team. The School has a Management Accountant who compiles monthly reports with oversight by a Faculty Finance Manager. Non-pay spend over £5k, outwith normal expected operations, is

reviewed and considered by Management Team. Research projects are funded as per the funder's commitment and are managed by the Principal Investigator.

The Dean and Head of Operations discuss the Schools financial performance and plans quarterly with the Faculty PVC, and are able to make the case for additional spend in relation to any increased income, in line with the target contribution. The School is able to secure 50% contribution on small building developments from University Estates for projects up to £500k, in addition there is a central University Strategic Development Fund process for consideration of funding new research or educational ideas (e.g. the School was successful in gaining £492k funding to establish the Advanced Data Analysis Centre <https://www.nottingham.ac.uk/adac/index.aspx>).

1.1.5 School organizational structure

The University is a highly devolved organisation. The main academic and budgetary units are the academic Schools. The University provides the legal, financial and organisational framework in which the Schools operate. The School utilises the highly developed quality framework employed by the University which covers quality management of learning and teaching (see www.nottingham.ac.uk/quality-manual), which covers aspects from design and approval of programmes, admissions through to student support and complaints.

The School is led by the Dean of School, a veterinarian, who is fully responsible for the strategic direction, quality management and operational and financial performance of the School. The School is organised into three Academic Divisions (Divisions of Veterinary Medicine, Veterinary Surgery and Animal Health and Welfare) and an Administrative Division, which primarily act to provide a line management structure (Figure 1). A number of Sub-Deans have been appointed to provide strategic input into discrete functional activities; these are supported by an administrative team or individual, normally in the School, although for Postgraduates and Student Welfare these staff are part of central Student Services.

The Dean of School is appointed by the University², whilst the Deputy Head of School, Heads of Divisions and Sub-Deans are appointed by the Dean of School, normally in consultation with the Faculty PVC.

Clinical Associates

In order that students encounter the most appropriate primary care, as well as second and tertiary caseload, and acquire true 'Day One' clinical competences, SVMS has developed a community-based teaching model, in which teaching is delivered at a number of Clinical Associates. Rotations are overseen by School staff and students are taught by both School and Clinical Associate staff. Use of these Clinical Associates negates the need for an on-site hospital at the Veterinary School, consequently, both financial and personnel resource is redirected into supporting an effective experiential learning environment around a caseload wholly appropriate for teaching Day One competences. The School has contractual relationships with nine Clinical Associates³:

- Defence Animal Centre, Melton Mowbray (Equine)
- Dick White Referrals, Newmarket (Small Animal)
- Minster Veterinary Practice, Sutton Bonington (Poultry and Farm Animal Pathology)
- Oakham Veterinary Hospital, Oakham (Equine, Small Animal)
- PDSA, Derby (Small Animal)
- PDSA, Nottingham (Small Animal)
- Pinfold Vets (Small Animal)
- Scarsdale Veterinary Group, Derby (Equine, Farm Animal, Small Animal⁴)
- Twycross Zoo (Zoo)

In addition a contract is in negotiation with Bransby Horses.

² Heads of School are normally appointed for 3 years, through consultation between the School, Dean of Faculty and the Faculty PVC. The Dean of the Veterinary School does not have a fixed term appointment.

³ In addition Dovecote Veterinary Hospital is contracted as a Clinical Associate, historically to support small animal referral teaching in 2011 whilst the Pride Veterinary Hospital was being built, however currently there is no need to place students on year 5 rotations there and as such Dovecote is not included further in this report.

⁴ Pride Veterinary Centre

The individual contract varies per Clinical Associate in terms of the financial, resource and staff investment, and also the length of term of the contract. Subject to confidentiality, contracts will be available to inspect during the visit.

The community-based teaching activities (Intra-Mural Rotations) are planned overall and assigned by the Clinical Director, supported by a senior administrator. The Clinical Director is aided by 3 species leads (Farm, Small Animal and Equine) and by Rotation Leaders, who have responsibility for developing and overseeing the delivery of learning outcomes and the overall organisation and student experience for each rotation.

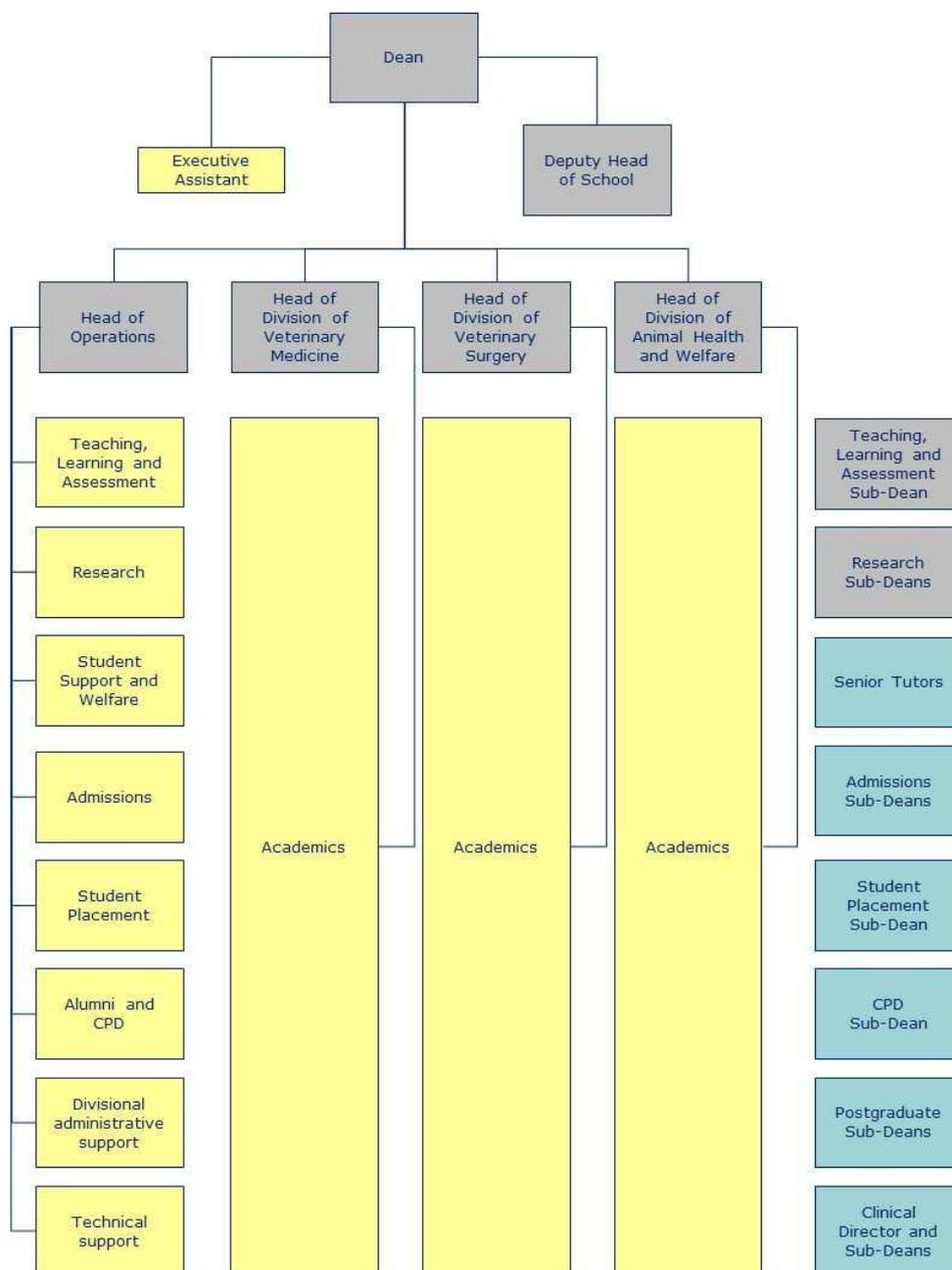


Figure 1. Organizational design of the School with major Sub-Dean roles and Support teams

1.1.6 Governance and School Committees

The School has established a number of focussed Committees, normally chaired by either a Sub-Dean or a Head of Division (Appendix 2). These Committees act to advise the Dean and Management Team on policy and process, have a remit for quality and also have decision making power (with strategic decisions or decisions with budgetary impact referred to Management Team), and comprise staff from across Divisions, with student and external representation where appropriate. All Committees ultimately

report into the weekly School Management Team Meeting, which considers all strategic and operational concerns. Terms of Reference will be available to view during the Visitation.

Our policy is that staff are empowered to deal with issues as they arise, such that issues are resolved at the lowest levels, escalating as needed to Sub-Deans, line managers or School management.

Staff and students are able to influence the schools direction and decision making processes through a number of means:

- Flat organisational structure, whereby the vast majority of staff report to a member of Management Team, facilitating easy raising of issues or ideas for senior consideration
- Monthly staff meetings, attended by all staff, report on and seek feedback on key issues
- Wide School consultation on and review by all staff to gain input on policies, documents etc as needed (e.g. all School staff will have had the chance to comment on and review this Self Evaluation Report)
- Diagonal-slice cross-School working parties are established to address new projects or tasks
- Staff Personal Development and Performance Review meetings
- Through various Committees (Teaching, Learning and Assessment (TLA), Research, Learning Community Forum (LCF), etc) with onwards decision making by Management Team
- As part of surveys and feedback such as Student Evaluation of Teaching, Year, NSS, University or School staff surveys, rotation feedback
- Staff and student attendance at staff recruitment interviews
- Individual students also commonly directly contact relevant Sub-Deans, the Clinical Director, the Head of Operations or the Examinations Officer with feedback on an ongoing basis
- Anonymously through a feedback box in reception

The veterinary profession and wider public are involved in the running of the School on a number of levels:

- Members of the veterinary profession and public are members of the Admissions Committee
- Veterinary professionals undertake admissions assessments for undergraduate students
- Appropriately qualified and briefed veterinary professionals and other individuals deliver elements of teaching in the undergraduate programme
- Members of the veterinary profession act as External Examiners on both the 5 and 6 year programme
- Members of the veterinary profession, farming and other animal-related industries supervise students on EMS placements and provide feedback about the School's processes and individual students
- Local animal-owners are involved both as clients of our Clinical Associates and also in teaching (e.g. client communication sessions) in earlier years of the course

Staff of the School are members of various regional, national and international professional bodies and associations and thus are able to develop working relationships with a variety of veterinary professionals ensuring that external views are adequately represented within the School. In addition lay members are involved in the management of campus and University (for example as members of the Ethics Committee, University Senate etc).

1.1.7 Structures that ensure alignment of the veterinary programme, veterinary hospital operations and curriculum leaders to support student learning

The Schools TLA Committee, is the major mechanism to ensure the overall alignment of the veterinary programme is maintained. Learning objectives developed for each teaching session, link to RCVS, EAEVE and AVMA criteria and overall module learning outcomes. Changes in specific learning outcomes are reviewed in an extensive module review process; when new learning objectives are proposed they are reviewed by the School clinicians on the TLA Committee to ensure that they are relevant to clinical outcomes.

The curriculum is overseen by the Teaching, Learning and Assessment Sub-Dean and her Deputy, both supported by a Teaching, Learning and Assessment (TLA) team which comprises 7.0 FTE highly experienced administrative staff, who support all academics, and have a quality assurance and control remit across all years of the veterinary programme.

Working relationships with Clinical Associates are good, and as School staff are embedded within Clinical Associates, there is ongoing dialogue regarding all aspects of rotation teaching and support, however there are formal review meetings held yearly with Clinical Associates, and student feedback (which is compulsory) is reviewed at the end of every 2 week rotation and acted on as necessary by the Rotation Leader, Sub-Dean and Clinical Director. This ensures that the requirements of the veterinary curriculum are aligned with hospital operations.

1.2 COMMENTS

We believe our organisational structure ensures that individual autonomy is balanced with sufficient control to enable us to achieve our School mission. We have an enthusiastic and entrepreneurial team of staff with a 'can do' attitude who are committed to the ongoing development and expansion of the School's activities.

The School has embedded quality within its culture, such that there is a wide recognition of the importance of quality assurance and control and it has become part of normal School operations. The School, as part of the wider University, is guided by the strategies, procedures and policies set at Faculty and University level, including internal review of the School and its operations. In addition the School has put in place additional mechanisms for quality associated with various aspects of the School's operations, by providing proactive frameworks and guidance tools to ensure quality is embedded in delivery and outputs. Likewise quality control measures have been put in place to reactively gauge and monitor quality standards, including input from independent external experts. External evaluations are undertaken periodically by the Royal College of Veterinary Surgeons (2009, 2011, 2014) and the European Association Establishments for Veterinary Education (2011, 2014). The quality assurance and control measures were first implemented in 2006, and have developed as the School successively grew with each additional cohort until the first undergraduate cohort graduated in 2011; however the School perceives quality improvement as ongoing and as such there is constant evolution of quality assurance and control mechanisms. School systems all normally employ Deming's management system model of plan-do-check-act (PDCA).

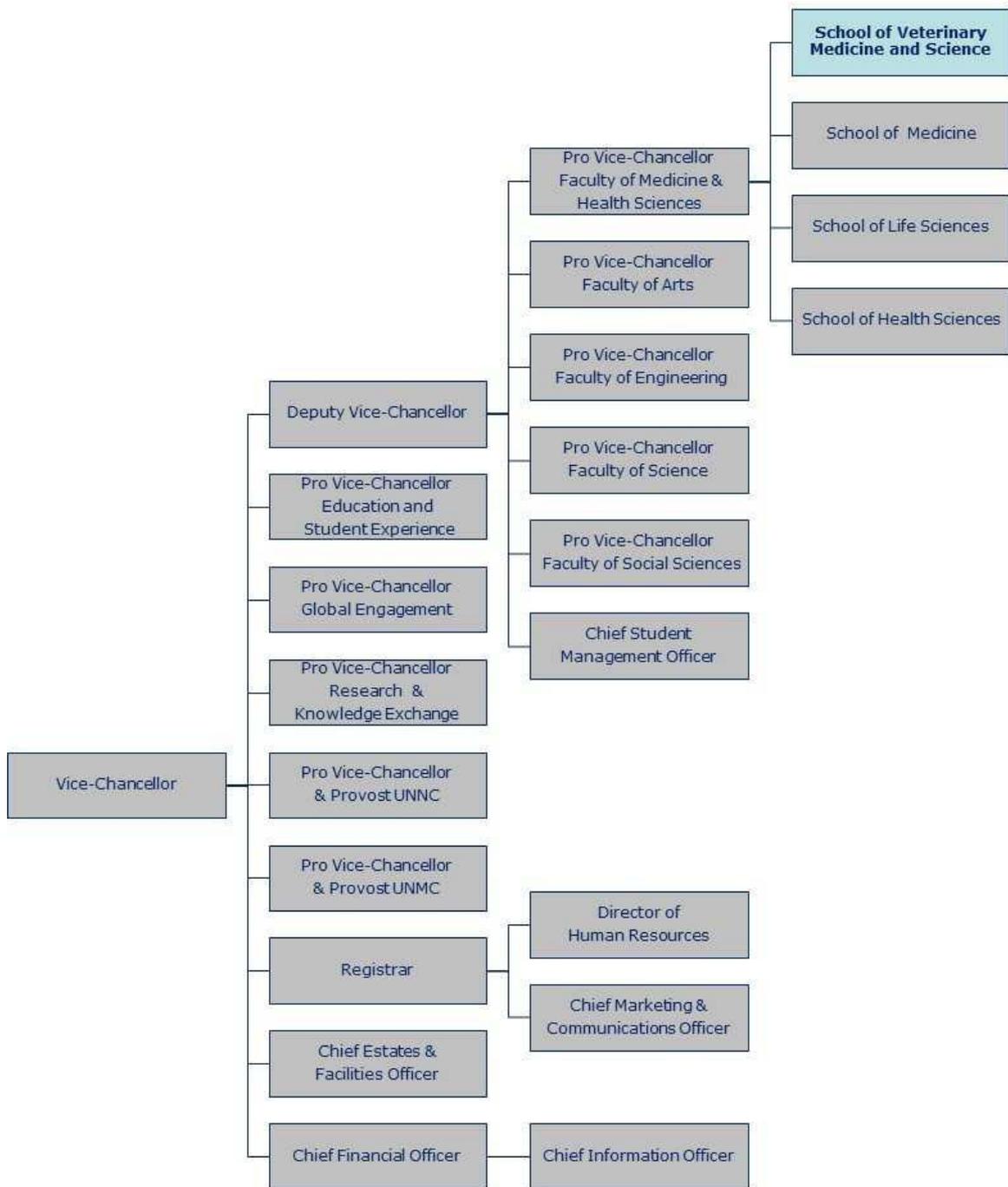
Risk is managed explicitly by quarterly review of the School's risk register at a Management Team Meeting; in addition there is quarterly review of both School performance and risk by Faculty Board. Risk associated with normal School operations is managed by Standard Operating Procedures, and Risk Assessments and also implicitly by quality assurance and control.

A comprehensive review of the two Schools at the Sutton Bonington campus, conducted by the University, concluded that organisational structures were good. The two Schools have recently initiated a cross-campus Early Career Researcher Committee and cross-campus collaboration on equality, diversity and inclusivity. We are currently strengthening cross-campus research grant mentoring and hold a yearly teaching symposium.

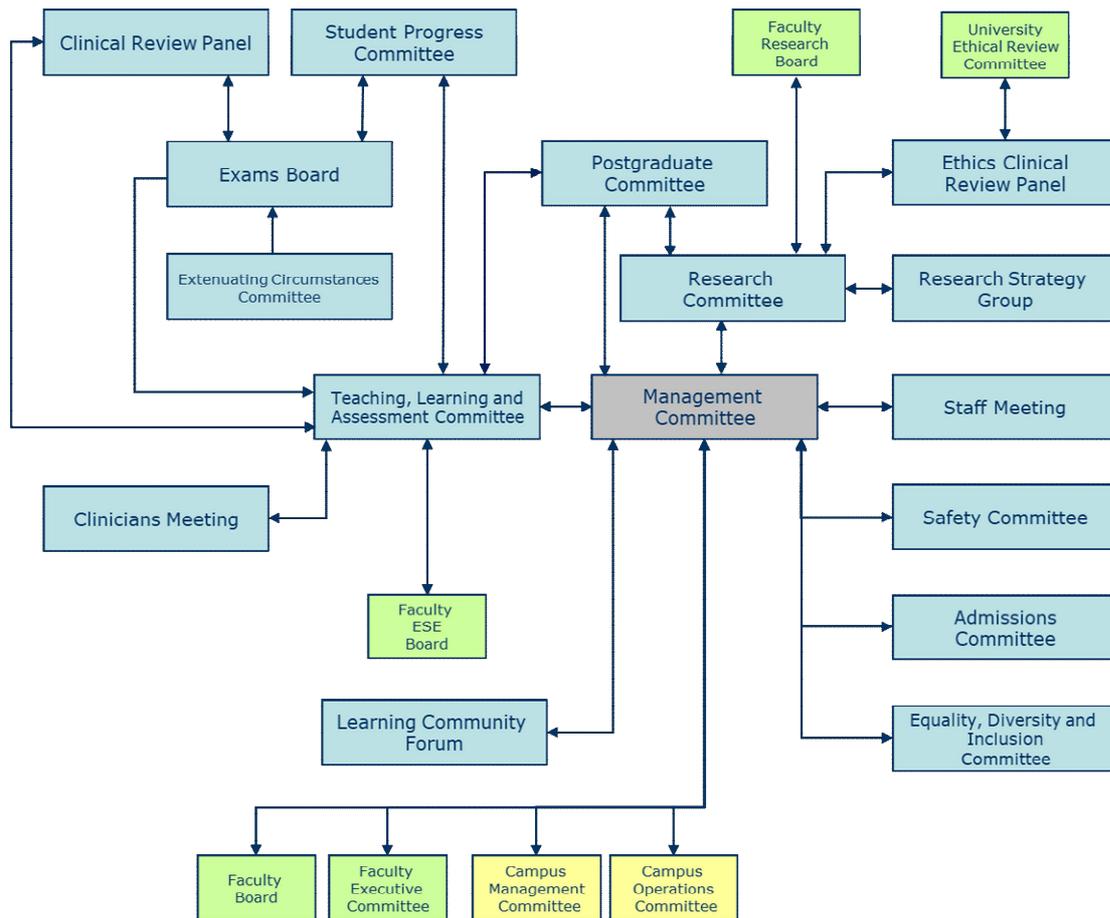
The University has recently moved to centralise some aspects of student services, which has led to loss of School control and challenges to our model and high level of student support. The school is working hard to ensure this does not impact on student experience and does not further erode our levels of administrative support.

1.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 1 Position of the school in the University structure



Appendix 2 School Committees



- Management Team, meeting weekly, comprises the Dean, Deputy Head of School, Heads of Divisions, Teaching, Learning and Assessment Sub-Dean and Research and Business Sub-Deans. Once a month all Professorial staff, and all other Sub-Deans attend the meeting. Meetings consider strategic and operational issues
- Teaching, Learning and Assessment (TLA) Committee, meets monthly and considers strategic and operational issues relating to teaching, learning and assessment together with all aspects of teaching quality and assurance. Associated with TLA Committee are other Sub-Committees / Meetings, the School Exam Board, the Extenuating Circumstances Committee, Clinicians Meeting, Clinical Review Group and Student Progress Committee
- The Research Committee meets every month and considers all strategic and operational issues relating to the School's research and business policies. Associated with this Committee is the Research Strategy Group
- Ethics Clinical Review Panel conducts business by circulation and meets as needed to review and approve all clinical research activities which involve either direct contact with animals, or indirect contact through their owners or keepers. It also considers all social and education research undertaken within the School from the perspective of ensuring compliance with data handling legislation
- Postgraduate Committee meets every 2 months and considers all strategic and operational aspects relating to postgraduate students in the School
- Admissions Committee meets once per year to review the preceding year's admissions and the process for the forthcoming session is discussed and agreed
- Learning Community Forum (LCF) meets once a term, and discusses any matters of concern (academic, welfare or social) that are raised by either students or staff. LCF recommendations are considered by other Committees
- Safety Committee meets 3 times per year and is responsible for managing, formulating and monitoring the School's health and safety policy in light of relevant legislation, accepted University policy and developments in standards of good practice
- Equality, Diversity and Inclusion Committee meets monthly and considers all strategic and operational aspects associated with equality, diversity and inclusion in the School, and the attainment of Athena Swan status
- Monthly Staff Meetings are open to all staff from the School and Clinical Associates. It allows an open forum for presentation and discussion of issues pertinent to the School as a whole

A number of project groups have been formed to address identified issues. Progress on these projects is reported to Management Team or to the respective Committee. In addition scheduled meetings exist e.g. between Clinical Sub-Deans to discuss and progress operational issues.



2 FINANCES

2 FINANCES

2.1 FACTUAL INFORMATION

2.1.1 University funding model and budget allocation

The University has a sound financial footing, returning a surplus year on year whilst investing in new teaching and learning technology, research priority areas, developing new partnerships and implementing new processes and systems. The University returned an EBITDA of £39m on a turnover of £635m in 2015/16, with capital investment of £101m, including the new £40m Sports village (<https://www.nottingham.ac.uk/fabs/finance/documents/globalreview/fin-stats-2016.pdf>).

The University allows Faculties significant freedom to run their operations as they see fit and as directed by the Faculty Pro-Vice-Chancellor (PVC). Clearly a proportion of the income generated by each Faculty is directed to supporting the running costs of the institution, such as for libraries, Information Systems, Professional Services (Student Services, External Relations, Finance, HR, etc). The percentage each Faculty and individual component School contributes is based on the costs of delivery within each Faculty, in a 'Contribution Based Budgeting' model; this targets each School to deliver a percentage of their income (where Research Margin and Services Margin is classed as income – not the gross income / costs of research). It also recognises the different sources of funding available to each Faculty (tuition fees, educational grants, research income, CPD, etc). The budget model incentivises Faculties to broaden their income base, as this gives them more control over how resources are spent. The School has the lowest University target contribution rate of 31.5% (after School costs, but before central charges; thus the School retains 68.5% of income). It is not possible, with the exception of funds associated with some research grants or services rendered projects, to retain any income or budget between years. The budget assigned to the School is required to support all operational costs incurred directly by the School, with the exception of central functions which are provided for from contribution, i.e. the School budget covers pay, consumables, school funded research, equipment etc but not, for example IT services, library, sports centre, registry etc.

2.1.2 School financial management

Budget for all aspects of the School's operations (except for research grants) is administered and flexibly managed centrally in the School by the Head of Operations, and allocated, with discussion with Dean of School, to individual project budgets on a yearly basis, based on prior year spend levels together with forecast future spend, including spend required on any replacement, maintenance or planned procurement of new equipment or buildings. Budgets are locally directed and utilised as required within the relevant budget envelope, by, for example, technical staff for consumables, the Research Manager for school-funded research, with procurement supported by a campus Finance Team. Research projects are funded as per the funder's commitment and are managed by the Principal Investigator.

The School has a Management Accountant who compiles monthly reports with oversight by a Faculty Finance Manager. Non-pay spend over £5,000, outwith normal expected operations (for example a request for a new piece of equipment), is reviewed and considered by Management Team. Equipment over £30,000 is capitalised; in theory there is no set capital budget, albeit the depreciation charge must be sustainable within future operational budgets. The Management Accountant and Head of Operations discuss capital requirements as required, although in reality the level of capitalised equipment in the School has historically been small as the School has expensed items within yearly budgets.

The Dean and Head of Operations discuss the Schools financial performance and plans quarterly with the Faculty PVC, and are able to make the case for additional spend in relation to any increased income, in line with the target contribution. The School is able to secure 50% contribution on small building developments from University Estates for projects up to £500,000, in addition there is a central University Strategic Development Fund process for consideration of funding new research or educational ideas (e.g. the School was successful in gaining £492,000 funding to establish the Advanced Data Analysis Centre <https://www.nottingham.ac.uk/adac/index.aspx>).

2.1.3 Expenditure

Table 1 shows historical expenditure incurred in association with the Veterinary School; this includes any costs for year 5 rotations undertaken at Clinical Associates (but not any costs incurred by Clinical Associates) and maintaining teaching animals, however for clarity these costs are also shown in Table 3.

University Expenditure

Personnel costs

The largest proportion of costs is pay at 49% of budget; teaching personnel costs have grown over time as the School has recruited academic and clinical staff to support teaching increased student numbers. Support staff costs have reduced in 2016/17 due to the transfer of 2.0FTE to central University Student Services. Personnel costs for research staff have fluctuated in response to levels of research income.

Operating costs

Utilities costs are incurred by the University on behalf of the School. Until 2014/15 the School was assigned central overhead charges, which includes utilities charges; these are £332,000 in 2014/15; for comparison, the same figure (inflated) is included in 2015/16 and 2016/17.

Expenditure for teaching has fluctuated but in general increased steadily with the exception of 2015/16 when additional budget was assigned towards clinical teaching staff in order to recruit staff and procure resources ahead of a larger number of year 5 students entering rotations the subsequent year. Teaching costs also include widening participation scholarship costs (£479,152 in 2016/17) and costs for farm Residents and zoo DVetMed students.

Expenditure for research includes both expenditure by the School, to support academics, for example, with pump prime support, strategic research etc (£141,690 in 2016/17) and postgraduate costs (£717,175) and also costs associated with externally funded research project delivery (£826,000) and donations (£103,000). Over time expenditure has slightly decreased in relation to reduced research revenue (discussed further below); the School has tried to ensure that increased School budget is available to allow staff to undertake research for publication and to support grant application bids.

Expenditure for services has fluctuated in relation to services income (discussed further below), with the exception of 2014/15 where some of extra expenditure relates to writing off obsolete shop stock.

General operations costs remain at fluctuating levels, and represent costs for items such as photocopying, conference costs and general unspecified costs. The increase in 2016/17 represents a new Faculty charge of £ 154,944.

Equipment costs

Teaching equipment costs have risen over time to support resources for increased year sizes; an apparent dip in 2016/17 is overstated as a further £36,000 was capitalised. Research equipment costs have been held steady, with replacement and new expenditure as required; in 2016/17 a further £79,000 was capitalised. General equipment cost levels vary and peak in 2014/15 where the School purchased 2 further vehicles.

Building maintenance

The School incurs a small level of building maintenance costs but the majority is provided for by the University Estates department (previously as part of a central charge until 2014/15 and included, inflated in years thereafter) – the figures are £56,791 and £200,532 respectively.

Other central charges

The remainder of the historical (until 2014/15) and equivalent charges thereafter is shown for completeness. Central charges were calculated on headcount of staff and students and space occupied, and reflect support to central University services.

Area of expenditure £	2016/17	2015/16	2014/15	2013/14	2012/13
a. Personnel					
a.1 teaching staff	6,345,987	6,079,961	5,766,056	5,251,467	4,841,096
a.2 support staff	1,317,881	1,381,825	1,370,875	1,182,466	1,230,534
a.3 research staff	598,110	982,561	806,348	732,511	700,666
Total for a	8,261,978	8,444,347	7,943,279	7,166,444	6,772,296
b. Operating costs					
b.1 utilities	334,220	327,667	332,000	331,667	331,333
b.2 expenditure relating to teaching	1,471,468	1,212,297	1,333,374	1,450,767	1,372,670
b.3 expenditure relating to research	1,787,865	1,831,142	1,807,885	1,781,564	1,975,882
b.4 expenditure related to services	173,000	179,604	244,043	172,533	143,813
b.5 general operations	468,753	309,420	433,623	413,676	266,543
Total for b	4,235,306	3,860,130	4,150,925	4,150,207	4,090,241
c. Equipment					
c.1 teaching	146,789	281,244	266,515	125,155	248,095
c.2 research	120,417	122,610	111,802	130,462	100,703
c.3 general (or common) equipment	100,524	131,692	165,208	59,939	80,057
Total for c	367,730	535,546	543,525	315,556	428,855
d. Maintenance of buildings	257,323	275,908	260,177	350,899	241,219
e. Other central charges	3,737,247	3,747,732	3,740,800	3,428,332	3,130,866
f. Total expenditure	16,859,584	16,863,663	16,638,706	15,411,438	14,663,477

Table 1 Annual expenditure for the last 5 years

Notes for all expenditure tables: Data has been compiled from analysis of cost categories for over 300 project codes; forecast data is used for 2016/17. There is probably some minor element of miscoding in the financial data such that a small proportion of costs assigned to general are likely to be related to teaching or research. All postgraduate costs are assigned to research, with the exception of farm Residents and zoo DVetMed students (which are assigned to teaching). Accurate central charges are included until 2014/15; after this point the University adopted a Contribution Based Budgeting model, however to allow comparison, and since it is not possible to get a detailed breakdown of how the current School contribution is spent, we have assumed that the total central charge has remained static going forwards (in line with University financial pressures on central service departments) in order to give an indicative total spend by the University in support of the Veterinary School.

No capital costs are included, these have been historically very small as the School has expensed items; however £105,000 capital expenditure for equipment has been made in 2016/7.

Future total budgets are a function of student income (itself a function of student headcount), HEFCE grants, research margin and services margin. Finances to sustain the veterinary programme are secure, as student recruitment is, and will remain strong. Future expenditure is shown in Table 2.

The forecast expenditure assumes a similar spend to that budgeted in 2017/18 with the addition of known changes, for example planned future recruitment of staff. Hypothetical central charges are included for completeness.

Area of expenditure £	2017/18	2018/19	2019/20	2021/22	2022/23
a. Personnel					
a.1 teaching staff	6,667,264	6,970,201	7,331,363	7,524,422	7,674,911
a.2 support staff	1,510,766	1,560,456	1,591,665	1,623,499	1,655,969
a.3 research staff	661,909	678,298	695,093	712,305	729,945
Total for a	8,839,939	9,208,955	9,618,122	9,860,227	10,060,824
b. Operating costs					
b.1 utilities	340,904	347,722	354,677	361,770	369,006
b.2 expenditure relating to teaching	1,418,311	1,567,944	1,711,905	1,924,925	2,094,800
b.3 expenditure relating to research	1,859,278	1,881,871	1,961,396	1,992,258	2,072,057
b.4 expenditure related to services	184,496	188,517	192,757	196,843	203,323
b.5 general operations	496,195	496,304	529,695	533,899	566,912
Total for b	4,299,185	4,482,359	4,750,430	5,009,695	5,306,099
c. Equipment					
c.1 teaching	140,000	195,665	205,191	195,520	204,829
c.2 research	105,000	101,749	108,893	109,140	116,122
c.3 general (or common) equipment	50,000	48,452	51,854	51,972	55,296
Total for c	295,000	345,866	365,938	356,632	376,248
d. Maintenance of buildings	263,089	268,540	274,211	280,002	285,917
e. Other central charges	3,726,553	3,715,644	3,704,517	3,693,167	3,681,591
f. Total expenditure	17,423,765	18,021,364	18,713,217	19,199,723	19,710,678

Table 2 Projected future expenditure for the next 5 years

Veterinary teaching hospital costs

The School has invested considerably in Clinical Associate teaching hospitals, as it does not own a teaching hospital. To allow comparison expenditure (historical and future) associated with year 5 teaching and caring for teaching animals, data have been extracted from relevant cost categories in Tables 1 and 2 and are shown in Tables 3 and 4.

Support staff costs represent technical time associated with looking after the Schools teaching animals. Teaching staff represent costs for clinicians. No maintenance of buildings or equipment is assumed incurred as this is paid for by Clinical Associates. Costs of consumable items etc are variable, within this category are costs paid to Clinical Associates, this may include costs where at certain times, for example during recruitment hiatuses a fee in lieu of placement of School staff may be made to the Clinical Associate; this accounts for the majority of fluctuation in this cost category, with other costs representing costs associated with consumables, rotation travel and clinical postgraduates with teaching responsibilities. The increase in 2016/17 includes a £200,000 payment to a Clinical Associate to expand

student and teaching facilities. Costs of maintaining teaching animals varies as the School incurs a £40,000 charge from the University Farm, however it was omitted to be charged in 2014/15 and 2012/13.

Costs	2016/17	2015/16	2014/15	2013/14	2012/13
1. Salaries for support staff	7,049	6,877	6,709	6,546	6,386
2. Salaries for teaching staff	2,086,156	2,159,254	1,876,785	1,687,845	1,555,950
3. Maintenance of buildings and equipment	0	0	0	0	0
4. Costs of consumable items etc	406,378	154,331	259,150	411,629	489,426
5. Equipment costs and depreciations	52,251	77,535	24,569	19,924	54,476
6. Costs of maintaining teaching animals	50,550	49,512	9,280	47,195	7,475
7. Total costs	2,602,384	2,447,509	2,176,493	2,173,139	2,113,713

Table 3 Sources of expenditure for the veterinary teaching hospitals for the last 5 years

Table 4 shows forecast expenditure for activities associated with year 5 rotations and School teaching animals. The figures are extracted from data in Table 2.

Costs	2017/18	2018/19	2019/20	2021/22	2022/23
1. Salaries for support staff	7,331	7,624	7,929	8,246	8,576
2. Salaries for teaching staff	2,359,224	2,406,408	2,676,295	2,729,821	2,784,417
3. Maintenance of buildings and equipment	0	0	0	0	0
4. Costs of consumable items etc	384,629	372,720	398,890	559,796	680,370
5. Equipment costs and depreciations	50,000	48,452	51,854	81,972	85,296
6. Costs of maintaining teaching animals	50,994	52,269	53,575	54,915	56,288
7. Total costs	2,852,178	2,887,473	3,188,543	3,434,750	3,614,947

Table 4 Projected future expenditure for the veterinary teaching hospitals the next 5 years

Table 5 shows the annual cost of teaching a veterinary student with and without the inclusion of student-related central charges. There has been a slight overall reduction in costs over time as the cost base has been stretched with increased student numbers.

Costs £	2016/17	2015/16	2014/15	2013/14	2012/13
Annual cost of training a veterinary student (School budget only)	13,511	14,375	14,441	13,954	14,245
Annual cost of training a veterinary student (including student-related central charges)	15,275	16,320	16,444	15,911	16,168

Table 5 Costs of veterinary training for the last 5 years

2.1.4 Revenues

Tables 6 and 7 show historical and planned revenues. The majority of the School's income is from State Funding Council grants for teaching and research and from student fees.

School revenues

Revenue from the State

The revenue for the teaching of Home and EU (HEU) undergraduate students is provided by HEFCE, the Higher Education Funding Council for England. Funds are allocated based on a unit of resource per student FTE according to the price group of the course with additional supplements depending on the level of the course, the intensity of teaching and whether the course is part time or full time. Veterinary science has the highest price group weighting of £10,180 in 2016/17 (£9,804 in 2012/13). As a result of the introduction of UK Government increased fees (see below), HEFCE funding has reduced per undergraduate student.

For HEU postgraduate students, HEFCE funding per postgraduate taught student is £11,300 (2016/17). The HEFCE Research Degree Programme grant is distributed according to the number (FTE) of research students for Schools that receive HEFCE Quality-Related Research (QR) funding, multiplied by a subject cost and quality weighting (this is £5,927 per student in 2016/17).

The School currently receives research related HEFCE QR funding associated with the grading resulting from the 2014 Research Excellence Framework (REF) assessment (and prior to that from the 2008 Research Assessment Exercise (RAE)). The QR formula has three elements: quality, volume and subject cost relativities. The assessment outcomes associated with quality are shown in the form of a profile detailing the proportion of work which reached each of four quality profiles. These ranged from 4* (world leading) to 1* (nationally recognised). Income up to 2015/16 was a result of the 23 staff submitted to the RAE in 2008; the income increased in 2015/16 as a result of increased numbers (41 staff) submitted for the 2014 REF. HEFCE Funding is also received on the basis of average research income from charities and business for the previous four years of published data. So, for 2017/18, this would be an average of such income in 2012/13; 2013/14; 2014/15 and 2015/16.

Revenue from research

All grants are costed (subject to funding body rules) on a full economic cost basis, in order that indirect / overhead costs are recovered from funders. Commercial work is costed at market rates.

The trend is fairly stable with minor fluctuations reflecting the way that the start /end of large grants can significantly affect the overall income profile. However, there was a 25% reduction in income in 2016/17 due to a marked fall in wins from UK Research Councils. These are high value and highly competitive. There are main reasons for the fall are the:

- Number of applications is down
- Proportion of awards being made by the Biotechnology and Biological Sciences Research Council (BBSRC) to areas in which we conduct research is lower than it has been historically

Tuition fees

Tuition fees are charged to all undergraduate and postgraduate students.

- All HEU undergraduate students pay a University fee of £9,000 per year (2016/17 entry). This fee also applies to graduates undertaking the undergraduate programme
- International undergraduate students on the 5-year programme are charged £28,320 per year (2016/17 entry)
- HEU postgraduates on taught programmes pay a fee as per the price of the course, currently this is £4,395 (Veterinary Medicine and Surgery) and £2,075 (Veterinary Education). HEU postgraduates on research programmes pay £4,121 fees
- International postgraduate taught students pay fees of £11,780 (Veterinary Medicine and Surgery) and £2,075 (Veterinary Education). Postgraduate Research students pay fees varying between £19,120 and £35,010 per year dependent on the type of research project

In 2012 the HEU undergraduate tuition fee was raised from £3,000 to £9,000 for new entrants by the UK Government; the completion of the transition for the 5-year course is 2017/18 with all students paying the higher fee. The Government has allowed the cap from the HEU tuition fees to be increased,

dependent on the University rating in the Teaching Excellence Framework, a national audit of teaching standards. The University is rated in the highest 'Gold' bracket and for 2017/18 HEU fees will be increased to £9,250. Home and EU undergraduate students are able to defer payment of all or part of their tuition fees by taking out a tuition fee loan (the level of loan available depends on family income). The Student Loans Company (SLC) provides these. The university receives the equivalent of the fee from the SLC whilst the student is studying.

The School has increased the cohort size to 160; there are no plans to increase student numbers above this level to ensure that resources are effectively used and the student experience is maximised. International undergraduate student income has decreased through a strategic decision to admit the highest achieving students irrespective of nationality, as experience had shown that international students frequently failed to complete the course due to cultural and academic reasons.

Continuing education

Continuing education revenue has increased over time as the School has grown the number of courses offered.

Diagnostic activities

Revenue associated with diagnostic activities is from three sources: NUVetNA⁵, the Schools own Pathology diagnostic service and a great crested newt eDNA analysis service.

Other revenue

The School has been successful in gaining small amounts of donations, which are mostly to support research work, equipment or postgraduate positions. Major changes between years reflect success in winning these donations, which are predominately from businesses or charities. Other revenue in this category mostly relates to shop sales of clothing and equipment, facilities rental and stable livery.

Table 7 shows forecast future revenues, based on student number forecasts, and small growth from our current position in other areas. To be prudent, no increase in HEFCE QR income is assumed.

⁵ Nottingham University Veterinary Nutritional Analysis: diagnostic services (trace element and metabolite, energy monitoring and urine analysis) aimed at extending veterinary services to aid client herd health and performance

Revenue source £	2016/17	2015/16	2014/15	2013/14	2012/13
a. Revenue from State					
a.1 UG student related	6,524,302	6,102,094	5,885,000	5,924,000	5,819,000
a.2 PG student related	353,399	379,374	458,000	349,000	279,000
a.3 Research related	1,431,665	1,412,022	1,157,000	1,167,000	1,069,000
b. Revenue from private bodies	0	0	0	0	0
c. Revenue from research	1,749,000	2,321,785	2,092,000	2,231,000	2,343,000
d. Revenue earned and retained by the School					
d.1.1 UG student fees (HEU)	5,842,071	4,847,792	4,068,000	3,217,000	2,358,000
d.1.2 UG student fees (overseas)	199,212	352,126	601,000	705,000	691,000
d.1.3 PG student fees (HEU)	214,318	264,372	296,000	230,000	203,000
d.1.1 PG student fees (overseas)	450,533	519,464	470,000	407,000	443,000
d.2 continuing education	141,812	139,303	89,000	52,000	44,000
d.3 clinical activities	0	0	0	0	0
d.4 diagnostic activities	105,084	102,813	87,000	41,000	33,000
e. Revenue from other sources	195,604	182,755	279,000	350,000	264,000
f. Total revenue from all sources	17,207,000	16,623,901	15,482,000	14,673,000	13,546,000

Table 6 Annual revenue for the last 5 years

Note: Revenue data prior to 2015/16 is only available rounded to '000.

Veterinary teaching hospital revenue

The School receives no income from hospital activities undertaken by School staff; all income associated with clinical activity undertaken by our academics, clinical Residents and Interns remains with the Clinical Associates as part of the contractual relationship. The School receives an income stream from its own Pathology service unit which accepts cases on a *pro bono* basis from our Clinical Associates but charges all cases from other submitting veterinarians (this revenue is shown in the 'Diagnostic Activities' category).

Revenue source £	2017/18	2018/19	2019/20	2021/22	2022/23
a. Revenue from State					
a.1 UG student related	6,650,046	7,053,830	7,346,122	7,482,623	7,652,000
a.2 PG student related	329,081	274,669	274,500	274,737	274,737
a.3 Research related	1,362,853	1,362,853	1,362,853	1,362,853	1,362,853
b. Revenue from private bodies					
c. Revenue from research	2,009,346	2,059,579	2,111,069	2,163,846	2,217,942
d. Revenue earned and retained by the School					
d.1.1 UG student fees (HEU)	6,311,994	6,730,406	7,172,111	7,574,552	7,964,000
d.1.2 UG student fees (overseas)	165,355	198,918	230,524	263,528	301,000
d.1.3 PG student fees (HEU)	237,927	255,648	308,106	322,328	337,375
d.1.1 PG student fees (overseas)	414,998	478,377	573,199	601,854	632,000
d.2 continuing education	152,177	154,979	157,838	160,754	166,046
d.3 clinical activities					
d.4 diagnostic activities	112,764	114,841	116,959	119,120	123,041
e. Revenue from other sources	214,859	219,481	224,208	229,042	235,721
f. Total revenue from all sources	17,961,400	18,903,581	19,877,490	20,555,235	21,266,715

Table 7 Projected future revenue for the next 5 years

2.2 COMMENTS

The School is content at the level of its current operational financial budget and is able to fulfil all required standards, however there are some issues that are worth noting:

- The University currently recognises that the lowest Contribution Based Budgeting (CBB) percentage is applied to the School, since unlike other clinical Schools in the Faculty of Medicine and Health Sciences there is no NHS subsidy, especially to support the increased costs of clinical staff. In the current wider economic climate there are increasing financial pressures on the University and the School would not be able to function adequately should the CBB increase in line with other University Schools. This is a particular imperative as the School, as with other UK Veterinary Schools, is finding it harder to recruit and retain clinical staff who are able to attain higher salaries in commercial practice
- Whilst there is no longer a central charge for services provided centrally by the University, the School continues to challenge service departments where they do not deliver to our requirements and expectations and fall below our high standards

Our number one priority for any increased funding would be to develop new teaching spaces at Sutton Bonington and provide further research support to staff.

The School has a high degree of autonomy and flexibility in financial matters and is well supported by the Faculty PVC, however it is disappointed at some historical financial decisions taken over the last 3 years to find immediate savings due to poor central University financial modelling (e.g. of pension

costs). There has been flex in the School budget, in that some cost savings have been able to be made historically. The School would defer spend in non-priority areas, should there be a need for expenditure, for example urgent replacement of equipment arise in future.

As detailed previously, under the CBB, the School has been able to use revenues associated with growing student numbers to support the teaching programme, such that an exceptional student experience is maintained. Investment continues to be made as required into staff, equipment, facilities, infrastructure and course development. The School is able to retain 68.5% of revenue and coupled with the autonomy and flexibility afforded to financial management, we feel there is currently no disincentive to grow revenue or services.

Projected budget data are shown in Table 2. This is based on a CBB of 31.5%; the School is comfortable with this budget, and in addition is able to capitalise equipment should the need arise. There are currently no anticipated financial changes.

Substantial funding (£6million) has been gained to construct a new Centre for Dairy Science Innovation on the Sutton Bonington Campus. The new Centre, due to open in November 2017, will place Nottingham as the leading national dairy research site in a major UK initiative to establish agricultural centres of excellence. The new Centre will include a Containment Level 2 research facility and novel flexible housing unit that will allow us to further increase research income and outputs from our high profile dairy health group.

2.3 SUGGESTIONS FOR IMPROVEMENT

Income associated with students is, and will remain strong due to the high demand for places. Robust interventions are being put in place that ensures the School performs highly in the next REF Assessment so that QR income levels are at least maintained. Research grant revenue is showing some weakness (as detailed above), however there are actions being put in place to improve this issue:

- The school has identified four Strategic Research Areas for prioritized financial investment and technical support, and to facilitate data acquisition to support better grant applications
- The School is considering incentivising staff to apply for and win Research Council UK (RCUK) grants (e.g. providing a fully funded PhD studentship alongside any RCUK win we lead)
- Holding sandpit events
- Mentoring of staff and holding grant surgeries
- Demonstrating that even a failed grant is worth having as it becomes a research plan that can be broken up for smaller awards/ student projects etc
- A member of staff is applying to join the BBSRC strategy advisory panel on agriculture and food security
- Staff are expanding collaborations in countries with expanding research grant investments, e.g. Brazil, China and Russia

The School is putting in place a number of measures to further strengthen and consolidate our financial position and mitigate any potential challenge as a result of the overall economic climate (these are not included in forecast expenditure or revenue):

- Introduction of an MSc Veterinary Physiotherapy from 2018/19 to increase income
- Investment into building 6 bedrooms and to improve teaching space at Oakham Veterinary Hospital (replacing holiday cottage accommodation currently provided for students by the School) to save cost and improve the student experience
- Submission of a bid to the University to develop Containment Level 3 and other laboratories on campus to boost infectious disease research



3 FACILITIES AND EQUIPMENT

3 FACILITIES AND EQUIPMENT

3.1 FACTUAL INFORMATION

3.1.1 Premises in general

Description of the major functions / activities that take place in facilities

The School is based at the University's 1,000-acre Sutton Bonington campus, 7 miles from Nottingham, close to the M1 junction 24, and within 5 miles of East Midlands Airport. The campus comprises, in addition the School of Biosciences, central teaching and research facilities, the James Cameron-Gifford Library, student residences, music room and sports centre, as well as essential amenities including a restaurant and café.

The School has been fortunate in having 3 specific and bespoke major buildings developed for the School, together with access to multiple animal and farm facilities and shared teaching and research facilities. Furthermore, through our Clinical Associates we have access to 9 veterinary hospitals.

The three-storey Academic Building is the main hub of the School and comprises:

- 400-seat, 160-seat and 30-seat lecture/seminar spaces with full AV facilities, including lecture capture
- 30-seat computer room, which can be used flexibly as a seminar room
- 15 small-group teaching rooms
- Laboratories and support facilities for virology and microbiology, cell and tissue culture, (immuno)histology, cell and molecular biology, immunology, clinical sample handling and specialist laboratories for transmissible spongiform encephalopathies, gas chromatography and imaging
- Staff, research fellow, postgraduate and visitor offices, and social space

The predominantly single storey Clinical Teaching Building provides:

- 160-seat dissection room, fully equipped with stainless steel tables, sinks, hydraulic table, extraction system, walk-in freezers and fridges, hoist system, radiograph viewers together with 2 preparation rooms; adjacent 30-seat cadaver surgery suite
- 13 small-group teaching rooms, together with a Year 5 hub comprising 2 small-group teaching rooms
- 40-seat seminar room with AV facilities, electronic whiteboard and videoconference facilities
- 6 bay / 36-seat Clinical Teaching Lab extensively equipped with examination facilities and clinical equipment including ultrasound, ECG, anaesthetic monitors
- 40-seat Clinical Skills Centre with equipment including an imitation practice, specialised resources such as a virtual reality rectal simulator (haptic cow), clinical training models and aids as well as clinical diagnostic equipment. 40-seat Surgical Skills Centre containing 12 operating tables
- Simulated radiography suite, containing decommissioned full size and dental x-ray machines
- Museum
- Staff offices
- Support facilities including 8 walk-in dog and 6 cat kennels, laundry, locker and changing rooms

The three storey Gateway Building provides:

- 120-seat seminar room
- 120-seat computer room
- Staff offices
- Other offices, laboratories and facilities for the School of Biosciences

The School also utilises the new 200-seat campus high specification general teaching laboratory.

The School has facilities for animals at the campus detailed in section 3.1.3.

The School has access to the on-site fully licensed abattoir with commercial facilities, e.g. lairage with a number of pens, stunning facility, a scalding tank, an overhead line, slaughter floor and gut room. There are two large cold rooms, and a substantial cutting room and cold store.

The School's own Pathology service unit with 3 board certified pathologists and technical support staff is based on the Sutton Bonington campus, adjacent to the University Sports Centre on a 0.5 acre site. These premises were, until recently, used as a surveillance centre by the Animal and Plant Health Authority (APHA). The facility comprises purpose built, state-of-the-art post-mortem rooms with hoists, large hydraulic post mortem tables, class 1 and 2 safety cabinets. The University has invested in upgrading and expanding facilities to include changing facilities including showers, new lairage, large walk-in cold room, staff offices, a student 'common room' with a kitchen and library, and a large seminar room with a 10-headed microscope with live projection onto a wide screen monitor and video conference facilities. The development provides the facility for handling a range of animals including farm species, zoo animals' cats, dogs and horses. The facilities are shared with Minster Group who involve students in interesting cases and teach poultry and large animal necropsies within the pathology rotation.

Our clinical facilities are based at our Clinical Associates, where, dependent on the terms of the contractual relationship the School has invested in facilities and equipment:

Bransby Horses

Bransby is one of the UK's largest equine welfare charities and is based on a 600-acre site near Lincoln. Equine facilities include stocks, recovery box, induction and recovery box, equine theatre, ultrasound, endoscopy and digital radiography, laboratory and pharmacy. There are hospitalisation places for 24 horses, an ICU barn, 2 intensive care boxes and 30 stables. Students at Bransby share study and amenity facilities with staff.

Defence Animal Centre

The Defence Animal Centre (DAC), which specialises in military equine and canine veterinary medicine and surgery, is based on a 360-acre site at Melton Mowbray in Leicestershire. Up to 140 horses can be stabled at the DAC, whilst a further 260 can be at grass. There is an extensive equine training facility and the Army School of Farriery has a purpose built facility for both students and instructors. The Canine Division has facilities for kennelling over 200 dogs, training barns and training houses. The Veterinary Division facility has fully equipped hospitalisation, imaging, operating and treatment facilities for both canine and equine care. Facilities include an equine surgery suite and small animal surgery suite, examination, hospitalisation and isolation kennels and stables, digital radiography, canine hydrotherapy, canine post mortem facilities and a horse walker. There is a dedicated student facility for teaching and learning and social space.

Dick White Referrals

Dick White Referrals is a state-of-the-art small animal veterinary referral hospital, based near Newmarket, Cambridgeshire. The centre combines modern clinical facilities with intensive care facilities, 12 consulting rooms, 5 operating suites, dedicated internal medicine investigation room, spacious climate-controlled accommodation for over 50 patients, diagnostic imaging including radiography and fluoroscopy and on-site diagnostic laboratory with extensive clinical pathology, histopathology and microbiology facilities. A separate building houses ultrasound, CT and MRI units. Facilities also include a dedicated physiotherapy unit, seminar room, and 6 student bedrooms and social space.

Minster Veterinary Practice

The Minster Veterinary Practice (whose poultry arm has recently rebranded as Poultry Health Services) is housed within the School's Pathology buildings and operates from 2 administrative offices; it utilises the School Pathology facilities to support the provision of their clinical poultry service regionally (see above for details of Pathology facilities).

Oakham Veterinary Hospital

The Oakham Veterinary Hospital is a RCVS tier 3 Hospital and is set in a 9-acre site which includes equine and small animal departments. Within the equine hospital, facilities include 3 consulting rooms, 2 operating theatres, 2 examination facilities with stocks, scintigraphy room, standing MRI facility, digital radiography room, post-mortem room, 23 horse boxes including isolation facilities, reproduction facilities including a dummy mare, farriery unit, menage, 2 trot-up areas, lunge pen, and a learning and teaching space for students. The site has 8 acres of grassland in small turnout paddocks and stabling for 22 horses, including mare and foal facilities. The diagnostic laboratory includes HBLB/ British Equine Veterinary Association (BEVA) CEM testing and the equine unit is an approved Artificial Insemination (AI) centre.

The small animal facilities include 4 consulting rooms, 2 operating theatres, digital radiography rooms, isolation facility, kennels, separate cattery, teaching and seminar room.

In addition, the shared facilities include a fully equipped laboratory. The dedicated student room comprises locker and changing facilities, kitchenette, IT facilities, soft seating and workspace areas.

PDSA Derby

The Derby PDSA PetAid hospital consists a waiting room, 6 consulting rooms, 2 operating theatres, operating preparation area, radiography suite, kennelling for 29 animals, isolation ward, and staff area. Students at PDSA Derby share study and amenity facilities with staff.

PDSA Nottingham

The Nottingham PDSA PetAid hospital consists 2 waiting rooms, 6 consulting rooms, 3 operating theatres, operating preparation area, radiography suite, kennelling for 30 animals, isolation ward, staff area. Students at PDSA Nottingham share study and amenity facilities with staff.

Pinfold Vets

Pinfold Vets is a first opinion small animal practice in East Leake, Leicestershire. There are 3 consulting rooms, 1 operating theatre, a digital radiography room, 8 dog and 4 cat kennels, 1 isolation place and a laboratory area. Students share study and amenity facilities with staff.

Scarsdale Veterinary Group (Markeaton: Farm and Equine)

Scarsdale is RCVS accredited as an Equine and Farm Animal General practice. The dedicated Farm and Equine unit has hospital and operating facilities for all species of farm animals. There are 6 pens for admission of adult cattle, numerous 'calf' pens for admission, and housing/isolation.

The equine facilities include 16 stables, including isolation facilities, boxes for critical care patients and foaling boxes, an operating theatre and induction suite, stocks, trot up and hard lunge areas, and indoor school. In addition, the facilities include a full range of ultrasound, digital and computerised radiography and endoscopy. The equine unit is a BEVA approved Artificial Insemination (AI) centre.

The student room comprises learning and teaching space, locker and changing facilities, kitchenette, IT facilities and workspace areas.

Scarsdale Veterinary Group (Pride Veterinary Centre)

Scarsdale's Hospital at Pride Park, Derby, is a RCVS accredited Small Animal Hospital and Emergency Services Clinic. It comprises substantial client waiting areas divided into species-related zones, 14 consultation rooms, multiple diagnostic rooms including advanced imaging, 5 operating theatres, species specific wards, isolation wards, intensive care, and a dentistry room. Other facilities include endoscopy, digital radiography, MRI and CT and an extensive laboratory. There is a substantial pharmacy, client retail, hydrotherapy and animal boarding facilities. Students have a dedicated student room with learning and teaching space, kitchenette, library, and IT facilities.

Scarsdale Veterinary Group (Shelton Lock practice)

The Shelton Lock practice is a branch practice which also hosts Blue Cross charity cases, it is accredited by the RCVS Practice Standards scheme. Facilities include 2 consulting rooms, a preparation room and operating theatre. In addition, there is a small laboratory, ultrasound and digital radiography, Kennels are available for outpatients. Students share study and amenity facilities with staff.

East Midland Zoological Society - Twycross Zoo

Twycross Zoo was established in 1963 and contains over 1,000 animals of 200 species. It occupies over 40 acres. Twycross Zoo has the largest collection of primate species in any zoo in the world.

Working out of a dedicated veterinary unit most work is carried out in animal enclosures and the necessary anaesthesia and other equipment such as ultrasound scanners and sampling equipment is taken to the patient. In the veterinary unit, there is a clinical treatment/surgical area, recovery room and pharmacy/laboratory, digital radiography, ultrasound, endoscopy. There is a small post mortem room, access to library and computers and basic laboratory facilities, with microscopes, a conference room and a seminar room, together with a dedicated student room.

Campus and area map

A campus map and map of Clinical Associates is included in the Supplementary Information pack.

Strategy and programme for upgrading and maintaining buildings and equipment

School facilities are managed through a combination of in-house process and support from central University Estates; formal oversight is by the School Technical and Facilities Manager. A reporting system exists within the School so that any staff member can report a facilities issue/defect – in addition to this, regular walk-arounds are carried out by technical and administration staff to identify and report issues or areas for improvement. The University Estates Office provides a range of professional services including repairs and maintenance via a dedicated helpdesk. An online system for reporting maintenance items or defects provides users to gain access to progress of the job reported and to receive an email on completion. Emergency requests for maintenance which occur outside of normal working hours can be made via the University 24 hour Security Control Room.

The School upgrades facilities as required, in conjunction with University Estates, with larger scale improvements as required to support strategic initiatives (for example, improvement in teaching facilities to accommodate an increase in student numbers). Where Clinical Associate facilities are expanded embedded staff provide input into design plans, these are monitored by the School through regular meetings between clinical sub-deans and Clinical Associate partners.

The School is able to secure 50% contribution on small building developments from University Estates for projects up to £500,000. The University Director of Estates meets with the Dean and Head of Operations on a half-yearly basis to review ongoing strategy and any operational issues.

Health and Safety measures and compliance

The University has a documented Health and Safety Policy, Codes of Practice and Guidance. The University Safety Office is the primary contact point with the Health and Safety Executive, The Environment Agency and the Fire Service. It also oversees all aspects of health and safety, advises in developing safety policies or procedures and monitors the implementation of safety policies (for further information see <http://www.nottingham.ac.uk/safety/safetyhandbook.htm>).

The School aspires to be a centre of academic and research excellence and seeks to ensure high standards in all areas including health and safety. The School expects, and is committed to the following principles:

- Attaining standards of health and safety which meet or exceed the requirements of the University of Nottingham
- Managers and staff/students working together to attain the highest standards of safety within the School
- Ensuring competence of staff and students through provision of information, instruction, training and adequate supervision
- Fostering a “no blame” culture to facilitate the reporting of all accidents, incidents and near misses so that effective action can be taken to rectify deficiencies and prevent reoccurrence
- Monitoring health and safety performance and using the information to inform decisions so that there is a continual improvement of health and safety performance

The School expects all staff and students to take reasonable care of themselves and others who may be affected by their actions. An outline of the School Health and Safety Management is provided in the School Staff Safety Handbook and Student Handbooks. New staff and students have an induction into the building safety and the emergency procedures of the University by the Safety Officer. Health and Safety is a standing item on the weekly Management Team agenda and Monthly Staff Meeting agenda. School safety guidance, risk assessments, Standard Operating Procedures (SOPs), and School Safety Committee minutes are available for all areas and activities through the on-line School Health and Safety Workspace and Moodle platforms. Central University safety information is available online.

Consistent with University policy, the School maintains a School Safety Committee (SSC) chaired by the Dean of School, with student representation and coordinated by the School Safety Officer (SSO). The SSC reports directly to the University Central Safety Office to ensure health and safety complies with

University and UK requirements. The role of the SSO is to create and maintain the health and safety management system on behalf of the Dean. Assisting the SSO are area specific safety officers covering; radiation safety, biological safety and administration, research and teaching area activities. In addition to specific safety committee members all Principle Investigators and teaching leads have a responsibility to ensure the work/teaching they lead complies with School, University and national requirements.

Clinical Associates

Safety management in Clinical Associate practices is under their local safety management process. All Clinical Associates have health and safety policies and procedures in place to meet national requirements. The School undertakes to advise and assist Clinical Associates with implementation of policies and procedures. Staff and students receive a detailed induction and undertake to adhere to local protocols. Clinical Associate safety is reported to the Schools Safety Committee by the Schools Safety Officer who visits the Clinical Associates sites.

EMS process

Students attend compulsory training on placement safety and animal handling. Placement providers are required to sign a Health and Safety agreement to confirm standard safety and insurance requirements. On placement students complete a personal standardised health and safety review to highlight risks. Prior to agreement for non-UK placements a standard checklist of requirements is completed and signed off by the student and School.

Facilities

The University Estates Office develops, services and manages the University estate. The Estates Service Level Agreement (SLA) defines the roles and responsibilities of the Estates Office and building occupiers. The SLA comprises a list of maintenance, servicing and safety activities and their responsibilities in relation to those activities. The Head of Operations, SSO and Estates representatives sit on the Campus Operations Group which reviews Health and Safety issues across campus. On a day to day level, the School Management Team and SSO have a duty to ensure Estates provide a safe and efficient working environment within the School.

Emergency (Fire, Ambulance, and Security)

First aid is provided by trained First Aiders within the school. The call out of emergency services is facilitated through the University security team and they will support the first aiders and coordinate the most rapid response to locations on campus. The security team also attend and manage fire and security alarms.

Incident reporting

All incidents and near misses within the School are reported and recorded online. All reported incidents are investigated by the School Safety Officer and reviewed by the Central Safety Office. Required actions and notifications are made and a summary of all incidents are reviewed at the quarterly SSC meetings. Incident reports are maintained by the central University.

Audits and checks

Annual safety audits of the School are undertaken by the University Central Safety Office. Local audits and checks are carried out at the required intervals by a combination of external contractors, University Fire Inspector, SSOs and the technical team to ensure compliance with safety policies and insurance requirements. School-managed derogated CL3 facilities are audited biannually by the University Safety Office.

Records

The SSC reviews and records audits, incident reports and other activities of the School in relation to Health and Safety, the minutes are uploaded on the workspace for accessibility for all staff and students. Training records are maintained for individual staff and research students, these are reviewed by line managers/research leaders dependent on staff activities (minimum frequency annual).

Recreational, study, locker and food facilities available to staff and students

Each student has access within the School to a dedicated Small Group Teaching Room (SGTR) for the purpose of study which they can access 24 /7 – all SGTR's are equipped with a wide range of teaching

resources and computing facilities. The James Cameron-Gifford Library located on site provides further facilities for study. The School provides locker facilities for all veterinary students and staff.

Various food facilities are available on campus for use by both staff and students including the Mulberry Tree Café, The Square Restaurant and Costcutter Convenience Store. Students also have access to a range of facilities provided through the SB Guild such as the campus bar and a kitchen facility. The School also provides vending machines which are available to both staff and students. A staff room is provided within the Veterinary School for use by both staff and postgraduate students and includes sufficient soft seating areas and facilities for the preparation and consumption of food. A further campus staff room is available in the Barn Building. Students have 24 /7 access to the Atrium with soft seating.

The Sutton Bonington Sports Centre, opened in 2008, houses a range of sporting facilities for both staff and students, including a large sports hall, squash courts, climbing wall and fitness suite together with various external sports pitches and courts. Further sporting facilities, including a 25m swimming pool are available on the University Park campus, where a £40m investment has been recently made into sports facilities. Students have the added benefit of numerous sports societies as well as a wide range of other recreational societies and facilities ran through the SB Guild such as The Music Society.

3.1.2 Premises used for theoretical, practical and supervised teaching

Data on rooms and places are shown in Appendices 3, 4 and 5.

3.1.3 Premises for animals

Dogs and cats

The School has 8 kennels for dogs and an outdoor exercise pen and also 6 separately housed cages for cats. The Schools holds an extensive register of normal and clinical case teaching animals that belong to students, staff and the local public. The School also owns 2 cats which are housed in a converted outbuilding on the school livery yard. Visiting animals are not held overnight and visit for a variety of day time non-invasive practical clinical classes including palpation, ultrasonography, ophthalmological examination etc in all years of the course.

Children's pets and exotic animals

The School has a dedicated facility to house children's pets and exotic animals, comprising chinchillas, rats, mice, gerbils, hamsters, guinea pigs, tortoises, corn snakes and bearded dragons. The animals are housed in various cages and vivariums, many with the ability to control temperature, UV lighting and humidity in two dedicated temperature controlled rooms. Each of these rooms also has automatic day/night lighting and an air extraction system. Rabbits are housed in a variety of hutches and run systems in the Clinical Building courtyard during the summer period. These animals are used for a variety of animal handling and physical examination practical classes and assessments in years 1, 2, 4 and 5.

Laboratory and research animals

An animal house and research surgery complex (Bio Support Unit (BSU)) provides access to animals and teaching associated with laboratory animals (rabbits, mice, rats etc) and facilities for holding and managing large and small research animals. BSU provides facilities for multi species animal research and teaching and services that include; facility and trial management, animal husbandry care and management, research and / or teaching assistance and surgical and procedural services. Facilities and equipment include fully equipped necropsy and surgery suites, imaging (ultrasound, DEXA, gamma scintigraphy, C-arm x-ray and CT scanning), races, weighing machines, animal transporter, and various cages and pens that can be configured in a variety of ways in order to hold different species.

Equine

The School also has sixteen 4m x 4m loose boxes and associated yard, tack and feed rooms for student's horses, 20 acres of turn-out and a 30m x 20m floodlit indoor menage, which is used by the students for equine recreation and also for teaching animal handling and husbandry. In addition there is an EziWeigh equine weigh scale which is used as part of equine teaching. Students pay a charge for DIY livery plus food, in return there is an expectation that their animals are used for teaching of palpation, lameness evaluation and physical examination of the normal animal in Years 1, 2, 4 and 5. In addition

the school also owns 2 horses which are used extensively for handling and non-invasive examination purposes.

Smallholding

A purpose-built smallholding contains accommodation pens for cattle, sheep and pigs, an examination area and static crush and student changing and wash room facilities. Outside the unit on hard standing there are further teaching areas and a sheep handling system with race and shedding gates. There is room in the smallholding for animal handling classes to be held. Other facilities include feed and straw storage. Adjacent to the smallholding is a large multipurpose teaching facility used for the examination of small mammals/exotics as well as housing a variety of farm animal related pieces of equipment.

Chickens are housed in a securely fenced coop. The School has an apiary comprising five hives.

Farm

The 1,000 acre University Farm comprises several animal facilities. Facilities include various barns, sheep polypens each holding up to 100 sheep, and 2 environmentally controlled commercial pig fattening houses with facilities for pig handling and weighing.

The Dairy Unit comprises 220 Holstein/Friesian cows and 290 followers. Cows and bulling heifers are housed in sawdust-bedded cubicles with straw bedded pens for weaned and milk fed calves and dry cows. There is storage for silage, concentrate, sawdust and straw. Cows are milked through 4 Lely Astronaut A3 robotic units. The facility also contains an automatic individual feeding system for one quarter of the herd which allows nutritional research to be conducted. The Unit is also a Home Office designated research facility with handling and laboratory facilities plus reception room, seminar room, a covered handling system with holding pen, race and crush. Other equipment at the Dairy Unit includes fully hydraulic mobile cattle foot trimming crush, hurdles and gates which can be configured to create a variety of additional handling facilities as required. We are currently undertaking a £6million expansion at the Dairy Unit which will result in an increase in herd size of 50%. The new unit will provide state-of-the-art teaching and research facilities and will include a variety of technology-based sensor equipment.

3.1.4 Premises for clinics and hospitals

The facilities available at the Schools Clinical Associates are detailed previously in section 3.1.1. The facilities are maintained by Clinical Associates, for example Pride facilities are inspected monthly by the practice Manager and any necessary maintenance scheduled. The currency of standards is also monitored by Rotation Leaders and the Clinical Director, in conjunction with the Technical and Facilities Manager.

Appendix 6 shows premises available for clinics and hospitalisation.

3.1.5 Diagnostic Laboratories and Clinical Support Services

Diagnostic Laboratories

Across the School and its Clinical Associates facilities are available for:

- Necropsy
- Histopathology
- Histology
- Microbiology
- Nutritional analysis
- Clinical biochemistry
- Haematology
- Cytology
- Immunohistochemistry
- Parasitology
- Serology
- Endocrinology

Necropsy Examinations

The School Pathology unit is capable of handling a variety of companion, livestock, exotic, zoo and wildlife species. The post mortem room comprises two large rooms with different sized tables (five for smaller to medium sized animals up to 250kg, one large hydraulic table for horses or other large animals up to 1000kg), a large, walk-in cold storage room, several freezers, and all the usual equipment needed for performing full post-mortem examinations (band-saw, oscillating saw, knives, scrubs, wellingtons, etc.). Integrated within the post mortem room is a separate facility for poultry necropsies provided by Minster (Poultry Health Services). A seminar room with a 10 headed microscope with live projection onto a wide screen monitor for teaching purposes of cytological (clinical pathology) and histopathological (diagnostic pathology) sample analysis. A histology laboratory contains all the basic instruments for routinely processing slides for histological examination.

Gross teaching material can be stored chilled, frozen or in Klotz solution in the cold room, and general cadaver disposal is via skips that are removed by a licensed commercial service provider. A local 'knacker' provides a service for collection of equine carcasses, delivered to the post mortem room and final removal of waste material. Other material is transported between Clinical Associate sites and the School by the School technicians with other material transported to the post mortem room by clients. Material is securely stored in clinical waste bags and transported in a School vehicle licensed for transport of this type of material. SOPs are available in the Pathology section of the Schools safety workspace. Further necropsy facilities are available at Twycross Zoo and Oakham (equine), while students may also undertake brief or partial necropsies on farms as part of the farm animal rotations, as this is often the case in private practice.

Histopathological Examination

Recovery of tissue from necropsy cases is carried out within the post mortem room. Histological processing and specialised staining is carried out by a School technician. Specialised histochemical and immunocytochemical staining techniques are available through third parties as necessary. Stained microscope slides are returned for examination by pathologists. Supervised reports are generated based on gross findings by rotation students. Transmission and scanning electron microscopy, microCT and MRI are available on an adhoc basis as required, on the Sutton Bonington Campus or at University Park. Extensive facilities for processing histology, histochemical and immunohistochemical stains also exist within the School.

In addition, Scarsdale has a small cytology facility and there is a significant throughput of cytological cases at Dick White Referrals and this also forms a focal point of the clinical rotation teaching of this discipline.

Microbiology Diagnosis

Within the School there are Containment Level 2 microbiology teaching facilities, including associated equipment. Diagnostic bacteriology, mycology and parasitological investigations arising from post mortem examinations are carried out using laboratory facilities at Scarsdale Pride Veterinary Centre or other private diagnostic labs like IDEXX or CTDS. Virology investigations for companion animal diseases use appropriate third party specialist centres like IDEXX or CTDS. (Diagnostic microbiology laboratories exist at Pride Veterinary Hospital with facilities including bacteriology, microscopy, microbial culture, etc.)

Clinical Pathology

A clinical chemistry laboratory exists within the School; it is primarily used for the assessment of the nutritional status of farm animals. It has links with the Clinical Pathology Laboratory at Scarsdale Veterinary Group and with Division of Environmental Sciences at University Park.

Clinical pathology is included as part of the clinical rotations at locations which possess clinical pathology laboratories: Oakham, Scarsdale, Pride and Dick White Referrals. Equipment at Dick White Referrals includes: an Olympus A400 wet chemistry analyzer, an Advia AD200 haematology analyzer and an Immulite 2000 for endocrine testing plus coagulation testing, blood gas analyser, various snap-ELISAs, blood typing etc. There are 3 qualified lab technicians plus a Clinical Pathologist Diplomate and a resident staffing the lab. At Pride, there is a Randox Daytona, clinical chemistry analyser, IDEXX Procyte Haematology analyser, a TOSOH immunoassay analyser and a teaching video screen microscopes and 3 dedicated laboratory technicians. Students also have access to multi-head high quality teaching

microscope in the necropsy facility and also LCD screen microscopes in 2 student learning rooms (Year 5 hub and the Pride Student seminar room).

During the Equine Skills rotation, students spend one-day at the Pride lab under the supervision of a School ECVCP Diplomate. During the Dick White rotation students has the opportunity to interact with 2 DipECVCP/FRCPath holders and/or clinical pathology residents. During the Elective Specialist EMS rotation students spend one-day at the Pride lab.

Central clinical support services

Clinical Associates host facilities and equipment for clinical support:

Bransby

Digital radiography, ultrasonography and endoscopy

Defence Animal Centre

Digital radiography facility, ultrasound machines including colour Doppler, anaesthetic machines and monitoring equipment, an ECG machine and endoscope facility

Dick White Referrals

Imaging suite, digital radiography, MRI, fluoroscopy, ECG, endoscopy, diagnostic ultrasound, colour Doppler ultrasound, extensive anaesthetic monitoring

Oakham

Computerised and digital radiography system, several ultrasound machines MRI, Bartech Scintigraphy, 4 anaesthetic machines, ECG machines, endoscopes, blood pressure monitors and blood gas monitoring machines

PDSA Derby

Digital radiography facility, ultrasound machines, several anaesthetic machines

PDSA Nottingham

Digital radiography facility, ultrasound machines including colour Doppler ultrasound, several anaesthetic machines, multiparameter anaesthetic monitor and several pulse oximeters, ECG machines and flexible endoscopy facilities and microscopes

Pinfold

Diagnostic imaging includes radiography and ultrasound, other equipment includes ECG, Doppler and oscillometric BP machines and 2 anaesthetic machines

Scarsdale Farm Animal and Equine

Equipment includes anaesthetic machines, several ultrasound machines, and digital radiography

Scarsdale Pride Veterinary Hospital

Digital radiography, fluoroscopy, ultrasound, CT, MRI, ECG, blood pressure monitors, endoscopes, extensive anaesthetic equipment

Twycross Zoo

Digital radiography facility, including portable radiography, ultrasound machines, anaesthetic machines, ECG machines, blood pressure monitor, flexible endoscopes, pulse oximeter, microscopes, a digital stethoscope, laser thermometers, and a thermal imaging camera

3.1.6 Slaughterhouse Facilities

The School has access to the on-site fully licensed abattoir for teaching. Students experience the full slaughter and inspection process within this unit during the final year VPH rotation. In addition, in the final year rotation they review the butchering of carcasses. The abattoir is fully licensed for slaughtering of pigs, sheep and cattle, and has all the facilities which one would expect to find in a commercial slaughterhouse. There is a small lairage with a number of pens for holding animals from different units. There is a stunning facility for sheep and pigs and a stunning pen for cattle, a scalding tank, an

overhead line, slaughter floor and gut room. There are two large cold rooms, and a substantial cutting room and cold store. The facility has always been upgraded as necessary to be compliant with the changing regulations which govern slaughterhouse structure and function and is licensed to produce meat for human consumption. Equipment in the abattoir also includes guns and stunners for humane slaughter, hoists, winches, butchery equipment, and various other equipment (saws, mincers, grinders etc). In the final year VPH rotation, students also have day-long visits to a high throughput local red meat abattoir and a poultry processing plant. These are complementary to the low throughput facility based at the Campus.

The School also currently utilises a number of local slaughterhouses (with 15-80 miles) to provide various cadavers and animal material for teaching in the VPH and other modules.

In the final year veterinary public health rotation, students spend a day at Melton Mowbray Animal market – concentrating on transport and responsibilities relating to animal inspection and welfare within the market. A debrief is run at the School to discuss animal health and welfare, as well as biosecurity aspects related to the visit to the animal market. Further information on teaching in abattoirs is detailed in section 9.1.10.

3.1.7 Foodstuff processing unit

During the final year Veterinary Public Health rotation students all spend a day visiting a dairy producer, either a dairy farm that makes cheese from unpasteurised milk, or a dairy cooperative producing a Protected Designation of Origin (PDO) cheese. The focus of this visit is the monitoring and inspection of these businesses and Hazard Analysis Critical Control Points (HACCP) analysis. The students identify and address the critical control points in these premises. Further information on teaching in food processing units is detailed in section 9.1.10.

3.1.8 Waste management

Clinical waste includes animal carcasses, blood and tissue, bedding from animals, soiled dressings and swabs etc and other laboratory plastic clinical waste such as materials from cases, sharps etc. This waste is disposed of via licensed contractors managed through by the Estates Department.

Infected clinical waste is disposed of on site or by a licensed contractor as per the guidelines laid out by the health and safety executive. Infected glassware is autoclaved using certified autoclaves in-house before being washed and sterilised.

Hazardous chemicals are disposed of as detailed in COSHH assessments. Bulk chemical disposal is carried out via the University Safety Office by a licensed contractor. Radioactive material is disposed of as appropriate depending on the radioactive source.

Manure from the livery yard and associated grazing is moved to the designated muck heap for regular collection by the University Farm. Waste (excrement) from the kennel facilities is collected in faeces bags and disposed of as described under clinical waste (above). Vet bedding is cleaned in house using the clinical building washing machines. Any areas contaminated by faeces or urine are cleaned and disinfected.

At all Clinical Associates, external contractors are employed to collect cadavers and for disposing of clinical waste and sharps.

3.1.9 Future changes

A major campus development has taken place through the establishment of a £4.2M, 200 seat teaching laboratory and associated preparation areas – this development has freed up laboratory space within the School which has been used to create a larger Clinical Skills Centre along with a dedicated Surgical Skills Centre – this in turn has created the opportunity to increase the number of clinical SGTR's from 12 to 13 – all of these developments are planned to be completed by the end of September 2017.

Future developments include a plan to extend to Clinical Skills Laboratory and kennel facilities – this is currently at University planning stage and subject to planning permission the aim is for this to be

completed by December 2018. Plans to improve student facilities at our Clinical Associate practices include the provision of 6 student bedrooms at Oakham Veterinary Hospital and a dedicated student study space at the Defence Animal Centre – the aim is for these to be completed by February 2018 and December 2017 respectively. The development at Oakham will also enhance clinical facilities with a CT and new diagnostic rooms.

The School will expand the Pathology unit in early in 2018 into space vacated by APHA. The new laboratories will be used to consolidate histopathology on one site under our management, enabling the development of a more comprehensive diagnostic and research service to the School, and facilitate expansion of our research collaborations across the University and region. These physical developments are in tandem with the introduction of a new client management system, enabling more efficient monitoring, reporting and charging, and a new digital pathology system, mainly for research, particularly oncology.

The School is seeking to redevelop Containment Level 2 and 3 laboratories, recently vacated by APHA. These facilities will initially support the EU-funded research into bluetongue virus (BTV), but will subsequently support a wide range of research in partnership across the University into the control of key viral and bacterial pathogens. Current Containment Level 3 research is undertaken in School of Biosciences laboratories.

With the UK government and industry, the University has recently co-funded a £5.7M redevelopment of its Dairy Centre, increasing the size of the unit and substantially upgrading and extending its facilities. The new facility is due to be commissioned at the end of 2017.

3.2 COMMENTS

The teaching facilities in the School have been, and continue to be, expanded to support the increase in student numbers, e.g. dissection room, further increases to numbers of small group teaching rooms, however, there are only 2 lecture theatres available that will accommodate the increased class size. Timetabling currently ensures access as required but the School continues to make representation to the University to increase lecture hall facilities. In addition, staff office and research space is constrained and the School has suggested that School of Biosciences staff located in the Veterinary School buildings could be found accommodation in their home School.

As a result of offering new options for rotation tracks from 2018, the School is able to accommodate increased student numbers at existing Clinical Associates, with the exception of Farm rotations, where an additional local Clinical Associate will be utilised from 2018; to facilitate improved choice of tracks a further Small Animal charity Clinical Associate (RSPCA Strinesdale, Manchester) will be utilised. Clinical Associate facilities provide an exceptional clinical experience for students, although there are plans to improve support facilities.

There is a need for further CL3 laboratory facilities on campus (see section 3.1.9).

3.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 3 Premises available for lecturing

School							
1 (A30)	2 (A29)	3 (A10)	4 (A14)	5 (LR9)	6 (LR2)	7 (LR3)	8 (LR4)
400	160	40	30	217	118	86	46
9 (LR11)	10 (SR5)	11 (SR6)	12 (SR7)	13 (SR8)	14 (B12)	15 (B13)	16 (Cwood)
65	18	24	26	16	66	36	120
17 (A28)	18 (B10)	19 (B08)	20 (B05)	21 (B09)	22 (A07)	23 (B01)	
30	12	14	23	26	120	120	
DAC		DWR	Oakham	Scarsdale FA & EQ	Scarsdale Pride		
1	2	1	1	1	1	2	3
100	40	40	40	30	60	20	8
Twycross							
1	2	3					
80	25	10					

Number of places in School lecture halls: 1813

Number of places in Clinical Associate lecture halls: 453

Appendix 4 Premises available for group work

School							
1 (A06)	2 (A07)	3 (A08)	4 (A09)	5 (A16)	6 (A17)	7 (A18)	8 (A19)
12	12	12	12	12	12	12	12
9 (A20)	10 (A21)	11 (A22)	12 (A62)	13 (A63)	14 (A64)	15 (A65)	16 (A66)
12	12	12	12	12	12	12	12
17 (A67)	18 (A68)	19 (A70)	20 (A71)	21 (A72)	22 (A73)	23 (A74)	24 (A75)
12	12	12	12	12	12	12	12
24 (A08)	25 (Library 1)	26 (Library 2)	27 (Pathology)	28 (A22b)	29 (A22c)	30 (A13)	
12	30	10	6	12	12	12	
Bransby	DAC		Oakham	Scarsdale FA &EQ		Scarsdale Pride	Twycross Zoo
1	1	2	1	1	2	1	1
12	12	6	18	10	6	8	5

Number of places in School rooms for group work: 382

Number of places in Clinical Associate rooms for group work: 77

Appendix 5 Premises available for practical work

School							
1 (A42)	2 (A43)	3 (A49)	4 (B47)	5 (B63)	6 (B66)	7 (A05)	8 (A06)
15	25	50	10	10	8	35	35
9 (A12b)	10 (A59)	11 (A61)	12 (A52)	13 (A25)	14 (A27)	15 (A23)	16 (Superlab)
8	40	15	160	30	10	12	200
17 (Path 1)	18 (Path 2)	19 (A45)	20 (B62)	21 (B59)	22 (B52)	23 (C05)	
40	15	6	6	10	10	15	
Bransby	DAC	DWR	Oakham	Scarsdale Pride	Twycross Zoo		
1	1	1	1	1	1		
4	6	2	6	4	2		

Number of places in School rooms for group work: 765

Number of places in Clinical Associate rooms for group work: 77

Appendix 6 Places available for hospitalisation and isolation

		Bransby	DAC	DWR	Oakham	PDSA Derby	PDSA Notts	Pinfold	Scarsdale FA & EQ	Scarsdale Pride	Twycross Zoo
Hospitalisation	Cattle								2		
	Horses	24	21		24				16		
	Small ruminants		1						4		
	Pigs								2		
	Dogs		13	85	33	21	21	8		68	
	Cats			10	14	8	14	4		34	
	Other species								2	18	Various
Isolation	Small animals		45	4	4	5	7	1		21	Various
	Farm animals and horses	2	2		2				1	0	

Notes:

- Defence Animal Centre: Stabling is also available for 140 horses and 200 dogs in total
- Scarsdale Pride: 10 rabbit/small mammal, 5 vivaria and 3 parrot cages for hospitalisation
- Twycross Zoo: Hospitalisation and isolation facilities are in different enclosures according to species.



4 ANIMAL RESOURCES

4 ANIMAL RESOURCES

4.1 FACTUAL INFORMATION

4.1.1 Anatomy

Fresh and preserved complete and part cadavers of the major domestic species, are used for practical teaching of anatomy in Years 1 and 2. Specifically, students work in groups of 3 or 4 to dissect the body regions of the dog relevant to the systems studied in specific modules throughout Years 1 and 2. These dissections are supplemented with material from other species as required, including human. Further use of cadavers is made in the teaching of surgical techniques in Years 3, 4 and 5.

Previously the School sourced dog cadavers from a supplier in the USA, Carolina Biological Supply, however, the supplier is no longer able to supply the volume required, and to mitigate this we source dogs in the UK and our technical staff have been trained in preservation techniques. Sourcing fresh companion animal cadavers remains a challenge, although the volume is adequate.

Entire skeletons of each domestic species and a variety of high quality plastinated specimens, illustrative models and other learning materials are available in the museum, clinical building and dissection room. Each small group teaching room holds a skeleton of a dog and / or a cat, and various models. The School Museum also holds skeletons of less common and exotic species. This material is either bought or prepared by School technicians.

Live animals are normally used during anatomical classes and comprise dogs, cats, horses and exotic animals owned by the School, staff and students, together with cattle, sheep, pigs and chickens which form the Schools smallholding and also cattle from the Sutton Bonington Dairy Unit. Further access is provided to live dogs (approximately 200) and horses (approximately 250) at the Defence Animal Centre (DAC), allowing students to practice live anatomy. Students also gain access to equine cadaver material from the DAC and exotic cadaver material from Twycross Zoo.

4.1.2 Pathology

Appendix 7 shows the number of necropsies over the last 5 years. The data is compiled from the School Pathology Service and from Clinical Associates

There is substantial use of exposure to necropsy material throughout the Year 3 and 4 modules in which pathology teaching is embedded; here materials are harvested and presented to students rather than being full necropsy examinations. This additional necropsy material derives from the formal necropsies as well as local abattoirs and slaughterhouses particularly in relation to the teaching of public health and food hygiene.

The average number of post-mortems undertaken by a student would be around 10 per student based on the ratio calculated (Appendix 7), however students on the pathology rotation would work in small groups, and so assuming an equal spread throughout the year an individual student is likely to undertake 6 food producing animal post mortems, 1 horse, 30 poultry/rabbits, 12 dogs and cats, and 1 exotic.

4.1.3 Animal handling / husbandry

Students have significant access to animals and animal materials throughout all 5 years of the course. All major species of farmed animals and companion animals are available on Campus. In addition, contractual links have been made with local organisations and Clinical Associates to ensure a wide availability of a variety of animals for teaching basic sciences, animal husbandry and clinical subjects.

Live animals are used in a variety of classes during years 1 to 4 and resources comprise:

- School, staff and student owned animals (horses, dogs, cats, rabbits, birds, hamsters, lizards, tortoises, fish, etc) are used for a wide variety of classes (e.g. ophthalmology, cardiology, animal handling). The School has a register of normal and clinical case teaching animals that belong to students, staff and the local public that are available to be used in teaching. Students are able to

livery their horses at the School, and the School holds its own collection of children's pets and common exotic species

- All the major farmed species are available for teaching animal health and welfare on site. The 1000-acre University farm comprises dairy cows and sheep. The School has a dedicated smallholding comprising cows, pigs, sheep, chickens and bees. All Year 1 students (in groups of 4 or 5) are required to care for the animals for 2 weeks each
- Visits to the Guide Dogs Breeding Centre for basic animal handling, dog care, dog behaviour, drug administration and reproduction
- Horses (250) and dogs (200) are provided at the Defence Animal Centre, Melton Mowbray, and are used to teach animal handling and animal health and welfare, including farriery
- Laboratory animals are provided on site for handling and animal health and welfare teaching
- Visits to local farms e.g. Underhill Farm, Stanford-on-Soar, for bovine rectal palpation
- Clients of local practitioners visit with animals for practical and client communication sessions (e.g. endocrine disorders)
- Poultry are available at Anslow Park Broiler Unit for husbandry and management
- Ante-mortem inspection to butchering of pigs at the School abattoir and visits to a number of local abattoirs (red and white meat)

In addition, students will see a range of production animals during the 38 weeks of Extra Mural Studies throughout their course.

4.1.4 Food hygiene and Public Health

Students gain practical teaching in food hygiene, inspection and technology in Year 3 during the Veterinary Public Health module and on Year 5 Veterinary Public Health rotation.

Students gain experience in a variety of situations including in the on-site abattoir, where they will be shown the complete process of slaughter from ante mortem inspection to post mortem and carcass examination. They also visit a number of local abattoirs (red and white meat). Each group of rotation students experiences approximately 100 red meat producing animals and over 15,000 birds being slaughtered at external abattoir visits in Year 5. Further information of the overall veterinary public health teaching is in section 9.1.10. Practical work in Year 3 includes ante mortem inspection, post mortem examination of fresh materials from ruminants, pigs and poultry collected from abattoirs, practical sessions in food microbiology to augment their lectures and small group learning in zoonoses and notifiable diseases and training in proper captive bolt guns use with cadaver specimens for the purpose of emergency/on-farm slaughter.

In Year 5, students spend two full days in the on-site abattoir, where the whole process of slaughter from ante-mortem inspection to butchering is reinforced. The School ensures that at least 2 pigs are procured for teaching purpose at slaughter every rotation; in addition Year 5 students are exposed to a variety of live animals at Melton Market and other abattoirs, and to bees at the School. The opportunities extensively reinforce their learning in veterinary public health including animal welfare, disease control and surveillance and residues control. Year 5 students also gain experience with raw meat, meat products, honey (and bee husbandry) and dairy products sourced from the School smallholding, University Farm, slaughterhouses, farms or food shops.

4.1.5 Organisation of clinical services

As detailed in section 1.1.5 the School has formal contractual relationships with a small number of veterinary practices and organisations that facilitates access to extensive caseload for year 5 clinical teaching.

Intra Mural rotations are planned overall and assigned by the Clinical Director, supported by a senior administrator. The Clinical Director is aided by 3 species leads (Farm, Small Animal and Equine) and by Rotation Leaders, who have responsibility for developing and overseeing the delivery of learning outcomes and the overall organisation and student experience for each rotation, including evaluation of caseload.

The rotation planning process for year 5 begins for students in Year 3, where students can define preferred tracks, and their colleagues with whom they would like to undertake rotations. Final year

rotation groups are always 6 students or less. For most rotations students are taught by School or Clinical Associate clinicians in groups of 3 or less, in many cases students are taught on a 1:1 basis providing an excellent student clinical learning experience.

Year 5 students on rotation at Clinical Associates and at the School, use a bespoke Microsoft Sharepoint system, termed 'Competency Assessment Record' (CAR) to manage rotations. The CAR system is the main interface through which students review the practical skills on which they are summatively assessed through DOPS on rotations (see section 10.1.2). CAR is also one of the many ways in which students communicate with the School and each other, for example providing feedback from rotation leaders on performance to students and feedback from students about their experience whilst on rotation. In addition, there are areas for sharing information on the rotations between fellow students as well as areas through which key announcements may be made by the School that are pertinent to their rotation. Staff are able to flag areas of concern or weakness identified for a student on their rotation, so that these can be rolled forward and reviewed by subsequent Rotation Leaders; this information is shared with the student. Furthermore, the system allows for declaration and reporting of relevant medical conditions and emergency contact details so that clinical staff have access to all relevant information for a student.

The School and its Clinical Associate practices employ significant numbers of American, European and RCVS specialists (32 at the School and, for example, 33 at Dick White Referrals). School Specialist staff deliver across the clinically integrated curriculum, with predominant focus on year 5. In the final year students are exposed to veterinary generalist staff and subject-matter experts as follows:

- Pride primary care – experienced primary care clinicians
- Pride referral – exposure to full range of specialist services staffed by 4 RCVS, European or American Board-certified SVMS staff (DipECVIM-CA, DSAM, DVC, DipECVAA) and 13 practice staff
- PDSA – experienced primary care clinicians, ex-PDSA employees.
- Oakham primary care - experienced primary care clinicians
- Dick White Referrals – exposure to full range of specialist services staffed by European or American Board-certified diplomats (33 DWR staff)
- Twycross Zoo – student activities are supervised by the Vet Services Manager who is a diplomat of the European College of Zoological Medicine
- Oakham Equine Hospital and Ambulatory (2x2weeks) – 3 Board-certified SVMS staff oversee the rotations (DACVIM, Dip ACVIM-LAIM, DipECVS)
- Defence Animal Centre – 2 Diploma-holding members of staff are involved in this rotation (DipACVIM, DipACVECC, DipECEIM)
- Equine skills rotation – 6 Diploma-holding school staff are involved in delivering this rotation (DipACVIM, DipACVECC, DipECVCP, DipECVS, DipECEIM, DipACT, DipECAR, DipECVAA)
- Farm Animal practice – The rotation is supervised by a European Diplomat. Along with the experienced primary care clinicians, farm visits are conducted with two European College Residents who under the supervision of RCVS and European diplomats in Cattle Health and Production, 7 Diplomats in total are involved with this rotation (DCHP, DipECRSHM, DipABVP, DipECBHM)
- Farm skills – 5 Diploma holding staff are involved in delivering this rotation (DCHP, DipECBHM, DipECRSHM)
- Herd health – supervised and taught by 3 diploma holding School staff (DCHP, DipECBHM)
- Pathology – supervised by 3 Diploma holding School staff, all DipECVP
- Veterinary Public Health – A Diploma holding member of staff is involved in the rotation (DipECVPH), with a further 2 nearing the end of their Diploma studies

Appendix 8 describes the supervision and monitoring of students and the contractual arrangements at each Clinical Associate. At Clinical Associates, teaching is predominantly overseen and monitored by School personnel; exceptions are DWR overseen by staff with Honorary University contracts, Scarsdale Farm by staff and School Residents and Twycross Zoo by DVetMed students; both are visited by the Rotation Leader or Clinical Director at least fortnightly. Assessment of DOPS is undertaken by School staff, Residents and trained Clinical Associate staff. Students on rotation undertake case management and have full access to School and Clinical Associate subject Specialists as appropriate to the rotation. Safety management in Clinical Associate practices is under their local safety management process and is detailed in section 3.1.1.

Appropriate training is provided to staff at all levels in the Clinical Associate Institutions. In association with the University Professional Development Unit the School has developed a training programme for those staff at Clinical Associates who have student contact. The course takes core components from the

established and accredited Intensive Learning and Teaching Programme (ILTP) run by Professional Development and intended for those educators relatively new to teaching. The course is run as necessary.

All Clinical Associates have high standard facilities accredited by RCVS Practice Standards, with the exception of Bransby Horses, PDSA, and Defence Animal Centre (as these are charity and military establishments) and Dick White Referrals (who believe that there is not an appropriate level which recognises the high quality of clinical facilities and expertise). All Clinical Associates have appropriate learning space and facilities, for example all have mini-libraries with key texts, wifi coverage with linkage to University IT systems.

Working relationships with Clinical Associates are good, and as School staff are embedded within Clinical Associates, there is ongoing dialogue regarding all aspects of rotation teaching and support, however there are formal review meetings held yearly with Clinical Associates, and student feedback (which is compulsory) is reviewed at the end of every 2 week rotation and acted on as necessary by the Rotation Leader and Clinical Director. There is detailed systematic review and reflection on the effectiveness of the clinical educational experience, which includes normal TLA Committee quality assurance and control mechanisms such as module review process and graduate outcomes analysis (see section 9.1.6). In addition there are monthly meetings of Clinical Sub-Deans and twice-yearly Clinicians Meetings to review common themes and issues across rotations.

4.1.6 Caseload

Caseload data are compiled across Clinical Associates and are shown in Appendices 9, 10 and 11⁶. There have been no major changes in the student's involvement in cases since the last visitation.

There has been no material difference with previously reported numbers in relation to production animals, with the exception that there the number of dairy farms visited for routine work has declined slightly (largely due to economic pressure on the UK industry) but that provision of herd health consultancy advice has increased. Other farm species caseload remains low with year to year variation, however it is currently adequate for teaching purposes.

Equine hospital caseload has increased predominantly due to recent increased patient visit caseload through the Army, relating to cases now being managed in-house in association with University clinicians. These include herd health programmes involving the Defence Animal Centre, Kings Troop Royal Horse Artillery, and Household Cavalry Mounted Regiment.

There is a significant and increasing canine and feline caseload, particularly due to growth in the caseload at Pride Veterinary Hospital and the addition of Blue Cross charity work undertaken at Shelton Lock. Comparison with the prior reported data, reported numbers show a drop, however the data reported in this SER show those with student involvement rather than the total.

Appendices 8 and 12 show details of Clinical Associate placements, including contractual obligations.

The Pathology team has developed a pathology service, charged at commercial rates to local veterinary practices and others (e.g. Police, RSPCA) and undertakes cases free for Clinical Associates to ensure that small animal and equine caseload requirements are met. There is also a regular but small number of farm animals coming from the sheep flocks owned by the University and few teaching cases from our Scarsdale Farm partner. When the School was established the Animal and Plant Health Agency (APHA) had a large caseload of farm animals, seen by our students. National contraction (and closure on campus) of the APHA has seen a rebalancing of caseload numbers. The Minster practice has employed a local APHA Veterinary investigation officer to cover farm animal cases which avoided a stark decrease in farm animal cases on closure of the APHA. We now expect a constant, regular exposure in every pathology rotation with small animal, equine, poultry and farm animal caseload and occasionally exotics and wildlife, but will review this annually.

Economic pressures on UK livestock sectors (especially dairy) have contributed to a reduction in farm animal caseload. In order to secure teaching for the future in a milk pricing climate which is likely to remain volatile, discussions are well advanced with an additional Clinical Associate farm animal

⁶ Neither Pinfold nor Bransby data is included in the tables as these are new rotations for 2017/18.

practice. In the short to medium term, UK milk prices are recovering and the industry is likely to be entering a period of increased price where it is anticipated that caseload will increase. Meanwhile, demand for herd health services has remained robust, and the increased herd caseload required for increased student numbers has proved easy to recruit.

There is a large caseload at Pride Veterinary Centre and the referral service has grown such that we have been able to switch the compulsory referral rotation previously held at Dick White Referrals (DWR) to Pride, making the DWR rotation now a choice between referral (DWR) or first opinion (Oakham). This provides a number of benefits, students who are not intending a career in small animal medicine can now undertake a first opinion rotation at nearby Oakham; students who have a requirement to stay local to the School no longer need to travel to DWR.

To ensure the student experience is not adversely affected with increased year and rotation group sizes, additional Clinical Associates have been recruited at Pinfold and Bransby Horses to facilitate excellent exposure to clinical cases. Further relationships are being developed to increase farm animal caseload and small animal caseload (RSPCA Strinesdale, Manchester).

Our teaching strategy is to ensure that students meet RCVS Day 1 competences through exposure to an appropriate caseload. We feel that our community-based teaching model provides an excellent balance between first opinion and referral cases, with students being involved in the clinical management of both types of cases.

4.1.7 Development of students' skills

Students are fully engaged in all aspects of the healthcare management of all species, under the supervision of a qualified veterinary surgeon in order to develop Day 1 competences. They will normally undertake rounds, and have considerable responsibility in all aspects of case investigation, management, treatment, care of patients and interaction with clients including:

- Pride / Shelton Lock Primary Care – first opinion consulting and medicine and first opinion anaesthesia and surgeries and investigations (blood sampling, radiography, ultrasound) including admission and discharging of patients, managing clinical records and in-patient care. The practice has isolation procedures and a separate facility for chemotherapy and radioactive iodine
- Pride Referral – consulting, clinical reasoning, case management planning, assisting with case investigation, communicating with owners and referring veterinary surgeons, writing report letters to referring veterinary surgeons under supervision, in-patient care. Includes verbal case presentation at twice daily rounds of cases for which the student is responsible and a single complete case report on last day of medicine week. The practice has isolation procedures and a separate facility for chemotherapy and radioactive iodine treatment of hyperthyroid cats. Regular morbidity and mortality rounds take place with results published in the hospital
- PDSA / Pinfold charity / shelter Small Animal – first opinion consulting and first opinion surgeries and investigations (blood sampling, radiography, ultrasound) including admission and discharging of patients in a charity clinic
- Dick White Referral – second opinion consulting and investigations (e.g. advanced imaging), in-patient care, assisting with second opinion medicine and surgery, clinical reasoning, case management planning. One week with referral medicine, one week with referral anaesthesia and surgery
- Pride Out of Hours (EMS) – out of hours (emergency) consulting, emergency triage, critical care and case management, in-patient care, communicating with clients
- Oakham Small Animal Primary Care – first opinion consulting and first opinion surgeries and investigations (blood sampling, radiography, ultrasound, MRI) including admission and discharging of patients, managing client records, in-patient care
- Twycross Zoo - Students are involved in all aspects of veterinary care of the zoo's collection, including husbandry and nutritional assessments, anaesthesia, case investigation and management and post-mortems
- Oakham Equine Hospital and Ambulatory– first and second opinion consulting and investigations (blood sampling, radiography, ultrasound, MRI) including admission and discharging of patients, in-patient care. Includes case presentation at twice daily rounds. The practice has isolation procedures and a separate facility for gamma scintigraphy
- Defence Animal Centre – first and second opinion consulting and investigations (blood sampling, radiography, ultrasound) including admission and discharging of patients, in-patient care, work-up of all cases

- Equine skills – first opinion consulting and investigations (blood sampling, radiography, ultrasound), in-patient care
- Scarsdale Farm Animal Practice – all aspects of busy ambulatory farm practice, history taking, clinical assessment of stock, managing clinical records, routine procedures including surgery, plan generation and communication of plan to farmer. Rounds at the end of the two weeks with all farm rotation groups
- Farm skills – mostly farm skills acquisition/refinement and coverage of minor farm species. Rounds at the end of the two weeks with all farm rotation groups
- Herd health – data driven population medicine. Visit to farm, discussion of problem and assessment of stock with owner, data review and plan generation – delivery of plan to stock owner at the end of the rotation. Rounds at the end of the two weeks with all farm rotation groups
- Veterinary Public Health - abattoir visits including ante-mortem inspection and passport reviews, and Food Business Operator (FBO) visits – discussion with FBO around raw materials, manufacture, relevant legislation, quality control and pathogen surveillance
- Pathology – performing gross necropsies, contacting submitting veterinary surgeon with initial verbal report, completion of formal written report under supervision. Elements of pathogen surveillance are also covered

As discussed the Intra-Mural rotations are delivered in Clinical Associate practices. These are private veterinary practices and as such students are exposed to veterinary business, client communication (including complaint-handling), ethics and professional practice throughout their time on clinical rotation.

Our clinical staff, most of whom teach across the curriculum, are well positioned to utilise consented case material from our clinics in developing material and resources available to all students. Case material is shared with rotation groups at clinical rounds, clinical case examples are placed on year 5 discussion pages, and also placed on the forum of relevant body system modules for students in earlier years. Clinical relevance cases are also a good example of this where cases seen in clinic become the teaching material in a problem based case. Additionally, we have numerous on-line case-based Xerte Toolkits which utilise case material to assist in the development of clinical reasoning skills. In final year, we have a number of teaching initiatives which allow us to maximise value of cases such as species based clinical rounds and online case discussions in the Virtual Learning Environment (VLE).

Students (particularly during year 4) will often undertake anatomy/pathology based teaching scenarios using specimens e.g. whole organs, that have been preserved from post mortem cases that were accepted to and reported upon by the School's Pathology Service Unit, along with histological slides from those consented cases.

On occasion, Clinical Associates submit consented cadaver material of anatomical/pathological interest to the anatomy lab, where the specimen along with anonymised case notes, radiographs, etc can be used during anatomy practicals. Specimens of osteological interest, from previous anatomy practicals or clinical cases, are also prepared to be handled in a dry state for use in small group teaching, clinical skills practicals, or placed at Clinical Associates for use during year 5 rotations.

As discussed above, in the lecture-free final year students spend 2 weeks in a total of 13 Intra-Mural Rotations during which they are fully engaged in all aspects of the healthcare management of all species in groups of 6 or less. The educational experience is delivered by School staff placed in the Associate organisation and by Associate staff who have been trained as educators, all of which are experienced primary care or specialist clinicians. The placement of School staff in the clinical facilities and the provision of on-site dedicated student facilities provides the opportunities for students to investigate cases in sufficient depth with the help and support of School and Associate clinicians. The provision of referral rotations in small animal and equine practice and the farm Herd Health rotation ensure that students are exposed to cases which require extended diagnostic work up and problem solving that go beyond those typically encountered in primary care practice and these case discussions, at rounds twice each day, would typically include discussion of all treatment options. All Associate staff and School staff are encouraged to deliver evidence- and research-based clinical practice. The requirement for the students to complete two Best-BETS during the final year formalises their engagement with evidence-based practice in particular (section 5.1.2). Clinical and procedural skills are assessed formatively throughout the final year, and summative through the requirement for students to self-certify that they are competent in the 52 Directly Observed Procedural Skills (DOPS). Students are formally assessed in 10 DOPS, one each randomly selected from each of the 10 skill areas. Students

failing a DOPS must retake the DOPS and an additional DOPS from the same skill area. All DOPS must be certified before students are allowed to sit Finals (section 10.1.2).

4.2 COMMENTS

Previously the School sourced dog cadavers from a supplier in the USA, Carolina Biological Supply, however, the supplier is no longer able to supply the volume required, and to mitigate this we source dogs in the UK and our technical staff have been trained in preservation techniques. Sourcing fresh companion animal cadavers remains a challenge, however the volume is adequate.

4.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 7 Number of necropsies over the past 5 years

Species		Number of necropsies undertaken					Estimated % of necropsies observed by or undertaken by veterinary students in 2016/17
		2016/17	2015/16	2014/15	2013/14	2012/13	
Food Producing Animals	Cattle	60	65	65	59	58	75%
	Small ruminants	52	56	57	54	53	81%
	Pigs	55	55	61	55	56	80%
	Other	13	13	13	15	16	80%
Equine		36	50	49	59	54	90%
Poultry		1,064	1,078	1,076	1,083	1,080	50%
Rabbits		23	10	21	31	14	95%
Dogs		233	154	172	153	168	95%
Cats		109	84	101	76	71	95%
Other/exotic		24	24	31	27	32	95%

Number of students graduated in the last year / Cadavers necropsied by students = $111/1081 = 1/9.7$

Appendix 8 Contractual arrangements at each Clinical Associate

Clinical Associate	Contractual arrangement	Teaching support	Supervision of students	Monitoring of students
Bransby Horses	Contract in progress	Contract in progress	Students will be directly supervised by SVMS staff with input from Bransby staff	Students will be directly monitored by SVMS staff
Defence Animal Centre	The provision of 1 day of SVMS staff contribution to clinical work for the DAC or training in consideration of every half day visit by the students. Quarter/half class half day visits during year 1 for animal handling and farriery. 4-6 year 5 students for 1 day every 2 weeks of the year on the equine skills rotation. Students may also optionally spend 2 weeks of the Oakham equine rotations at DAC.	Canine and equine handling and husbandry, equine musculoskeletal examination and farriery in Years 1 and 2. Equine skills rotation Equine Hospital and Equine Ambulatory rotations	Students are directly supervised by SVMS staff with input from DAC staff	Students are directly monitored by SVMS staff
Dick White Referrals	3.0 FTE interns placed Contribution to building costs of student accommodation Student numbers are variable as students can choose to attend Oakham or DWR for this rotation. Maximum numbers would be 6 students every 2 weeks	Small Animal Specialist Referral / Primary care rotation	Students are supervised daily by DWR staff who hold Honorary status with the University, with the Rotation Leader visiting fortnightly	Students are monitored by DWR staff who hold Honorary status with the University
Minster Veterinary Practice	Rent and expenses free occupation of the University-funded Pathology building extension. 4-6 students on rotation every 2 weeks of the year (combined with Pathology rotation)	Anatomic pathology rotation	Students are directly supervised by SVMS staff with input from Minster staff	Students are directly monitored by SVMS staff
Oakham Veterinary Hospital (Equine)	3.0 FTE SVMS staff placed at Oakham, Contribution to building costs of teaching facilities. 8 students on 2 rotations every 2 weeks of the year.	Equine Hospital and Equine Ambulatory rotations	Students are directly supervised by SVMS staff with input from Oakham staff	Students are directly monitored by SVMS staff
Oakham Veterinary Hospital (Small Animal)	0.2 FTE SVMS staff placed at Oakham. Student numbers are variable as students can choose to attend Oakham or DWR for this rotation. Maximum numbers would be 2 students every 2 weeks.	Small Animal Specialist Referral / Primary care rotation	Students are directly supervised by SVMS staff with input from Oakham staff	Students are directly monitored by SVMS staff

PDSA	1.2 FTE SVMS staff placed at PDSA Contribution to building costs of teaching facilities at Nottingham. 4 students are on rotation every 2 weeks of the year (between Derby, Nottingham and Pinfold).	Small Animal Charity/Shelter rotation	Students are directly supervised by SVMS staff	Students are directly monitored by SVMS staff
Pinfold	0.6 FTE SVMS staff placed at Pinfold 4 students are on rotation every 2 weeks of the year (between Derby, Nottingham and Pinfold).	Small Animal Charity/Shelter rotation	Students are directly supervised by SVMS staff with input from Pinfold staff	Students are directly monitored by SVMS staff
Scarsdale Veterinary Group (Farm)	2.0 FTE residents placed at Scarsdale Contribution to building costs of teaching facilities. 4-6 students in 1 rotation every 2 weeks of the year.	Farm Animal Practice rotation	Students are supervised daily by residents and SVMS staff with input from Scarsdale staff; Rotation Leader visiting twice a week	Students are directly monitored by SVMS staff
Scarsdale Veterinary Group (Equine)	0.2 FTE staff placed in Equine departments Contribution to building costs of teaching facilities. 4-6 students for 3 days every 2 weeks of the year.	Equine Skills rotation	Students are directly supervised by SVMS staff with input from Scarsdale staff	Students are directly monitored by SVMS staff
Scarsdale Veterinary Group (Pride and Shelton Lock)	3.0 FTE staff placed at Pride Contribution to building costs for veterinary hospital, including development of teaching facilities. 8-12 students in 2 rotations every 2 weeks of the year. Compulsory Emergency and Critical Care/Out of Hours EMS rotation 2-3 students for 4-5 nights every week	Small Animal Primary Care and Small Animal Referral medicine, anaesthesia, and imaging rotations	Students are directly supervised by SVMS staff with input from Scarsdale staff	Students are directly monitored by SVMS staff
Twycross Zoo	Contribution to building costs for veterinary clinic, including development of teaching facilities 2 students are on rotation every week of the year	Zoo rotation	Students are supervised daily by SVMS DVetMed students with input from Zoo staff; Rotation Leader or Clinical Director visiting fortnightly	Students are directly monitored by SVMS DVetMed students and Zoo staff

In many cases, to make best use of the clinical case resources, we exceed our contractual obligations. At certain times, for example during recruitment hiatuses a fee in lieu of placement of School staff may be made to the Clinical Associate.

Appendix 9 Clinical Production Animal cases involving students, data to June 30 each year

Production Animals	(a) Received for consultation		(b) No. of hospitalised days		(c) No. of herds/flocks / average herd size		(d) No. of animals seen by students on farm/herd health visits		(e) Estimate % of first opinion vs. referral cases per species seen by students			
									First opinion		Referral	
	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16
Cattle	50	40	40	40	>300/90	350/90	47,089	47,879	99	99	1	1
Small ruminants	150	13	50	13	70/150	80/150	318	325	100	100	0	0
Pigs	15	6	5	2	0	0	12	9	90	90	10	10
Poultry	10	10	0	0	0	0	0	0	100	100	0	0

Note: These numbers do not include animals seen on the two week School-hosted Herd Health rotation which delivers consultancy advice to 14 farms (a total of just under 5,000 cows); each would typically receive 2-4 visits per year. These farms are clients of Scarsdale Veterinary Group or Farm Veterinary Solutions. Students on the Farm Animal Medicine and Skills rotation, may, when seasonal constraints allow, undertake a flock visit to a commercial flock in the local area and a flock health investigation of the University commercial flock during the rotation.

Appendix 10 Clinical Companion Animal cases involving students, data to June 30 each year

Companion Animals	(a) Received for consultation		(b) No. of hospitalised days		(c) No. of animals seen by students		(e) Estimate % of first opinion vs. referral cases per species seen by students			
							First opinion		Referral	
	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16	16/17	15/16
Equine	7,527	7,494	4,119	4,364	7,527	7,494	69%	76%	31%	24%
Dogs	23,410	22,535	11,370	11,284	23,410	22,535	87%	86%	13%	14%
Cats	8,105	7,868	3,613	3,567	8,105	7,868	83%	84%	17%	16%
Caged pet mammals (Rabbits, gerbils etc)	435	391	78	60	435	391	100%	100%	0%	0%
Exotics and zoo animals	1,712	1,624	0	0	1,712	1,624	100%	100%	0%	0%

Appendix 11 Herd health programme, data to 30 June each year

Herd health programmes provided through private owned animals										
	2016/17		2015/16		2014/15		2013/2014		2012/2013	
	Sites	Animals	Sites	Animals	Sites	Animals	Sites	Animals	Sites	Animals
Dairy	82	15,000	88	16,000	91	16,500	96	17,250	100	18,000
Beef cow-calf	250	25,000	233	23,333	225	22,500	213	21,250	200	20,000
Beef feedlots	5	3,000	4	2,667	4	2,500	3	2,250	2	2,000
Sheep	80	20,000	87	20,000	90	20,000	95	20,000	100	20,000
Goat	50	200	67	267	75	300	88	350	100	400
Pig	0	0	0	0	0	0	0	0	2	600
Poultry	0	0	0	0	0	0	0	0	0	0
Fish	0	0	0	0	0	0	0	0	0	0
Horses	0	0	0	0	0	0	0	0	0	0

Note: Data is provided by Clinical Associates for 2016/17 and 2012/13 with interpolation for intermediate years. These numbers do not include animals seen on the two week School-hosted Herd Health rotation which delivers consultancy advice to 14 farms (a total of just under 5,000 cows); each would typically receive 2-4 visits per year. These farms are clients of Scarsdale Veterinary Group or Farm Veterinary Solutions. Students on the Farm Animal Medicine and Skills rotation, may, when seasonal constraints allow, undertake a flock visit to a commercial flock in the local area and a flock health investigation of the University commercial flock during the rotation. These numbers also do not include visits to military horse herds.

Appendix 12 Off-campus rotation information for each Clinical Associate

Placement name	Species	Duration of rotation	Number of rotations per year	No. students per year	Patient numbers	Students per rotation	Core
Bransby Horses	Equine	2 weeks	25	30	Rotation in development	0-2	Core but location optional instead of OVH
Defence Animal Centre	Equine	1 day (with 2 weeks as an option instead of 2 weeks at OVH Equine)	25	120	1,035*	4-6	Y
Dick White Referrals	Small Animal	2 weeks (or OVH)	25	60	2,000*	0-6	Core but location optional instead of OVH
Minster Veterinary Practice	Poultry and Farm Animal(Pathology)	2 weeks (with Pathology)	25	120	1,216***	4-6	Y
Oakham Veterinary Hospital (Equine)	Equine	4 weeks (with 2 weeks as an option at DAC)	25	120	6,412*	4-6	Y
Oakham Veterinary Hospital (Small Animal)	Small Animal	2 weeks (or DWR)	25	60	14,233*	0-6	Core but location optional instead of DWR
PDSA Derby	Small Animal	2 weeks (or PDSA Notts and Pinfold)	25	60	2,280*	2	Core but location optional instead of Nottingham / Pinfold
PDSA Nottingham	Small Animal	2 weeks (with Pinfold; or 2 weeks PDSA Derby)	25	60	3,389*	2-4	Core but location optional instead of Derby

Pinfold	Small Animal	2 weeks (with PDSA Notts; or 2 weeks PDSA Derby)	25	60	New rotation	0-2	Core but location optional instead of Derby
Scarsdale Veterinary Group (Farm)	Farm Animal	2 weeks	25	120	47,419**	4-6	Y
Scarsdale Veterinary Group (Equine)	Equine	3.5 days	25	120	80*	4-6	Y
Scarsdale Veterinary Group (Pride)	Small Animal	3 weeks	25	120		4-6	Y
Scarsdale Veterinary Group (Shelton Lock)	Small Animal	1 week	25	120		4-6	Y
Twycross Zoo	Zoo	1 week	25	120	3,152*	4-6	Y

Note – Year size assumed to be 120 to indicate relative size of cohort that attends each rotation.

Bransby and Pinfold patient numbers are not included as they are new rotations.

* number of consultations seen

** number of animals seen on herd /flock visits

*** number of necropsies



5 INFORMATION RESOURCES

5 INFORMATION RESOURCES

5.1 FACTUAL INFORMATION

5.1.1 Information resources available to the School

The University of Nottingham promotes a high quality teaching and learning, and research environment by investing significantly in its libraries, IT infrastructure and support teams. The School embraces the opportunities offered by IT to meet the expectations, and better support and enhance the educational experience, by harnessing the abilities of today's IT-literate undergraduate generation. The School uses IT in all aspects of its interactions with students, from admission, pre-registration through to computer-assisted learning and assessment.

The Library

All staff and students have access to all University libraries (<https://www.nottingham.ac.uk/library>), part of the Libraries, Research and Learning Resources (LRLR) function. The James Cameron Gifford (JCG) Library based at Sutton Bonington occupies 1,126m² floor space, and offers seating for 324. Opening hours are: Monday to Friday 8am - 9.45pm; Saturday 9am - 4.45pm; Sunday 9.30am - 4.45pm. The library is open 24 hours at key points of the year, including during examination periods. There is wireless access throughout the library and self-service printing and photocopying facilities are available. There is also self-service check out and return facilities.

The JCG holds a wide range of resources associated with animal biology, animal welfare and care, veterinary sciences and allied subjects such as food production and agriculture etc. The JCG holds at least one copy of all the books on student reading lists, and multiple copies of key text books, together veterinary journals and access to veterinary eBooks, eJournals and databases. Library statistics are shown in Table 8.

Year	2016/17	2015/16	2014/15	2013/14	2012/13
Total Budget	£13,912,000	£11,388,033	£11,604,458	£11,081,845	£11,948,459
Total book budget	£1,330,350	£1,152,000	£1,113,000	£1,040,000	£1,039,025
JCG Library staff (FTE)	6.1	6.1	6.3	6.3	6.3
Library staff (FTE)	163.7	166.3	152.4	171.1	151.4
Vet School book budget	£22,000 plus share of £245,000 ebook budget	£12,321	£11,634	£10,191	£9,470
Total number of paid-for journals	42,074	42,825	39,945	24,402	22,983
Total journal subscriptions (£)	£4,768,000	£4,485,526	£4,325,000	£4,065,543	£3,997,565
Acquisitions *(Total)	£6,098,350	£5,637,526	£5,438,000	£5,105,543	£5,036,590

Table 8 Library statistics (5 year comparison)

Note:

Historical information is not available on volumes held, however the JCG currently provides access to:

- Hard copy books: 26,681 total, of which 6,210 are veterinary specific
- Hard copy journals: 73 total, of which 17 are veterinary specific
- Electronic journals: 42,000 total, of which 145 are veterinary specific

Staff and students are able to access an extensive range of library resources using the NUsearch library discovery system that allows students to search for books, reports and journals that are held across all eight University of Nottingham libraries. NUsearch provides a single interface through which all members

of the University can access not only material held in the University libraries but also electronic resources available globally and relevant to their subject (including access to databases such as Web of Science, Scopus, Medline, CAB Abstracts and Vetstream.) The University library policy includes the purchase of eBooks where possible and has a total holding of 486,080 at present.

School information resources

Students have 24 hour access to a range of learning resources in their small group teaching room mini-libraries. This facility is valued by students and has resulted in extensive use of the rooms with students working together outside of normal teaching hours. The resources include all course textbooks, all British Small Animal Veterinary Association (BSAVA) Manuals, various other specialist and reference textbooks, skeletons, models and posters. Mini-libraries have been set up at each of the Clinical Associates used for placement in Year 5, together with the Year 5 teaching hub. In addition to hard copy material, the Virtual Learning Environment, Moodle, hosts a range of learning resources including embedded image and video resource hyperlinks to other sites and reusable resources.

Virtual Learning Environment

All teaching materials are delivered online and supported through the Virtual Learning Environment (VLE), Moodle. Moodle is used to organise and distribute course materials and schedules from a central location, as well as enhance students learning through interactive activities and resources. No paper handouts are provided to students; all relevant resources are available online, including presentations, briefing notes, and links to relevant videos, databases and web resources. Students and staff can access Moodle on and off campus through the internet. The School also uses audio recording (pod casting) and video recording (vodcasting), including Echo360 lecture capture, to support the learning experience and to disseminate information.

IT Infrastructure

All students on the 5 year course are provided with a laptop computer by the School for their own use at all times. Postgraduate students are provided with a desktop or laptop computer, as required for their research. In addition, all students are able to access School and Campus Computer Rooms on a 24 hour basis (1 room with 22 computers in School, and a further 5 computer rooms across SB Campus). This provides an exceptional opportunity for all students to undertake self-study and access educational and research resources as required. Staff are provided with a laptop or desktop computer as requested, replaced on a 3 year cycle.

There are high quality high speed wired and wireless networks throughout the campus buildings. Internet access is provided to all students through the Eduroam wireless service which is available in all teaching and communal areas of the University. The School has established a dedicated high-speed data network between the School and Clinical Associates, which mirrors the learning environment of the School to the Clinical Associates, such that students (and staff) have access to the same support and resources offered when on the campus; where this has not been possible students are provided with BT wi-fi dongles.

Lecture theatres across campus are fully equipped with the high quality audio visual facilities including video and slide projection, amplifiers, electronic visualisers, lecture capture facilities (Echo360) and audio capture for podcasting etc. Investment in state-of-the-art audio-visual facilities has been made throughout the teaching rooms of the School such that electronic whiteboards are commonplace alongside usual AV equipment in lecture theatres, seminar rooms, small-group teaching rooms and laboratories. Additional facilities include teaching microscopes, overhead high definition visualisers, and electronic voting handsets. Students are able to borrow digital video and photography equipment in relation to course activities. Teaching rooms at Clinical Associates include computing facilities and in some cases electronic whiteboards or LCD screens for presentations.

5.1.2 Learning and information technology support

The JCG Library is staffed by 6.1 FTE customer services staff who are available during core hours. The staff comprise of one full time supervisor plus a team of Library Advisors who offer the front line service to students, each with extensive experience in library provision. Further support is offered from Senior Librarians from the STEM libraries. Funding for library materials is held by the library and is based on the number of staff and students. The School liaises closely (via the Teaching, Learning and Assessment Team) with the Library team leader for the JCG Library. On a quarterly basis, the TLA Team work with

Module Convenors to collate a list of resource requirements for the library, which are then procured by the Library. Any feedback from the various School Committees (e.g. Learning Community Forum, Postgraduate Committee etc) is considered when formulating a list of requirements. The School has also representation by the Head of Operations on the Campus Operations Committee which provides a function to quality assure, monitor and review learning opportunities, and provide a mechanism for two way feedback.

A LRLR Teaching and Learning team has a specific responsibility for delivery of Information Skills, which is a series of teaching sessions designed to help students develop their learning techniques and access resources; these are mapped against key points in the student lifecycle. In 2016-17, 7 sessions were run by LRLR staff, specifically for the School, which were attended by a total of 475 students. In addition, the LRLR website offers detailed online support tools within its "Studying Effectively" pages. Undergraduate students undertake an introduction to using the Library collections in year 1 Personal and Professional Skills, run by the Library team, in addition there is School teaching in the critical review of learning materials, Microsoft software and use of Moodle. In year 2 students are taught how to write a literature review, including a session delivered by Library Services on the use of Endnote; summative assessment is a piece of scientific writing. The year 3 research project provides significant training in accessing and evaluating information; students collect, analyse and interpret data, read and collate previous information and results relevant to their research problem, and write a clear and concise report which is summatively assessed. Year 5 teaching includes BestBETs delivered by the Schools Centre for Evidence Based Veterinary Medicine⁷. Students get to design and evaluate evidence for a clinical question.

Staff and postgraduates can access advice direct from Librarians and IT Services (as can undergraduates), but can also attend a wide range of courses run by LRLR and by Staff Development (<https://training.nottingham.ac.uk/cbs-notts/Portal/DesktopDefault.aspx>).

The School Teaching, Learning and Assessment (TLA) team which comprises 7.0 FTE highly experienced administrative staff, support all academics, including providing specialist advice on development of new learning technologies and techniques. TLA liaise closely with a LRLR specialist Learning Technologies team who provide a systems, content and special projects function. The remit of the Learning Technology department of LRLR is to support staff and students in the area of technology enabled learning. This includes: developing, maintaining and upgrading the core University teaching and learning systems; providing multi-media and video production services for staff to develop creative and interactive learning resources; and providing consultancy support to students and staff in the use of learning technology.

The University has a central IT Services function responsible for all aspects of IT provision, supported operationally by local campus based teams. IT Services operates an email and telephone helpline, which is manned 24 hours. The local IT Support team provide support for a wide range of equipment and operating systems and operate an open door policy for students and staff to visit for assistance. The local team comprises 5 staff – a Group Leader and four IT technicians, one of which has a speciality in Audio Visual systems. The Head of Operations is the IT Representative for the School and has regular meetings with the IT Group Leader.

5.1.3 Learning aids

The clinically integrated nature of our curriculum necessitates extensive use of part task trainers and simulation based learning. Our clinical skills centre and laboratory are equipped with a range of models for developing various techniques (e.g. venepuncture, rectalling, ophthalmological examination, CPR) which are a mix of commercially available and school produced. We also utilises simulated clients (professional simulators from Birmingham Medical School) extensively throughout our communication skills curriculum. Simulation and clinical skills models are used as the first step in developing students' practical skills, often alongside cadaver-based teaching. Models are available on an ad-hoc basis for

⁷ The School hosts the Centre for Evidence Based Veterinary Medicine (CEVM). The overarching aim of the CEVM is to increase the awareness and use of evidence-based principles in the veterinary profession, and works with a number of small animal, large animal and mixed practices on a number of different research projects. The CEVM has developed a toolkit for evidence synthesis to aid the effective delivery of evidence to practitioners, and a freely accessible database of Best Evidence Topics (BETs) for vets in practice called BestBETs for Vets

students to continue the development of their skills during Clinical Skills Centre drop in sessions outside the formal timetable

However, perhaps most important as an educational resource that enhances our educational mission is the fact that the entire body of curriculum materials are delivered electronically via the electronic learning environment, Moodle, which the students access by laptops provided by the school. It is unusual for the entire curriculum to be delivered in this manner, and to be supplemented by additional learning resources for example the video bank (MooTube), an online anatomy museum, an award-winning Twitter finals revision class (<https://twitter.com/VetFinals>), virtual patients (using Xerte toolkits) and the clinical image repository.

5.1.4 Processes to evaluate new technology

The School uses IT extensively to support learning and horizon scans to identify ideas, packages and applications both with the veterinary and medical sector and wider afield. New technologies are identified by both staff and students and piloted on a small scale with feedback sought from teachers and learners. Benefits to learning are assessed and if a large scale purchase is required for implementation, a business case produced for Management Team approval of financial spend. Training is then provided by either TLA staff, relevant academics or the central LRLR Learning Technologies team. An example is the development and adoption of OSCE software, allowing staff to use iPads to mark OSPE/OSCEs during assessment delivery providing quality control benefits and reducing manual intervention. This £35k project, managed by the eLearning Manager in the TLA team, initially trialled software from 2 providers alongside paper OSCE assessment materials, before the systems being fully utilised in a formative situation. A successful case was made to management team allowing procurement of iPads and yearly software licences.

Staff in the School have been recognised both internally in the University and externally in their promotion and use of new technology (e.g. by University Lord Dearing Awards and one member of staff was recognised by JISC as a Social Media Top 50 influencer in Higher Education).

5.2 COMMENTS

For 2017/18 the School has gifted laptop computers to students so that they are able to keep them and downloaded learning resources (e.g. images, videos, lecture notes, Portfolio pieces etc.) at the end of their course.

5.3 SUGGESTIONS FOR IMPROVEMENT



6 STUDENTS

6 STUDENTS

6.1 FACTUAL INFORMATION

6.1.1 Undergraduate students

The School offers 2 undergraduate BVM BVS veterinary programmes, a 5-year course and a 6-year course including a Preliminary Year (for widening participation and also high achieving non-science students) (Table 1). We aim to recruit 24 students for the Preliminary Year. We do accept international students to this Year, if for example they do not have science qualifications at the level required for direct entry to the 5 year course, however normally all students are from the UK, and occasionally EU. These students are state subsidised or may be self-funding in the case of graduates. Progression is automatic to year 1 on meeting a high level of attainment across each module. On average 10-20% of the Preliminary Year exit the course due to failure to progress academically.

The School is able to determine the number of student places offered. In recent years, we have increased our student numbers on the 5 year course, with a current intake of 160. The majority of these students are UK, with normally <10 from EU countries and <5 from other international countries in each year group. International students pay full fees. Applications data are shown in the Table 9 below:

Year	UK and EU students		Overseas students		Total students	
	A/P*	O/A	A/P	O/A	A/P*	O/A
2016/17	1,485	296/158	128	9/1	1,613/160	305/159
2015/16	1,387	183/127	126	12/3	1,513/145	195/130
2014/15	1,491	144/125	94	7/2	1,585/135	151/127
2013/14	1,639	161/116	120	8/4	1,759/131	169/120
2012/13	1,491	129/102	94	15/8	1,585/130	144/110

Table 9. Applications, offers and acceptances data for the 5 year course

A/P Applications/Places available O/A Offers made/Acceptances

*P Places are not assigned to home or overseas students, as the School will admit the best student irrespective of home location

The School has increased cohort size for the 5 year course to 160; there are no plans to increase student above this level to ensure that resources are effectively used and the student experience is maximised. The 6 year course will remain at an intake of 24 to ensure quality applicants for the course. In recent years we have changed our policy in recruiting international students, such that we now admit the best applicants irrespective of home country; we had found that there was a higher attrition rate of international students due to cultural fit and academic ability. Likewise there is no specific number of places available for graduates, they are also considered within the overall pool of candidates.

The teaching facilities in the School have been, and continue to be, expanded to support the increase in student numbers, (see section 3.1.9), however, there are only 2 lecture theatres available that will accommodate the increased class size. Timetabling currently ensures access as required but the School continues to make representation to the University to increase lecture hall facilities. As a result of offering new options for rotation tracks from 2018, the School is able to accommodate increased student numbers at existing Clinical Associates, with the exception of Farm rotations, where an additional local Clinical Associate will be utilised; to facilitate improved choice of tracks a further Small Animal charity Clinical Associate (RSPCA Strinesdale, Manchester) will be utilised. Clinical Associate facilities provide an exceptional clinical experience for students, although there are plans to improve support facilities (see section 3.1.9)

All students graduate with a BVMedSci degree in year 3. Students who do not meet the BVM BVS progression requirements in years 1 and 2, but meet the lower University progression requirements can continue but are required to exit with a BVMedSci degree at year 3⁸. Students are able to intercalate degrees, most commonly after year 3, but occasionally after year 4. The School has funded 2 students to intercalate PhDs, and yearly offers 2 MRes positions and 3 PGCertificate in Veterinary Education intern positions. Students are also able to intercalate at other universities, albeit they need to self-fund or be successful in gaining other funding.

Year	2016/17	2015/16	2014/15	2013/14	2012/2013
Prelim year	24	24	26	24	14
First year	163	135	140	132	132
Second year	138	128	119	123	102
Third year	131	116	121	105	105
Fourth year	111	125	99	104	94
Fifth year	120	95	100	86	93
# graduated	120	95	99	84	90

Table 10. Students enrolled on the undergraduate veterinary programme

In addition the School runs a module in Principles of Animal Health and Disease for up to 60 students in years 2 and 3 from the School of Biosciences. These students utilise the small holding, stables and teaching laboratory facilities for a total of 12 hours per year in addition to a 3 hour session run at the Dairy Centre.

6.1.2 Postgraduate students

Intern students study for a 1 year PGCertificate in Veterinary Medicine, except the intercalated Veterinary Education Intern positions who study for a PGCertificate in Veterinary Education (Table 11). The number of Interns has fluctuated over the years, as the School has been successful in gaining external funding from Dick White Referrals, Merial, and Hills Pet Foods. The School funds Interns at DWR and Oakham, and Vet Education interns. Clinical students are based at our Clinical Associates where they gain access to a wide caseload. Numbers have fluctuated over the last 5 years as a response to external funding.

Year	Small Animal	Equine	Farm	Vet Education
2016/17	10	2	0	5
2015/16	15	3	0	0
2014/15	16	3	2	0
2013/14	7	3	1	0
2012/13	4	2	0	0

Table 11. Students enrolled on veterinary Intern programmes

Resident postgraduate students normally register for a 3 year MVM or MVS degree (Table 12). It is possible to convert (with extra study) from MVM to PhD. The School funds 2 farm Residents at Scarsdale Veterinary Hospital and 2 in Pathology. Two Oakham staff members are being supervised for residencies. Other positions are funded from external funders such as Crown Pet Foods. Students are based at our Clinical Associates where they gain access to a wide caseload. Numbers of Residents are low and relate to contractual relationships at Scarsdale Veterinary Hospital (Farm), with growth in Pathology Residents due to growth in the Pathology service and research.

⁸ The pass mark for modules is 50% on the 5 year course. Students have to pass all module examinations (with the exception of AHDOPS and OSPes) before they enter later years of the course, and also gain a minimum of a 2.2 BVMedSci degree in order to progress to year 4⁸. University progression requirements are a compensatable 40% pass mark per module.

Year	Small Animal	Equine	Farm	Farm + PhD	Pathology
2016/17	1	2	3	1	3
2015/16	0	1	2	1	1
2014/15	0	1	3	1	1
2013/14	0	1	2	0	0
2012/13	0	0	2	0	0

Table 12. Students enrolled on veterinary Residency programmes

Students can also register on other postgraduate programmes (Table 13). A PGCert in Small Animal Rehabilitation was offered in conjunction with, and delivered by 2 outside providers, the course closed in 2015/16, as it was felt this was not core business for the School. Numbers are small on the DVetMed and are likely to remain so, with the School funding 2 students based at Twycross Zoo on DVetMed degrees. MPhil is normally the exit degree from a PhD for students that fail to progress. The School invests in MRes positions and also PhD positions, particularly through matched funding. Example external funding sources for PhDs include BBSRC, TEAGASC, AHDB Dairy and commercial/industrial sponsors such as Zoetis. PhD numbers fluctuate in relation to success with funding and grant applications.

Year	PGCertificate Small Animal Rehabilitation	MRes	PhD	MPhil	DVetMed
2016/17	0	4	67	0	2
2015/16	2	5	69	0	1
2014/15	14	5	71	1	2
2013/14	10	3	76	3	2
2012/13	8	0	74	3	2

Table 13. Students enrolled on other postgraduate programmes

6.1.3 Student services and support

The School, the University centrally and other students provide both conventional and specialist academic and pastoral support to the students. Student support is provided immediately from pre-acceptance and throughout the course.

Students are provided with a wide range of information to help induction and enculturation into the School (e.g. campus map, clothing and equipment brochure, voucher to buy a laptop computer, congratulations card, Guild brochure, equine livery reservation form, new student information guide, student entry agreement, student handbook, study skills booklet, survival leaflet, Vet Society information, module details). Students are telephoned by their Personal Tutor to welcome them to the School.

A welcome week (Fresher's Week) provides a wide variety of induction events including an Opening Ceremony, School tour, initial animal handling practical on Day 1, Tutorials, Social events, Tutor group social events, a visit to Twycross Zoo, together with introductory talks on safety, School structure, the curriculum, assessment, student support and EMS. In addition, students receive profiles of all staff members, together with their equipment and clothing.

The School employs a number of measures to ensure that students experiencing difficulties with their studies or with any non-academic problems are identified and supported. In addition, students are directed to establish and maintain individual Portfolios and Skills Diaries for self-support both during and after their studies. Alignment of support processes, school philosophy and teaching reinforces core values (e.g. professionalism).

Academic support

Academic support is provided predominantly by the School, and provides support to learning utilising:

- Pre-registration information packs and online registration
- Pre-term animal husbandry training for international students
- School-based identification of dyslexia and other learning difficulties
- Induction and orientation weeks at the beginning of each year, including a Day 1 meeting with the Personal Tutor⁹, followed by timetabled Tutorials to review academic progress
- Student handbook
- Portfolio and Skills Diary
- Provision of web-based learning environment that incorporates core curricular material and details, and facilities for learning support (e.g. self-assessment, learning objectives) and student feedback
- Pairings of clinical and non-clinical Personal Tutors
- Student Progress Committee¹⁰ for support of students with academic difficulties
- Students in higher years (via the veterinary family¹¹ and Vet Soc run Big Vet, Little Vet system)
- Extensive staff contact in practical classes
- Small group case studies with dedicated group facilitators
- Dedicated Student Placement team to facilitate EMS
- Student Experience focussed administrative staff
- One-to-one access to a Year 3 project supervisor
- Library facilities (paper-based and electronic), Twitter and Flickr resources
- Provision of a laptop computer to all 5 year course students
- Computing facilities, and basic IT skills training with access to computer-based self-learning packages
- 24 hour access to study room and museum with extensive teaching resources
- An open door policy providing access to all teaching and administrative support staff
- Access to University support services (e.g. study support, dyslexia support, disability support)

Pastoral and Welfare support

Pastoral and welfare support is currently provided by the following means:

- Personal Tutor, supported by Senior Tutors providing pastoral support and advice
- Dedicated Student Welfare Manager with the role to advise and support students, liaising as necessary with other University support agencies
- Disability Liaison Officer to provide a point of reference, advice and guidance for staff and students in the School about disability issues and support
- Pre-arrival Health Declaration questionnaire, reviewed by the University's Occupational Health team, identifies support requirements for each student and assures fitness to study
- Veterinary family and Vet Soc-run Big Vet, Little Vet schemes with trained older students providing mentoring for younger students
- Personal and Professional Skills module covering aspects of work-life balance
- Welfare Week to promote support available across the School and University
- Access to University support and advice services (e.g. disability support, confidential counselling, mental health advisors, career development, advice and support on financial matters, accommodation advice, legal advice, visa advice to international students)
- The VetSoc, Student Guild and Student Union offers an extensive range of social and sporting activities together with various support services including 24 hour telephone help lines (<https://www.su.nottingham.ac.uk/>)
- International student global café

⁹ Students are assigned a Personal Tutor for the entire 5 years of a course; they also are assigned a Clinical Tutor. The Personal Tutor's role is to review academic progress, provide pastoral support, and to support specific academic requirements of the course, including the review of the Portfolio, Skills Diary and planning and reviewing placement activities. Personal Tutors provide examination marks for degrees, and help failing students understand their weaknesses. The School has timetabled tutorials within the Personal and Professional Skills module. Tutorials are structured with a formal agenda so that a high quality of tutoring is provided and that all students receive the same tutorial experience.

¹⁰ The Student Progress Committee (comprising the student, Chair, Student Welfare Manager and Personal Tutor) meets on a needs-basis to support and advise students with academic problems.

¹¹ All new veterinary students in Nottingham are allocated to a 'Veterinary Family' for the whole of their course. The main aim of the Family is to provide a framework for pastoral support of students both horizontally in each year and vertically between years. The family comprises two Personal Tutors and a Clinical Tutor. A Year 1 student will have a 'parent' who will be a student from the Year 2 who is in the same 'Family'

- Chaplains and prayer rooms for various faiths
- Sutton Bonington Hall Warden and Hall tutors
- University Warden for off-campus affairs
- Outside agencies, e.g. local Doctor, Samaritans, VetLife, Vet helpline

During term, the Student Welfare Team (Senior Tutors and Student Welfare Manager) meet weekly to discuss and action general matters in terms of professionalism, pastoral and academic progress across the student body. Members of this meeting are also interlinked with external bodies such as VetLife.

The School complies with the Faculty's dual 'Expression of Concern' process, which is divided into welfare and discipline issues. Any student or member of staff may raise a concern relating to a student's academic abilities, including performance on a clinical rotation, or for any other matter. The Concern is then reviewed by Senior Tutors and is acted on as appropriate to the circumstances (e.g. pastoral support, disciplinary proceedings, Fitness to Practise enquiry etc).

In addition to the University Support mechanisms available for undergraduates, postgraduates are able to access the support of the on-site Graduate Centre, Graduate School as well as campus Postgraduate Society. Complementary to the support provided by the two Postgraduate Sub-Deans, the School has appointed a Senior Tutor, dedicated to postgraduate pastoral and welfare support. Student elected Postgraduate Representatives attend Postgraduate Committee meetings, raising any issues and receiving advice or feedback on resolutions.

Support for ill and disabled applicants and students

We expect all students to declare any requirements for disability support (including dyslexia) early in the admissions process, in order that the School can evaluate and implement support needs throughout the admissions process and/or as soon as the student commences the courses. The School also meets students prior to admission to provide review and advice on potential reasonable adjustments that can be made to the course.

Applicants who declare a disability on their UCAS form are reviewed by the University Disability Support Team. The team, together with the Senior Tutor and Welfare Manager will meet students at, or prior to Assessment Centres if needed for further discussion, particularly around the potential demands of the veterinary course.

All students are required to complete a medical assessment form which is reviewed by the University Occupational Health Team prior to joining the course. This may result in referral to Occupational Health prior to admission or assessment by University of Nottingham Academic or Disability Support staff. Occupational Health will provide recommendations on the suitability of the applicant to study on the course. These assessments may result on preparation of either an Academic or Disability Referral Form. These will provide for reasonable adjustments to be put in place for teaching or examinations, which will be discussed with the School to determine whether providing these adjustments is feasible. The assessment may suggest reasonable adjustments required and in extreme cases, has required students to undertake a gap year in order to improve their health prior to joining the course. The Occupational Health team assesses students against national Higher Education Occupational Physicians guidance (<http://www.heops.org.uk/guide.php>) to ensure that students are able to meet RCVS Day 1 competences.

All students undertake a mandatory online dyslexia assessment during year one.

Students who become ill or disabled during the course are supported in school by the Student Welfare Team or out of school by the University Student Service Centres. These teams can provide guidance and signposting to appropriate support services either within the University, including counselling, mental health, academic support and disability support services, or external to the University. Students may be referred to the University Academic or Disability Support staff who may suggest reasonable adjustments so that the student is able to manage their illness or disability (for example additional time in exams, rest breaks etc). Students with long term illnesses or disabilities who engage with the School Welfare Team are offered regular reviews appropriate to their condition, especially prior to starting clinical rotations.

Students who believe that their performance in examinations or during teaching has been impaired can apply online for extenuating circumstances. These applications are considered against University of

Nottingham procedures by a committee within the school which can make recommendations to the relevant Exam Board that the student should be allowed a further attempt at the affected assessment.

Methods used to identify and remediate failing students

All students gain feedback for all forms of summative assessment; this is provided individually for failing students in a discussion with the module leader (in years 1-4). Students who fail examinations are also invited to attend the Student Progress Committee who consider reasons for failure and mechanisms for remediation. Specifically during year 5 students who fail a Rotation Professional Assessment are required to meet with the Clinical Review Group to understand reasons for failure and ways to improve, and also whether further assessment is required (which may include repeating a rotation). In addition students who fail end of year assessments in year 5, may be able to repeat rotations prior to reassessment

Students may also be recognised as struggling with the course, mentally or physically, in which case a Concern Form may have been raised by a concerned staff member or peer which is then formally addressed, or alternatively the Welfare Manager or Senior Tutor may informally meet with a student.

Careers and employment support to graduates

Career development and job selection and application techniques are taught within the Year 4 Personal and Professional Skills module, topics include CV writing, and interview techniques; students can also access the University careers team for advice and training. A "Careers Day" is held yearly for all students but especially year 4 students. This exposes students to a range of careers in the veterinary profession and hosts a job fair and talks from practitioners from across the profession. We also provide links, presentation opportunities and marketing materials from large veterinary employment organisations, such as British Veterinary Association (BVA).

Students work with their Personal Tutor to plan a variety of experience during their EMS study appropriate to their career and personal interests; students commonly build up strong relationships with hosts, which lead to job offers before graduation.

The School has developed an optional Nottingham Advantage Award¹² module "Careers skills for vet students". This module aims to provide students with knowledge and a range of skills that will allow them to reflect upon issues surrounding personal development and professional aims in relation to a career in the veterinary profession.

Undergraduate and Postgraduate students can access support from the University Careers Service. Year 5 students have a Careers noticeboard where positions are advertised (and they are also circulated electronically). Alumni have an active Facebook group where job offerings are posted.

6.1.4 Mechanisms for student suggestions, comments and complaints

Students are involved in quality assurance at national, University and School level. The University student engagement policy covers the University of Nottingham's arrangements to ensure that students are fully involved and represented in all aspects of their learning experience, and have a range of opportunities to engage in the University's quality assurance systems, at University level, at programme and academic level. As detailed in section 1.1.6 students are able to influence the schools direction and decision making processes by a number of means, including making comments as to compliance with RCVS/EAEVE standards. Students are involved in influencing the School's direction, providing suggestions, comments and complaints by the following methods, with consideration and action as appropriate:

- Attendance at staff recruitment interviews
- National Student Survey (NSS) to provide opinion and feedback on the student experience completed by all UK final year students, considered on a detailed basis by both the School and University
- Association of Veterinary Students Survey on teaching, learning and student support completed by all students

¹² The Nottingham Advantage Award allows students to gain recognition and additional credits for extra-curricular activities. A completion certificate is awarded when 30 credits are completed.

- Student Evaluation of Module questionnaires (SEM) completed on every module to provide feedback on overall delivery and learning, with outcomes considered in module reviews
- Student Evaluation of Teaching questionnaires (SET) completed on all academic staff to provide feedback on teaching by individual, scores are considered by the Dean and also in promotion
- Student Evaluation of Year questionnaire is structured as per the NSS and is run by the School to gather feedback from students on their experience of the year of programme as a whole
- Rotation feedback questionnaires are compulsory for year 5 students and are completed at the end of every 2 week clinical rotation, reviewed by the Clinical Director
- Learning Community Forum (LCF) meetings, are held termly and discuss any matters (academic, welfare or social) that are raised by either students or staff, matters are referred to an appropriate committee if the LCF feels that a referral is necessary. In practice the majority of operational issues raised at this meeting are resolved at the meeting
- Committee meetings including Teaching, Learning and Assessment and Postgraduate Committee
- Yearly student survey conducted by the University
- Undergraduate and postgraduate student membership of other relevant Committees and Sub-Committees at Faculty, Campus and University level
- Year representatives meet the TLA Sub-Dean and Head of Operations regularly to discuss various topics and provide feedback
- Veterinary students are highly engaged and motivated and individual students also commonly directly contact relevant Sub-Deans, the Clinical Director, the Head of Operations or the Examinations Officer with feedback on an ongoing basis
- Ad-hoc focus groups convened around particular topics
- The School also has an open door policy providing access at any time during the working day to all teaching and support staff; any student feedback is either directed to the appropriate review mechanism or addressed and actioned if appropriate
- Anonymous suggestion box in reception

Undergraduate students elect a School Educational Representative, who is the lead representative for the students. Each undergraduate year and each postgraduate programme also elects 2 representatives, who represent student views at Committees including:

- Learning Community Forum meetings
- TLA Committee meetings
- Postgraduate Committee
- Student membership of other relevant Committees and Sub-Committees at Faculty, Campus and University level

In addition the 3 School funded Veterinary Education interns act as Student Liaison Officers, liaising between staff and students to help improve teaching and pastoral support.

In all routes of student feedback the relevant School Committee consider information and implement any required actions, with the exception of any negative feedback received as a result of SET, in which case the Dean and member of staff would consider required improvements and/or development needs, in conjunction with the Divisional Head. Feedback on student feedback is provided, (e.g. as part of the examination feedback process). In addition, at the start of each academic year, a dedicated session is held so that the students are provided with a summary of their feedback and how issues raised have been addressed for the prior year and also details changes in their forthcoming year based on student feedback raised by students in the year above them. Examples of actions taken following student feedback range from providing students with funding to support Graduation Ball (request to Head of Operations), adding a week's holiday in the curriculum prior to the start of year 4 teaching following year 3 exams (Year rep request to TLA Committee), through to improving assessment feedback with attainment mapped to learning outcomes (NSS feedback).

The School follows University regulations on student complaints. It is desirable that complaints are resolved informally and quickly between the relevant parties, and the formal University process is only started if that fails. (<https://www.nottingham.ac.uk/academicservices/currentstudents/complaints.aspx>).

6.2 COMMENTS

There are plans to improve School teaching and support space (see section 3.1.9 for further details).

Any campus changes are considered by the Campus Operations Committee, for example current plans for changes to campus amenities including bar social space.

6.3 SUGGESTIONS FOR IMPROVEMENT



7 ADMISSION AND PROGRESSION

7 ADMISSION AND PROGRESSION

7.1 FACTUAL INFORMATION

7.1.1 Selection and admission

The School has a formal Admissions policy, approved by the Admissions Committee, which comprises School and University staff, external veterinary professionals and local secondary school teachers. The policy defines admissions requirements and processes, including the requirement for training of assessors. It reviews data relating to the prior admissions cycle yearly and reviews proposed changes for future cycles.

The admissions policy for the veterinary courses aims to encourage a more diverse range of people to study Veterinary Medicine. The School particularly wants to encourage people with ability and commitment, but whose circumstances might make such study difficult, or who would be less likely to apply to Nottingham. Enrolling a diverse group of students enriches the learning environment for all students, and produces a veterinary profession that better reflects the communities it serves.

The School provides a range of information to pre-applicants: all UK Secondary Schools are provided with a School brochure and other information (available for viewing during the visitation), detailed information is available on the School website (<http://nottingham.ac.uk/vet/prospectivestudents/index.aspx>), and the School holds 4 interactive Open Days for pre-applicants per year. In addition, the School visits secondary schools across the UK on request to provide admissions talks or demonstrations, and attends local country and career fairs. The School hosts a summer workshop for students from disadvantaging backgrounds, and supports a number of local lower achieving schools through staff teaching and student visits. The School endeavours to provide a balanced view of both the course and the veterinary profession, including the personal, financial and academic demands on applicants whilst as a student and ultimately as a regulated veterinary professional.

Academic requirements for admission

The minimum requirements for undergraduate admission are detailed in school brochures, the University website and through the Universities and Colleges Admissions Services (www.ucas.com)

GCSES:

- Minimum of 5 grade As to include Chemistry and Biology (or Double Science), one of Physics or Maths must be passed to grade A
- Minimum of grade B in Maths and English Language

A levels:

- Minimum of grades AAB, in Chemistry, Biology (or Human Biology) and a third subject (excluding only General Studies and Critical Thinking) at A Level (A2). Chemistry and Biology must be passed at grade A

Scottish qualifications:

- Minimum of 5 Grade As at National level to include Chemistry and Biology (or Double Science), one of Physics or Maths must be passed to Grade A
- Minimum of Grade B in Maths and English Language at National level
- Minimum of Grades AABBB at Higher level in any order, to include Biology and Chemistry
- Minimum of Grades AA in Advanced Higher in Biology and Chemistry

International Baccalaureate:

- Minimum total score of 34 overall with grade 6 in Higher Level Chemistry and Biology and grade 5 in a third subject at Higher Level, with supporting level 2 qualifications

Degree:

- At least 2:1 in a science-related subject (any BSc) together with a Grade B in A level Chemistry and Biology, with supporting GCSE Grade B in Maths and English

International Qualifications:

- The School will consider on an individual basis qualifications taken by international students. These qualifications will need to be equivalent to our A level and GCSE requirements

Other qualifications, including alternative routes into education are considered. The School offers a 6 year programme (which includes a Preliminary Year) to widen participation by accepting students who may have been disadvantaged during their education (and often enter with vocational qualifications or poorer grades)¹³ and also for high achieving non science students; the A level offer is BBB and AAB respectively. The course provides a thorough grounding in biology, chemistry, maths together with animal care.

Work experience

All applicants are required to have a minimum of 4 weeks animal-related work experience prior to application.

Disabilities

As detailed in Section 6.1.3 we expect all students to declare any requirements for disability support (including dyslexia) early in the admissions process, in order that the School can evaluate and implement support needs throughout the admissions process and /or as soon as the student commences the courses. The School also meets students prior to admission to provide review and advice on potential reasonable adjustments that can be made to the course.

All students are required to complete a medical assessment form which is reviewed by the University Occupational Health Team prior to joining the course. This may result in referral to Occupational Health prior to admission or assessment by University of Nottingham Academic or Disability Support staff. Occupational Health will provide recommendations on the suitability of the applicant to study on the course. These assessments may result on preparation of either an Academic or Disability Referral Form. These will provide for reasonable adjustments to be put in place for teaching or examinations, which will be discussed with the School to determine whether providing these adjustments is feasible. The Occupational Health team assesses students against national Higher Education Occupational Physicians guidance (<http://www.heops.org.uk/guide.php>) to ensure that students are able to meet RCVS Day 1 competences.

All students undertake a mandatory online dyslexia assessment during year one.

Further details on disability support are detailed in section 6.1.3.

Admissions process

The admissions process has been designed to assess a range of personal and practical skills including animal orientation, communication, enthusiasm and professional potential as well as academic ability for our courses. The admissions process has been developed with consideration of attributes and qualities required of a new veterinarian as articulated in the RCVS 'Day One Competencies' and 'Code of Professional Conduct for Veterinary Surgeons'.

Phase 1 – Academic Review

All Students must apply through UCAS. All applications are initially reviewed to check that applications meet minimum academic standards. The School does not consider predicted grades.

Phase 2 – Non Academic Personal Qualities Review

Personal and Referees Statements on the UCAS form are reviewed and scored to assess understanding of the profession, motivation, interests.

Phase 3 – Widening Participation and Work Experience Detail Collection (via online survey)

Applicants are requested to complete an on-line further information paper in order to supply further information for Widening Participation criteria and work experience (at least 4 weeks' experience of

¹³ A minimum of 3 criteria from: being a first generation entrant to Higher Education; family, cultural or financial reasons for needing to study in the East Midlands; attending a school without a strong tradition of progression to Higher Education and/or with a low average A level score; living in a deprived home location; being a refugee; being in local authority care; other disadvantaging circumstances (reviewed on an individual basis)

working with animals is required to ensure that applicants have an understanding of the profession and practical experience).

Phase 4 – Motivation, ability, attitude and attribute assessment

The on-line questionnaire also provides an opportunity to provide further evidence that the applicant has the motivation, ability, attitudes and attributes for a career in the veterinary profession; this includes considering an individual's other experiences or achievements (e.g. sporting achievements, expeditions, music etc). The questionnaire is marked by veterinary qualified staff and is derived from RCVS Guide to Professional Conduct.

Phase 5 - Situational Judgement Test

The Situational Judgement Test (SJT) assesses key attributes that have been identified as important for veterinary students. Applicants are presented with a set of hypothetical but relevant scenarios associated with the veterinary profession and asked to make judgements about possible responses. The competency framework consists of four attributes; empathy and building client relationships, professional integrity and trust, resilience and team work. The SJT builds on UK medical doctor selection methodologies and was developed in conjunction with psychologists.

Phase 6 - Assessment Centre

Candidates are ranked on their overall scores and the top applicants are invited to attend our Assessment Centre. The aim of this final phase of the selection process is to assess and select candidates who are academically able enough to cope with the course, who are motivated towards a career in veterinary medicine and science, who have insight into the implications of this career choice and who have, or appear to have, the potential to acquire the personal and practical skills expected of veterinary practitioners.

- An interview is conducted by two members of staff, one of whom is a veterinary professional (either School staff or from the wider professional community). The interview uses a scoring scheme to evaluate the depth of: motivation, insight into a veterinary career and interest in veterinary topics together with communication skills, animal orientation and personal attitudes and attributes
- A practical aptitude assessment is undertaken by all applicants. During the assessment, applicants deal with animal material and clinical information and are scored using a scheme that assesses enthusiasm and aptitude including observational and analytical skills and animal orientation.
- A team working assessment is conducted in a group situation and assesses the individuals' ability to work with a peer group

Staff receive initial training, are offered refresher training yearly and are briefed in detail at every Assessment Centre session.

Phase 7 – Offers

All Assessment Centre data is compiled and standardised to reduce any differences in marking between assessors, students are then ranked. The information is reviewed by the Admissions Team and Admissions Sub-Deans. Applicants are considered solely on the basis of their merits, abilities and potential, regardless of gender, ethnic or national origin, age (subject to the University regulations on minimum age), disability, religion, sexual orientation or any other irrelevant distinction. Decisions on offers are made by comparison with the candidate pool, rather than by individual. Applicants are then telephoned by one of their interviewers and made a conditional or unconditional offer¹⁴, or are rejected by letter. Any offer is made subject to an Occupational Health assessment. All students offered a place on the course are required to accept the Veterinary School Code of Practice by signing a Student Entry Agreement; this ensures that the student is aware of the specific objectives and standards for professional attitudes and behaviour required by the School and the profession.

For international students, the applicant may be telephone interviewed, and some leniency may be given regarding the full 4 weeks work experience, dependent on local conditions. International applicants must also meet English language criteria (British Council IELTS test with a minimum score of 7.5).

¹⁴ Students who are identified as "widening participation" are made flexible contextual offers, still at the standard of grades AAB, but they are able to achieve the B grade in Biology or Chemistry.

Widening participation and enhancing diversity

The School was established with a remit to increase diversity in the veterinary profession in the UK, and as detailed previously implements a range of measures (e.g. summer workshops, School visits, contextual offers, Preliminary Year course) to enhance diversity.

We are particularly successful in attracting a wider range of applicants to the School (Table 14), especially via the Preliminary Year route, however there are historically low numbers of ethnic minorities participating in the veterinary profession due to wider cultural influences. Male student numbers are consistently low and reflect low application numbers nationally.

Year	2016/17	2015/16	2014/15	2013/14	2012/2013
Deprived home location	10.0%	10.4%	7.9%	7.3%	5.3%
First generation to go to University	31.8%	32.9%	28.3%	27.6%	28.7%
Ethnic minority	3.9%	4.8%	6.0%	6.5%	6.8%
Disabled	12.8%	12.9%	12.8%	10.0%	9.7%
Male	27.6%	27.9%	28.7%	28.9%	32.1%

Table 14. Undergraduate student demographic data (5 year course only)

Review of admissions criteria and processes

The Admissions process for undergraduate students is overseen by the Admissions Sub-Deans and reviewed annually by the Admissions Committee, which considers information such as demographics and admissions performance. In this way, the School monitors the Admissions process and ensure that there is no unfair discrimination

Admissions policies and procedures are validated through feedback on the performance of students on the course and reviewed at Admissions Committee. Analysis is undertaken on cohorts of students admitted to the course. Data are cross checked against the admissions process for that cohort in order to highlight whether the admissions process has impacted on success in the course. This process is ongoing and informs decisions on the admissions process, via the Admissions Committee, to ensure it is identifying students who will perform to the standards and values required in the School's mission statement. In addition, regular feedback is obtained from veterinary undergraduates regarding the admissions process and how well it reflects the requirements of the undergraduate course

We believe that the admissions process is very successful; we have recruited students from a wide range of backgrounds, with normally over a third of any year being 'widening participation', and commonly put emphasis on the performance at Assessment centre over academic ability (for example a personable, capable, communicative student who has achieved highly at Assessment Centre but fails to meet the academic offer is likely to still be accepted at ABB at "Clearing"). The student attrition rate is low and we are content that we are selecting students academically capable of qualifying as veterinary surgeons; our high emphasis on personal qualities and communication selects students that are able to conduct themselves professionally as veterinary surgeons. We believe the diversity of our students will in future add significantly to the profession.

The admissions process has not substantially changed from that commended in the last RCVS Visitation.

7.1.2 Veterinary student progression and attrition

Progression requirements

Progression criteria are made clear to students at the start of the course, in their student handbooks and yearly through the circulation of an addendum to the handbook which covers all aspects of assessment (assessment timetables, detail on types of assessment, extenuating circumstance claim processes and progression criteria etc.)

The pass mark for modules in the Preliminary Year is 60%; in addition students are required to undertake 2 weeks Animal Husbandry EMS placements. Progression is automatic to year 1 on meeting the pass mark for each module. On average 10-20% of the Preliminary Year exit the course due to failure to progress academically.

For students on the 5 year course, to progress between years students must pass all modules at 50%. In all years there are non-mark bearing 'must pass' elements (OSPEs, Portfolio and Skills Diaries). For year 2 OSPEs and year 3 OSCEs students are required to pass 70% of stations. To ensure high standards are maintained students have one opportunity to resit their assessments before they are required to leave the 5 year veterinary course, with the exception AHDOPS (Animal Handling Directly Observed Procedural Skills), held in years 1 to 3 where there is no limit to the number of resits available.

In addition to passing all year 3 exams, students are required to have passed all Animal Husbandry DOPS, completed Animal Husbandry EMS and gain a minimum of a 2.2 BVMedSci degree in order to progress to year 4.

Student attrition rates are shown in Table 15. The average attrition rate in the University is 9.3% (transfers to other courses and leavers only), the equivalent School value is 4.6%. Students who transfer course mostly transfer to the BVMedSci only course (students who do not meet the BVM BVS progression requirements in years 1 and 2, but meet the lower University progression requirements (40% compensatable pass mark per module) can continue but are required to exit with a BVMedSci degree at year 3). Absolute attrition reasons are predominantly due to long term ill health or decisions to change career. There are ongoing reviews of reasons for attrition in order to inform admissions requirements and also welfare support.

Entering class	Total Students	Reason for relative attrition			Absolute attrition		Total Attrition	
		Academic failure	Personal	Transfer to other UoN courses	Academic	Personal	n	%
2012	132	1 (0.8%)	3 (2.3%)	6 (4.5%)	0	4	14	10.6%
2013	132	2 (1.5%)	1 (0.8%)	6 (4.5%)	2	5	16	12.1%
2014	140	3 (2.1%)	8 (5.7%)	2 (1.4%)	0	2	15	10.7%
2015	135	2 (1.5%)	2 (1.5%)	0	2	1	7	5.2%
2016	163	0	0	0	0	2	2	1.2%

Table 15 Attrition of veterinary students

Attrition = Relative attrition + absolute attrition

Relative attrition = students moving to an earlier year or transferring to other University courses

Absolute attrition = students who leave and never return (excluding those on other University courses)

Students who intercalate are not included in this table

Students must complete the veterinary course within 10 years and cannot take more than 3 years to complete 1 year. Data on average duration of studies for the 2016 graduating cohort is shown in Table 16. Data includes periods of suspension (e.g. maternity)

Duration of studies	5 year course	6 year course including a Preliminary Year
5 years	78	
6 years	6	10
7 years		
8 years		
9 years	1	
10 years		
Average duration of studies (years)	5.1	6.0

Table 16 Average duration of studies for the 2016 graduating cohort

Note: 2 students intercalated a PhD and a further intercalated a MRes in this cohort, the time spent intercalating is not included as an enhanced duration on the 5 year course

Academic misconduct and fitness to practice

Suspected cases of academic misconduct during teaching or examinations are regulated by University of Nottingham procedures. Following initial investigation by the Dean or nominated representative proven allegations may result in either a school-imposed penalty such as a written warning or the award of a mark of zero. More serious offences may be referred to the University Academic Misconduct Committee for consideration under the University of Nottingham Student Code of Discipline. In the most serious cases University Ordinances allow for exclusion of a student from the University. (<http://www.nottingham.ac.uk/academic-services/qualitymanual/assessmentandawards/academic-misconduct.aspx>).

Fitness to Practise is regulated by the University of Nottingham Faculty of Medicine and Health Sciences Fitness to Practise Board, which is attended by two members of School staff. (<http://www.nottingham.ac.uk/academic-services/documents/qmdocuments/fitness-to-practise-procedure-faculty-of-medicine-and-health-sciences.pdf>). Investigations into allegations are initially undertaken in school with preparation of a report which is considered by the Faculty of Medicine and Health Sciences Fitness to Practise Board which may recommend school based sanctions or escalation to a formal Committee investigation. The formal committee has the power to apply sanctions up to and including exclusion from the course. More minor, non-Fitness to Practice disciplinary issues are considered by Senior Tutors, which may result in a formal warning or if the disciplinary issue is outwith School operations then it is considered under the University Code of Discipline (<https://www.nottingham.ac.uk/governance/documents/code-of-discipline.pdf>).

The School is enrolled in the Excluded Student Database of the Medical, Dental, Pharmacy and Veterinary Schools Councils and the details of any student excluded from the course will be entered into this database.

Identification and support to failing students

The School provides mechanisms to identify and support failing students; these have been previously described in section 6.1.3.

Policies for appeals

The School abides by the University policy for appeals against academic decisions and progression (<https://www.nottingham.ac.uk/academic-services/qualitymanual/assessmentandawards/academic-appeals-policy-and-procedure.aspx>). Students cannot appeal matters of academic judgement of an individual or Exam Board (i.e. a student's assertion that the result unfairly reflects the merit of their work or their ability is not grounds for appeal). In summary students make a written case which is initially reviewed by central university before the School makes a response (normally this is by the Examinations Officer or the Teaching, Learning and Assessment Sub-Dean). Should the School issue a revised recommendation which is not satisfactory to the student, or uphold the original decision, the case will then be considered by an Academic Appeal Panel. Once the internal academic appeal procedure has been completed, if the student is still not satisfied with the outcome, they may take their case to the Office of

the Independent Adjudicator (OIA). The OIA operates externally to the University. It will not normally look at a case unless and until all relevant internal procedures have been exhausted.

Students are made aware of the appeals procedure through their student handbook, in an assessment addendum (detailing examinations timetable, progression information etc) and are also given advice as required by their Personal Tutor, Examinations Officer or Teaching, Learning and Assessment Sub-Dean.

Applicants can appeal through a complaints process about misleading or incorrect information by the University and concerns about the application or interview process. (<http://www.nottingham.ac.uk/academic-services/quality-manual/admissions/applicant-complaint-procedure.aspx>). However they cannot challenge the academic judgement of a member of staff and/or School, including the outcome of an admissions decision nor disagreement with the admissions policy rather than its application. The complaint is handled initially at local level, followed, if required by Head of School then ultimately by a Head of Service or Faculty. Applicants are informed of this policy in their initial contact letter with the School.

7.2 COMMENTS

The academic standard of students entering the course is high and within the remit of the School to manage through selection of higher grades should we require this in future. We have found there is no advantage to students undertaking a third A'level in maths or physics and as such accept any third A level subject including subjects such as Art, Physical Education or Music which adds to the diversity of interests in our student body. We have found however that in general attainment at grade B at A Level in Biology and Chemistry is required to be successful on the course, for this reason our contextual offer for widening participation applicants and graduates is at least a grade B in these subjects. In relation specifically to graduates, we require any BSc subject at 2.1 level, as we feel that the proven learning ability of a 2.1 science graduate can be underpinned with a grade B in Chemistry and Biology.

In recent years we have changed our policy in recruiting international students, such that we now admit the best applicants irrespective of home country; we had found that there was a higher attrition rate of international students due to cultural fit and academic ability.

We have found that the incidence of support needs (especially for disabilities associated with mental health) has increased in recent years; we aim to ensure students are identified and supported as early as possible during the course, however we will advise students to delay starting veterinary school or interrupt studies if we feel that this would be the best approach for them to manage their health.

The School has increased cohort size for the 5 year course to 160; there are no plans to increase student above this level to ensure that resources are effectively used and the student experience is maximised. The 6 year course will remain at an intake of 24 to ensure quality applicants for the course.

As detailed previously the teaching facilities in the School have been, and continue to be, expanded to support the increase in student numbers. Timetabling also currently ensures access as required but the School continues to make representation to the University to increase lecture hall facilities. As a result of offering new options for rotation tracks from 2018, the School is able to accommodate increased student numbers at existing Clinical Associates, with the exception of Farm rotations, where an additional local Clinical Associate will be utilised; to facilitate improved choice of tracks a further Small Animal charity Clinical Associate (RSPCA Strinesdale, Manchester) will be utilised.

We feel that progress made by students in their studies is good and that the levels of attrition seen are appropriate. Ongoing curricular changes and improvements consider progression and attainment data, for example, Veterinary Public Health has been moved from year 4 to year 3 and delivered as a block module rather than a long module, this decision was informed by lower assessment attainment compared to other courses.

The School has extensive support mechanisms in place to support students who are not progressing satisfactory, which have been recognised by the University with a prestigious Lord Dearing Award, which recognises excellence in enhancing the student experience. As mentioned the School has seen increased requirement for support needs for students, in particular a higher incidence of support for mental health issues; this is recognised within the University and wider profession as a growing issue.

The School is confident in its academic and support processes so that only those able to practise competently as veterinary surgeons are able to graduate; 92.4% of the 2012 entry class will graduate.

7.3 SUGGESTIONS FOR IMPROVEMENT

The School is considering the number of weeks of work experience required for admission, as applicants are finding it increasingly hard to find placements, particularly due to insurance implications.

The School would wish for a greater number of and lower waiting times for counselling appointments at Sutton Bonington campus.



8 ACADEMIC AND SUPPORT STAFF

8 ACADEMIC AND SUPPORT STAFF

8.1 FACTUAL INFORMATION

8.1.1 Staff allocation

The School has an ongoing recruitment programme phased in relation to the development of the School; academic staff work within Strategic Research Areas well as contributing to or leading teaching modules. The allocation of staff to the establishment is based on the manpower plan contained with the School's business plan. The manpower plan was benchmarked against other University Schools and some UK Veterinary Schools and reflects both teaching delivery requirements at the School and within Clinical Associates and to support research development in the School. Recruitment in relation to non-budgeted posts is determined by the requirements of the research grant or external contract.

There are currently 140.5 FTE / 159 headcount staff in the School, of which 51.2 FTE / 61 headcount are vets (27.7 FTE / 32 headcount of are Specialists (possessing a Diploma)). Academic staff demographic data is shown in Appendices 14 and 15.

Academic staff are recruited to one of three main career paths within the research and teaching job family dependent on the focus of the role:

- A combination of research and teaching;
- Wholly or mainly involved in research;
- Wholly or mainly involved in teaching and learning.

Levels of academic appointments as follows:

Professor (level 7). These roles are established chairs in the School (rather than personal chairs). Professorial staff who are appointed have achieved and sustained an outstanding international reputation and widely recognised eminence in a particular field.

Associate Professor, Clinical Associate Professors and Readers (level 6). These staff have a substantial and ongoing national and international reputation in their discipline/field (including clinical service), normally supported by a PhD, and/or postgraduate clinical qualification and/or Higher Education teaching qualification. Role holders will make a significant impact on the University and on their specialism/discipline through effective and innovative academic and organisational leadership.

Assistant Professor and Clinical Assistant Professor (level 5). Staff appointed on the lecturer scale have extensive experience within their subject/discipline, normally supported by a PhD and/or postgraduate clinical qualification and/or Higher Education teaching qualification. Role holders will have a national reputation in their field.

Teaching/Research Associate/Fellow (level 4). The Associate/Fellow role provides primarily teaching or research support in a specified subject/discipline or activity. Associates tend to possess a degree, Masters, or the equivalent in professional qualifications, with Fellows possessing a PhD.

Research staff are recruited to the relevant category dependent on the needs of the research grant or external contract.

Honorary staff may only be appointed using criteria of standing that is equivalent to normal University appointments. Honorary staff have particular contractual rights and responsibilities and deliver some teaching at Clinical Associates, or on the course.

The School is organised into 3 Academic Divisions and an Administrative Division, which primarily act to provide a line management structure. The Divisions of Veterinary Medicine, Veterinary Surgery and Animal Health and Welfare contribute teaching and clinical input throughout all years of the course. Each of these academic divisions comprises academic staff from all grades; there is no sub-structure to the Divisions (albeit Postdoctoral Research Assistants and Postgraduate students report to their supervisors). Allocation to Divisions is made on similarity between research and teaching interests of the individuals.

There are 26.8 FTE technical staff and 18.8 FTE administrative staff in the School; in addition, there are 24.6 FTE of central University Professional Services staff that support the School. School support staff demographics are shown in Appendix 13. Technical staff are either entirely dedicated to supporting teaching (e.g. the preparation of material for dissection, organising and demonstrating clinical equipment, looking after animals etc) or in a combined research/teaching role, where the majority of focus is on supporting staff with research and also providing input and guidance to postgraduate students and Year 3 project students. There are 5 levels of technician recruited in the School. The administrative staff in the School undertake a range of activities. There are 6 levels of administrative staff in the School.

8.1.2 Staff recruitment policies and processes

Staff are appointed to permanent or fixed term contracts. The majority of staff are appointed on open ended permanent contracts, with funding ultimately by the Higher Education Funding Council for England and Student Fees. No staff are appointed in relation to Clinical income (as this is retained by the Clinical Associate), staff theoretically may be employed from service income, however there are no staff funded in this way. Staff on fixed term contracts are predominantly recruited to Research Associate/Fellow positions on fixed term research grants, or recruited to provide cover for example maternity leave.

The University utilises a thorough recruitment¹⁵ process that utilises the following stages¹⁵:

- Writing role profile form and job description
- Getting approval to fill a position
- Advertising
- Shortlisting
- Selection and interview
- Making an Offer
- Induction

The initial stages confirm that a role profile clearly defines the skills, experience and qualifications required for the post and that the post is comparable to other posts at the same level in the University. The job description will also state the necessary and desirable criteria for selection. Following local, national and international advertisement, a shortlist is compiled by assessing applications against the identified criteria in the person specification. Decisions are based on objective reasons and it is ensured that selection criteria are applied consistently to all applicants. Shortlisting is conducted by at least two members of staff and for all academic and teaching posts normally by the Dean of School and Heads of Divisions.

Up to and including appointment at the level of Associate Professor, University HR arranges the interview panel, which will include the Faculty PVC as Chair, or an independent Head of School or Senior Academic who has had Chair training, together with School representatives. Professorial appointments include an interview panel comprising the Vice Chancellor, Faculty PVC, Dean of School, School representatives, and 2 External Assessors.

All interviewees for the posts of Assistant Professor and above, give presentations and a question and answer session to School staff; these are scored by staff and the results provided to the interview panel. The School has also initiated a process such that selected students attend staff interview presentations and interviews for staff on teaching contracts. Contracts for employment are only provided once appropriate references have been received together with evidence of qualifications.

Induction is managed by the School and includes a timetabled week of activities such as an introductory meeting with key staff, safety and biosecurity briefing, training needs assessment and the provision of detailed information around policies and procedures; it is tailored to the requirements of the individual and may include a follow-up review with the individual. The University also provides a half-day session to introduce new starters to the University, held quarterly.

¹⁵ For further details see www.nottingham.ac.uk/hr/local/recruiting

8.1.3 Staff recruitment and retention challenges

The major challenge to the School, as is common at all UK Veterinary Schools, is the recruitment and retention of suitably qualified clinical staff; there is little difficulty in recruiting non clinical or support staff. The pool of suitable candidates for clinical positions is small, as a consequence of expansion of Veterinary Schools and commercial competition from private practice for diplomate level staff. Although there has not been significant difficulty in attracting applications for positions in the School, the School has taken the decision to appoint only those candidates who understand and meet the School ethos and culture as well as being able to demonstrate the appropriate capabilities and potential for the role. Thus there have been instances where no candidate has been appointed after interview and the position has remained open.

The School has put in place financial incentives to attract clinical staff including a consolidated and pensionable 10% or 15% market supplement. In addition, a further clinical supplement is available for staff based at Clinical Associates undertaking clinical work and out of hour's activities, this supplement is 15% or 20% of salary after addition of the market supplement. These clinical supplements do go some way to meeting the difference between academic and commercial salaries, however there are a number of additional tangible and intangible benefits associated with employment in an academic institution (e.g. pension scheme, sports facilities etc), as well as the academic environment generally and the ability to impart knowledge and skills to a new generation of the profession.

Specifically, in relation to clinical staff, the School has been able to retain excellent postgraduates and residents and recruit them to positions in the School. There are strong benefits in this approach, including cultural understanding and fit, and currently there are four ex-students who have joined the staff. In addition, the School (supported by the Faculty PVC) have provided guidelines which supplement the University's promotion criteria for clinical staff. This allows veterinary clinical activity to be considered within the University Teaching and Learning promotion track.

The School ensures that School staff based at Clinical Associates undertake a full role in the Schools activities and are part of the collegiate community:

- Twice yearly clinician meetings take place at the School
- Monthly Clinical Sub-Dean meetings take place at the School
- Staff are expected to attend monthly staff meetings
- Staff are paired with a non-clinician who forms a veterinary family with their tutees
- A member of management team visits each Clinical Associate regularly
- Staff have full access to the University and Schools systems, including intranet and receive minutes and notes of meetings through this
- Clinical staff are fully included in all normal School operations and have opportunities to contribute to a range of activities such as TLA Committee, student recruitment etc

To attract the highest calibre individuals (both clinical and non-clinical) and also to reflect the fact that most staff cannot bring research funding with them, the School has made available funding for every academic staff member to have a pump-prime fund on joining the School, and has also allocated strategic money to fund postgraduate students and postdoctoral workers.

The University's aim is to attract, retain and motivate high quality individuals and to provide equality of opportunity in order to maximise the benefit to the University from the diversity of its workforce. The Equal Opportunity Policy seeks to create the conditions whereby staff are treated solely on the basis of their merits, abilities and potential, regardless of gender, race, colour, nationality, ethnic or national origin, age, socio-economic background, disability, religious or political beliefs, trade union membership, family circumstance, sexual orientation or other irrelevant distinction.

The School has put a number of measures to embed this in our culture and these are overseen by 'Equality, Diversity and Inclusivity' (EDI) and Athena Swan committees. For example, we have created an Equality and Diversity website, providing information on support for all protected characteristics and useful contacts within SVMS and outside SVMS for support. To attract and retain a diverse faculty, we internationally advertise all academic positions and our adverts highlight our commitment to EDI.

The School is working to attain the Athena Swan Bronze status (<http://www.ecu.ac.uk/equality-charters/athena-swan>) to implement various diversity measures and interventions in the School. There have already been outcomes of involvement in the programme: 2/2 women staff promoted to Professor

in 2016/17, there was also an increase in research grant success rate by female staff in 2016/2017, career and leadership shadowing initiative for all academic staff and adoption of our School best practice on staff engagement surveys by the University.

There are a number of School staff employed on part time contracts, in particular 0.2 FTE roles are available for staff facilitating clinical relevance sessions – these roles are especially attractive to parents who wish to balance child care / family commitments. All part time staff are fully integrated and treated as any other member of University staff.

There are a variety of policies designed to maintain a stable cohort of academic and support staff. The School complies with university policies on parental leave and flexible working and encourages part-time working to all staff to improve work-life balance. As an example 82% of administrative staff have at some point opted to undertake “flexible” working of some description. Divisional Heads recognise the importance of staff development in maintaining a stable cohort of staff and are good at developing bespoke programmes for individuals.

Loss and recruitment of academic staff is shown in Appendix 16. Average staff turnover is 8.4% over the last 5 years.

Short term gaps in filling appointments are normally covered within the workload of current staff, for example maternity cover, however for clinical maternity cover the School will either employ a locum, offer a fixed term position or provide a payment to Clinical Associates to cover their additional staff effort. Longer term gaps in appointments occur in times of recruitment ‘freeze’ by the University, in light of financial pressures. When these have occurred the School has been able to successfully argue a case for appointment for academic and clinical staff on the basis of the requirements of accreditation; for technical and support staff the School employs temporary members of staff. Longer term gaps have also occurred in relation to clinical appointments, where the School has not been able to select appropriate candidates; in this case we would employ locum staff or make payments to Clinical Associates. Currently we have 3 FTE clinical staff positions vacant which incur additional payments to Scarsdale Veterinary Group and Oakham Veterinary Hospital; these positions deliver part of year 5 rotations, and equate to <2% of the core curriculum.

8.1.4 Staff teaching competence and expertise

The University requires that all newly appointed academic staff undertake the Postgraduate Certificate in Higher Education (PGCHE); 36 staff possess at least a PGCHE; 70% of staff have a teaching qualification (compared to 58% in the University). In addition, the Nottingham Recognition Scheme enables participants to claim recognition for their contributions to the University’s educational objectives, based on evidence of engagement with the UK Professional Standards Framework in their teaching and their continuing professional development activity. The scheme is accredited by the Higher Education Academy (HEA) so those who make a successful claim can be recognised as Associate Fellows, Fellows or Senior Fellows depending on their expertise, scholarship and scope of impact. The School actively encourages staff to seek recognition as Fellows of the Higher Education Academy: 3 staff are Principle Fellow of the Higher Education Academy, with a further 44 staff Fellows/Senior Fellows; in addition 1 member of staff is a National Teaching Fellow and 18 staff have received the prestigious University Lord Dearing award for teaching.

The School organises a number of relevant initial or refresher courses or workshops in-house on a regular basis covering all aspects of teaching, learning and assessment, (e.g. facilitation skills, introduction to ultrasound, MCQ/EMQ writing, use of YouTube for teaching and learning, admissions, personal tutoring). There are strong links with a number of other veterinary schools, where there is collaboration in development of staff skills and curricular activities, School staff have attended relevant external training courses such as EMQ training, assessment in clinical rotations.

Appropriate training is provided to staff at all levels in the Clinical Associate Institutions. In association with the University Professional Development Unit the School has developed a training programme for those staff at Clinical Associates who have student contact. The course takes core components from the established and accredited Intensive Learning and Teaching Programme (ILTP) run by Professional Development and intended for those educators relatively new to teaching. Several Clinical Associate staff have registered to undertake educational Masters programmes; in addition Clinical Associate staff are

also supervised by School staff to undertake residencies (for example, two Oakham clinicians are being supervised to attain DipECVS).

There is some supplemental teaching delivery by other University and external staff, when appropriate or niche expertise does not reside within the School; these staff may be paid as consultants or are honorary staff. All external deliverers are appropriately briefed and monitored by the Module Convenor, including pre-appointment and pre-delivery briefings and a post-delivery review. In 2016/17 they delivered 302 hours of teaching (12.3% of the total in years 1-4).

The University of Nottingham also offers staff who teach the opportunity to be observed by an experienced academic from outside their school via the Peer Observation College (POC). The POC aims to support colleagues who wish to improve their teaching through observation of their teaching and learning practice. The POC has recruited 50 experienced staff from across the University who will provide professional and independent feedback. Staff can also request to observe an a POC member with a view to developing their own practice. The benefits are to:

- Encourage staff to reflect on the effectiveness of their teaching
- Increase their awareness of the whole student experience
- Identify areas for improvement and put in place an action plan

The POC uses information collected anonymously by the college to identify and publicise good practice around the University. It also provides summarised feedback to academic management identifying general strengths and weaknesses in teaching as sampled through observations of individuals.

8.1.5 Staff support and development

At the annual appraisal meeting Divisional Heads discuss personal development plans. This may include plans for internal or external training or developmental opportunities such as national committee work, work shadowing or other opportunities. The University Professional Development Unit provides development advice and courses for all groups of staff though a varied programme of short courses and accredited qualifications. Themes such as professional and personal development, managing people and projects, and equal opportunities are delivered through a variety of methods such as web based training, forums and traditional courses (<http://www.nottingham.ac.uk/hr/aboutus/professional-development/professional-development.aspx>). All staff are encouraged to attend courses and most are offered free of charge.

Each academic member of staff has a yearly fund to attend scientific meetings or professional development. There is also a centrally held training budget which is also used to subsidise additional attendance at relevant professional development opportunities where there is justification that attendance would aid a member of staff's personal development. The School also supports staff to undertake academic qualifications, currently 3 staff are undertaking PhDs, and 2 are also undertaking study for the DipECVPH. Support staff also access this funding, and support has been provided for a variety of courses – from day courses through to MBA.

8.1.6 Processes for mentoring and supporting staff especially junior academics

A 'buddy' Peer Observation of Teaching process is in place. All academics are assigned to work in a group of 2-4 and are encouraged to observe teaching of other members of the group on a yearly basis. This allows them to improve their own curriculum literacy whilst providing a mechanism for informal feedback to other academics in their group.

All academic members of staff are aligned with a senior staff member who acts as a research mentor with whom they meet once a semester to discuss research and funding opportunities, to identify and cultivate collaborations and discuss career opportunities and development. Research mentoring has been extended to include post doctoral scientists since it was perceived that this stratum within the school had no formally structured career guidance. In this latter case mentoring is performed by more junior staff at Assistant Professor level since we believe that these staff will have more in common with the issues of early career scientists than would senior staff; senior staff are also available for discussion as necessary.

Recently the School has agreed to join the School of Medicine Mentoring Scheme and will contribute financial support and mentors to the programme. The programme matches the skills, interests and

requirement of mentees with mentors and will allow cross-school pairing from across the three job families.

8.1.7 Opportunities to attend conferences and take sabbatical leave

As detailed above each academic member of staff has a yearly fund to attend scientific meetings and has access to a centrally School-held training budget which is also used to subsidise additional attendance at relevant meetings, where there is justification that attendance would aid a member of staff's personal development. The School strives to maintain excellence in both teaching and research. In order to encourage research activity within the School, funding for relief teaching, examining, or administrative duties may be given up to a maximum of £5,000. The focus of this scheme is to provide a sabbatical for academic staff to allow them to visit and collaborate with international-leading research teams in fields that have clear strategic focus for the individual, research group and School. The sabbatical scheme is intended for staff to visit a leading international group or institution for a period of 3 to 6 months, requests for shorter intensive visits are also welcomed. All academic staff within the School are eligible to apply. It is anticipated that applicants will also be making every effort to gain matched funding. The School's Management Team reviews proposals.

8.1.8 Rules governing outside work

The University encourages members of staff to undertake external professional work. Interaction with industry, business, public organisations and the community in general (whether regionally, nationally or internationally) has the dual benefit of broadening the experience of (and providing additional income for) staff and enhancing the reputation of the University. Staff are able to devote up to a maximum of 50 working days a year to outside work with not more than 30 days falling within University term-time. The permission of the Dean of School is required to undertake all outside work, not conducted within individual's annual leave or at weekends. University academic staff have the choice of whether to undertake the work privately or through Nottingham University Consultants, a University organisation which provides management and commercial support and expertise to academic staff wanting to carry out consultancy work. Currently Nottingham University Consultants charges a top slice fee of 17.5% on the total project costs. Staff employed as clinical academics are unable to undertake external clinical work under the 50-day rule.

8.1.9 Review and planning of staff performance

The University has a robust Personal Development and Performance Review (PDPR) process¹⁶ to enable the School to manage salary progression in a way which ensures that individuals are appropriately rewarded, based on the contribution they make, clearly linked to the objectives of the School. For individuals, it provides the opportunity to be rewarded through a goal-based process which is transparent and fair.

Contribution is measured in a variety of ways and includes

- Clinical teaching and assessment responsibilities and achievements
- Research grants applied for and awarded
- Publications
- Supervision of research students, interns, residents and postdoctoral research fellows
- Administrative duties and other contributions to the School, University, and external bodies

Behaviours and values are evaluated against 5 competency groups:

- Achieving and delivery
- Personal effectiveness
- Working together
- Thinking and innovation
- Managing, leading and developing others

The Review process enables the School to identify and respond to the development needs of all staff, including both short-term development and more long-term career aspirations. Furthermore, the process

¹⁶ Further details are available at <http://www.nottingham.ac.uk/hr/guidesandsupport/performanceatwork/index.aspx>

sets goals for the coming year. Appraisals are held with the direct line manager, which for all academics is the Head of Division, with the exception of Professorial staff who are appraised by the Dean; Research Associates/Fellows are appraised by the Principal Investigator of the grant on which they are employed. Support staff are appraised by their line manager, who will be a team leader, or Head of Operations. The yearly appraisal process recognises excellent performance; additional increments can be awarded resulting in accelerated progression within a band, together with an option to award bonuses up to 9% of salary. Poor performance results in a review of development and support needs within the context of University guidance on managing underperforming staff.

The University has instigated a workload planning system. The underlying ethos driving the workload planning framework is to allow effective planning of academic time and to enable a more open and transparent view of planned workload. It is assumed that all academic staff will have time allocated to undertake each of the following: teaching – including preparation, delivery and assessment - research, citizenship and academic service. Elements of an individual's workload allocation can vary from year to year, but that their overall workload within a three to four year period should fall within the norm expected by the School. Additional development time is allocated to early career academics; staff in the first three years of their first academic appointment, and all staff have allowances for their own specific individual commitments, for example positions on School, University or external committees, research grant delivery, Sub-Dean roles, postgraduate supervision etc. The workload plan is populated centrally in the School and staff can comment on their assignment at that point to correct inaccuracies. Research data are made available to line managers and the Dean via an Academic Profile Tool. An individual's workload is discussed at PDPR, with changes made as necessary for the subsequent year.

8.1.10 Promotion policies and processes

The University's promotion process for academic staff recognises a high level of achievement in 3 broad areas of activity:

- Research and scholarship: research activity (including research income and publications), and standing within the UK and international research community
- Teaching and learning activity: teaching quality, teaching leadership, educational research, teaching innovation and good citizenship, including PhD supervision, outreach etc. For clinical staff, clinical activity is also considered within teaching
- Academic service: e.g. leadership, management, administration, collegiality, knowledge transfer or pastoral care within the University, or by engaging with the wider community on behalf of the University

All applicants for promotion are expected to demonstrate high achievement in the areas applicable to the focus of their role and all must include evidence of academic service. Each individual case is judged on its merits with weight given to teaching, clinical work, research and other activities according to the career track an individual wishes to be considered for. All academic staff may put themselves forward for promotion if they consider they match the relevant criteria. Progress towards promotion is discussed with all staff at their annual PDPR and the School provides support through the promotion process with workshops and mentoring. The School Promotions Panel considers each application against the University promotions criteria prior to submission to the Faculty PVC. Following discussion by the Faculty PVC and Heads of Schools, the Faculty may pass applications to the University Promotions Committee and then if supported onto external review; feedback and further support is given to unsuccessful staff. Detailed criteria will be available to view during the visitation.

There are no promotion opportunities for support staff, instead they can move to a higher grade role or the role is regraded (rather than the individual).

8.1.11 Role of Interns, Residents and postgraduate students in teaching and assessing veterinary students

Residents, Interns and DVetMed students are integrally involved with year 5 clinical teaching, they may work closely with the students on an informal daily basis, and may be involved in scheduling activities, but ultimately feedback, with academic staff and other members of Clinical Associates about student performance to Rotation Leaders. Residents may be involved in assessing DOPS, however otherwise no students are involved in assessment. Other non-clinical postgraduates (e.g. PGCertificate, MRes, PhD) act as demonstrators in practical sessions in years 1-4. It is normally expected that students undertake

university courses in teaching and demonstrating and school teaching induction courses. Some students, for example, Residents may undertake the Associate Teacher Program and gain HEA status.

8.1.12 Secondary roles of academic staff

A list of secondary roles of academics is shown in section 0.1, with Committee membership available in the Supplementary Information pack.

8.2 COMMENTS

In order that the School can ensure a pipeline of clinical applicants to positions the School is considering whether it is possible to establish a programme where students can undertake a residency programme that culminate in tenure as a full clinical academic, subject to satisfactory performance.

At Faculty level work is ongoing to ensure consistency of practice within the workload planning system: for example ensuring a uniform approach to time allocated for teaching preparation.

8.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 13 School staff support for teaching and research (data at 14.6.17)

	Technical staff FTE	Administrative and other staff FTE
Responsible for the care and treatment of animals	15.3	0
Responsible for the preparation of practical and clinical teaching		0
Responsible for administration, general services, maintenance etc	0	17.8
Support staff primarily engaged in research	11.5	1.0
Total	26.8	18.8

The teaching technical team care for School teaching animals (approximately 0.2 FTE) and prepare for practical teaching so the category is merged.

In addition there are 24.6 FTE staff based in central University functions (e.g. Student Services, Estates, HR, Dairy Farm, and Finance etc) that directly support the School

Appendix 14 Non Veterinary qualified FTE staff (data at 14.6.17)

Status	Title	Non degree (and unassigned for Clinical Associates)	Bachelor degree	Bachelor + PhD	Bachelor + Masters + PhD	Higher Degree and Fellows
Full time (>75%)	Administrator					
	Professor			2.0		4.0
	Associate Professor			6.0	4.0	2.0
	Assistant Professor			5.0	5.8	1.0
	Teaching Fellow	2.0				
	Research Fellow		1.0	5.0	2.0	
Part time (<75%)	Administrator					
	Professor			0.4	0.5	
	Associate Professor				0.6	
	Assistant Professor					
	Teaching Fellow	1.2		0.5		
	Research Fellow			0.5		
	Clinical Associate Staff	0.6				
Total		3.8	1.0	19.4	12.9	7.0
Total non veterinarians		44.1				

Higher degree is DSc; Fellows include FRCPath, FRSB, FRSC, these staff possess other qualifications (e.g. Bachelors and PhD).

Clinical Associate staff include veterinary nurses, farriers, and army staff and are not differentiated into categories.

Appendix 15 Veterinary qualified FTE staff employed at 14.6.17

Status	Title	Vet degree only (and unassigned for Clinical Associates)	Vet degree + Masters	Vet degree + PhD	Vet degree + Masters + PhD	Vet degree + RCVS Cert	Vet degree + Masters + RCVS Cert	Vet degree + PhD + RCVS Cert	Vet degree + EU/RCVS/ American Diploma	Vet degree + Masters EU/RCVS/ American Diploma	Vet degree + PhD + EU/RCVS/ American Diploma	Higher degrees and Fellows
Full time (>75%)	Dean											1.0
	Professor								1.0		3.8	4.0
	Associate Professor			1.0	1.0	1.0		1.0	2.0		6.0	2.0
	Assistant Professor	3.0		3.0					2.0		6.0	3.0
	Teaching Fellow	4.7	2.0									
Part time (<75%)	Administrator											
	Professor											
	Associate Professor							0.2	0.7			
	Assistant Professor					0.5				0.4		
	Teaching Fellow	0.4	0.4			0.1	0.3		0.2			
	Research Fellow										0.6	
	Postgraduates	1.0	1.0									
	Clinical Associate Staff	14.1										
Total		23.2	3.4	4.0	1.0	1.6	0.3	1.2	5.9	0.4	16.4	10.0
Total veterinarians		67.4				Total School specialist veterinarians				27.7		

Diploma holders may also possess Certificates

Fellows include FRCVS and FRCPath. These staff possess other qualifications (e.g. Bachelors, PhD, Certificates and Diplomas).

Clinical Associate staff include many staff with Certificates and Diplomas however it is overly complicated to assign the FTE per Clinical Associate to qualification categories

Postgraduates include 2 farm residents and 2 zoo DVetMed students

No external teaching deliverers, apart from Clinical Associate effort is included.

Appendix 16 Loss and recruitment of faculty over the last 5 years

Year	Faculty lost		Faculty recruited	
	Category of staff	Discipline	Category of staff	Discipline
2016/17	AP (Doles) AP (Davies) AP (Bexfield) L (Habershon-Butcher)	Equine Surgery SA Clinical Practice SA Medicine and Oncology Equine Medicine	L (Wieser) L (Dubuc) TA (Roots)	SA Practice Equine Surgery Teaching
2015/16	AP & Reader (Corr) AP (Flynn) AP (Frank) AP (Perry) L (Tildesley) L (Janicke) TA (Booth) TA (Reed) TA (Leicester)	SA Surgery Immunoparasitology Endocrinology Veterinary Reproduction Infectious Disease Modelling Clinical and Professional Skills Clinical Skills Teaching Teaching	P (Mertens) L (Down) L (Dottorini) TA (Foden) TA (Bowden) TA (Reed) TA (Tomlinson) TA (Gordon) TA (Henstridge) TA (White)	Virology FA Population Health Bioinformatics Teaching Teaching Teaching Teaching Teaching Teaching Teaching
2014/15	L (Asher) L (Kuchipudi) L (Mostyn) TA (Buckenham) TA (Douglas)	Epidemiology Molecular Virology & Immunology Comparative Cellular Physiology Preliminary Year Equine General Practice	P (White) SL (Eastwood) L (Payne) L (Duz) P (Bennett) TA (Merritt)	SA Veterinary Surgery Teaching Anatomy Equine Internal Medicine Zoonotic & Emerging Disease SA General Practice
2013/14	AP & Reader (Mobasheri) AP (Gains) AP (Brower) L (Blunt) L (Klisch) TA (Castillo Fernandez)	Comparative Physiology Pathology Pathology Applied Entomology Clinical Anatomy Teaching	AP (Bexfield) AP (Self) AP (Blott) AP (Graham) L (Janicke) L (Stavisky) L (Remnant) L (Grau Roma) L (De Brot) L (James) L (Tildesley) TA (Garcia Ara)	SA Medicine & Oncology Anaesthesia & Analgesia Animal Breeding & Genetics Clinical Pathology & Endocrinology Clinical & Professional Skills Shelter Medicine FA Health & Production Pathology Pathology Cancer Biology & Gene Expression Infectious Disease Modelling Public Health

2012/13	AP (Hammond) AP (Brown) AP (James) TA (Farrell) TA (Stockdale) TA (Yarnell)	Anaesthesia Pathology SA Clinical medicine Teaching Exotics Teaching	AP (Davies) AP (Lovatt) L (Brogden) L (Egan) TA (Cripps) TA (Castillo Fernandez) TA (Curzon) TA (Onions)	Sheep Health & Production Sheep Health & Production SA General Practice Infection and Immunity Clinical Skills Teaching Preliminary Year Preliminary Year
TOTAL	30		39	



9 CURRICULUM

9 CURRICULUM

9.1 FACTUAL INFORMATION

9.1.1 Overview of the programme

Introduction

Curriculum development at Nottingham is driven by the learning outcomes that students are required to display at graduation, and is the culmination of extensive consultation and planning coupled with ongoing review. The curriculum has thus been designed to meet the RCVS Day One competences, QAA Subject Benchmark and EAEVE Subject Areas, with additional key underpinning themes of providing a grounding in basic science, research literacy and ensuring development as professionals. Being a recently established school has enabled us to develop a bespoke and novel curriculum which ensures our graduates have excellent employment prospects and excel in practice and other roles both within the veterinary profession and beyond. The clinically integrated nature of our curriculum ensures students are engaged, motivated and enjoy their learning, whilst developing problem solving, team working and communication skills.

Our key aim is to educate and train veterinary students, providing them with the knowledge, intellectual, practical and professional skills to fulfil the demands required of them to succeed and develop as accomplished veterinary professionals. Specifically, the aims of the programme are that students should have, on graduation:

- Broad knowledge of the basic sciences on which the activities of veterinary surgeons are based
- Broad knowledge of the structure and functions of healthy animals in relation to husbandry, health, welfare, housing, reproduction, behaviour, nutrition and hygiene
- Knowledge of animal health and its promotion and of disease and its causes, diagnosis, management, treatment and prevention
- Practical competences allowing accurate, safe and practical handling, examination, diagnosis and sample collection and analysis
- Knowledge of clinical pharmacology, medical and surgical skills and techniques
- Knowledge of veterinary public and animal health standards, processes and issues including animal foodstuffs, transmittable and notifiable zoonotic diseases and animal welfare
- Problem solving ability, and knowledge, understanding and skills in contemporary research
- Professional skills and attributes ensuring effective communication, liaison and team working with clients, colleagues and other stakeholders; understanding of the professional, legal and ethical responsibilities of the veterinary surgeon with regard to RCVS guidelines and in the wider society, including the obligation for a commitment to continuing professional development, coupled with due recognition of their own personal limitations
- Skills and attributes for further professional development and continual lifelong learning as a veterinary surgeon

Our programme is mapped to RCVS Day One competences, EAEVE and AVMA clinical competences.

The 5-year veterinary curriculum at the School of Veterinary Medicine and Science, is unique in culminating in the award of two degrees:

- Bachelor of Veterinary Medical Sciences (BVMedSci) at the end of Year 3
- Bachelor of Veterinary Medicine (BVM) and Bachelor of Veterinary Surgery (BVS) at the end of Year 5 (awarded jointly)

The curriculum is delivered in a vertically (clinically) and horizontally (subject) integrated programme using a range of innovative teaching methods. Each major body system is delivered as a separate module (Supplementary Information pack). In Years 1 and 2, the systems-based clinical science modules cover structure and function in the normal animal (Musculoskeletal 1, Cardiorespiratory 1, etc.). Each of these systems-based modules is repeated in Year 4, when the clinical aspects of disease, diagnostics and treatment are delivered (Musculoskeletal 2, Cardiorespiratory 2 etc). Module 1 (clinical science) and Module 2 (clinical) of each body system are scheduled within the same month during the academic year where possible, enabling the clinical students to review any relevant Module 1 material

(basic biology and science, anatomy dissections, histology etc.) during the Module 2 teaching. This helps students to activate their previous knowledge and also to appreciate how clinical aspects inter-link with normal structure and function. Year 4 students are also involved in peer-led teaching to earlier years thereby ensuring they are cognisant of all the relevant basic science relating to that module.

A problem-oriented approach ensures integration is emphasised appropriately. Delivery methods are diverse and include core 'signposting' didactic lectures and practical classes, alongside facilitated small group problem-based learning sessions. The development of lifelong learning skills is supported through the inclusion of self-directed and group work.

In addition to 'block' system-based modules, there are also 'long' modules running throughout the year. Long modules cover some of the key skills and knowledge required across the veterinary field (for example in Years 1 and 2; Animal Health and Welfare, and Personal and Professional Skills). Integration between these long modules and the body system modules ensures relevance and engagement.

In a typical problem-orientated curriculum, matrices of subject and topic are mapped into the individual cases that are delivered throughout the course. When doing this there is the potential for particular topics to become 'hidden' to teachers and learners. To avoid this we identify and map learning outcomes of "embedded" modules, a process overseen by dedicated Module convenors for these areas. Examples include biochemistry, ethics, and anatomy and embryology (see Appendix 17).

Year 3 acts as a transition year between clinical science and clinical modules. A twelve week free choice research project at the start of year 3 allows students to develop scientific curiosity and research skills of literature searching, experimental design, analysis of data and scientific writing techniques; many students are involved in formal publication of their work. The students also study further principles of veterinary science, veterinary public health, and clinical and professional skills, which builds on skills already delivered within the systems based teaching and prepares students for learning in the clinical workplace.

Year 5 is lecture free and students undertake a series of Intra-Mural Clinical Practice Rotations that comprise small-group clinical teaching in the hospital / practice / laboratory situation (Table 17). The year is competency-based, and allows students to further develop clinical skills, reasoning, knowledge and professionalism in the context of the workplace. Teaching and learning is based upon practical experience, observation and discussion and may also include seminars, case rounds, practical classes and self-directed learning; students are normally under the supervision of University academic staff placed at, and working within, the institution. The 26 weeks of rotations are delivered over a period of 50 weeks. During year 5, students also undertake a 4 week elective in Specialist Practice, a 1 week compulsory Emergency and Critical Care/Out of Hours rotation and undertake up to 21 weeks of Clinical Extramural Studies and study /vacation.

Students meet RCVS requirements to undertake Animal Husbandry and Clinical Extra-Mural Studies (EMS) in vacation periods.

- A minimum of 12 weeks Animal Husbandry EMS (AHEMS) is scheduled in Years 1, 2 and 3
- A total of 26 weeks Clinical EMS (CEMS) is scheduled from the end of Summer of Year 2

Appendices 18 and 19 show hours per unit of study and of disciplines and subjects. Details of units of study including learning outcomes and mapping to programme outcomes and RCVS Day 1 competences are available in the Supplementary Information pack.

Basic subjects

The curriculum is delivered in an integrated programme using a range of innovative teaching methods. A systems-based approach means each major body system is delivered as a separate module in which coverage of all basic subjects is included. In Years 1 and 2, the systems-based clinical science modules cover structure and function in the normal animal (Musculoskeletal 1, Cardiorespiratory 1, etc.).

There is incremental development of understanding in a range of basic science subjects including anatomy, physiology, biochemistry, embryology, immunology, genetics, molecular biology and microbiology within the systems based modules undertaken in Years 1 and 2. Subjects which traditionally have been considered as 'paraclinical' such as pathology, microbiology, parasitology and immunology are also taught within the system based modules in Years 1 and 2 and are complemented and reinforced by additional teaching in a Year 3 Principles of Clinical Veterinary Science Module. Basic

subjects and sciences are considered as embedded modules within the curriculum and tracked to ensure elimination of any omissions or duplications across the modules. It is expected that when the students progress to the clinical modules in Year 4 they are conversant with all the material taught in the clinical science system-based modules and the long modules delivered in Years 1 and 2.

Animal production

Animal production is primarily covered within Animal Health and Welfare modules which are “long modules” running through years 1 and 2. Teaching is integrated with concurrent systems based teaching where appropriate. Three of the guiding aims of these modules are to provide:

- An introduction to the health and husbandry of the common species on which to build throughout the remainder of the course.
- A basic understanding of animal industries and the role of the different species in society
- The key animal handling and practical skills to enable students to effectively and efficiently learn during preclinical farm based Extra Mural Studies (EMS) and clinical EMS
- Animal production is consolidated during clinical teaching in year 4 (e.g. Reproduction 2) and Year 5 rotations (e.g. Farm practice, Herd Health)

Clinical subjects

Delivery of clinical sciences exploits the vertical integration of the course to allow effective embedding of clinical concepts and skills alongside basic sciences from Year 1. In Years 1 to 3 clinical material is used to reinforce and contextualise the basic subjects and sciences, and practical skills which are core to later development of clinical competence are taught, practised and assessed. In Year 4 of the course emphasis is primarily clinical, utilising and building upon earlier concepts and knowledge. Year 4 students are also involved in peer led teaching to earlier years thereby ensuring they are cognisant of all the relevant basic science relating to that module. The development of clinical knowledge is also supported by the process of EMS.

The lecture-free Year 5 is based at the Clinical Associates in which structured, quality assured clinical teaching is delivered in the context of a large, varied caseload, relevant to the ‘Day One’ veterinary graduate. Total Intra-Mural Rotations are 26 weeks; in addition students are required to undertake a 1 week CEMS compulsory Out of Hours / Emergency and Critical Care. Details of Clinical rotations, durations and locations are shown in Table 17.

Food hygiene

The principles of the food chain of a variety of species, epidemiology, milk production and microbiology are delivered in body systems based modules where appropriate e.g. milk hygiene in Reproduction 2, microbiology teaching in all modules. In Year 3 the Veterinary Public Health (VPH) module integrates the principles and concepts of food hygiene, population medicine and veterinary epidemiology. Furthermore, the management and surveillance of zoonotic and notifiable diseases is developed and its context with regard to legislation and enforcement defined. The students are expected to develop an understanding of the public health issues relating to other food sources and to exhibit a working knowledge of the basic food sciences including food technology, processing and preservation as well as the relevant environmental and economic issues associated with food production.

Food hygiene knowledge is applied in context during the year 5 VPH rotation.

Preventative medicine

Preventative medicine topics are integrated into the systems-based modules as appropriate. The majority of vaccination teaching, for example, is included in infectious disease teaching in Principles of Veterinary Science and Lymphoreticular Cell Biology 1 and 2. Preventative medicine teaching is consolidated during final year, where students commonly lead vaccination/wellness consultations during Shelton Lock and PDSA rotations, and design farm animal health preventative strategies during Farm Animal Practice and Herd Health rotations.

Professional skills

Personal and professional skills are delivered in each year of the curriculum, ensuring a strong emphasis of important topics such as communication skills, ethical reasoning and business. This material is taught in two ways; firstly, the stand-alone module Personal and Professional Skills (PPS), and secondly, learning outcomes from PPS are integrated at multiple relevant points within other system based modules (including, for example clinical relevance sessions). This philosophy avoids the common pitfall of professional skills and knowledge being seen as ‘soft’ and underlines the importance

of this teaching to the students. Within the PPS module, teaching is often experiential or discussion based and uses techniques such as the use of medical actors for communication skills sessions. Years 1,2 and 4 contain standalone Personal and Professional Skills modules. In year three professional skills are included in the Clinical and Professional Skills module, which prepares the students effectively for Clinical EMS placements. Professional skills and professionalism are examined throughout the curriculum through an annual ePortfolio assessment and communication skills OSCEs and DOPS. Professionalism is a separate and specific must-pass assessment for each Year 5 rotation.

9.1.2 Unusual and innovative aspects of the curriculum

There are many examples of unusual and innovative aspects of the curriculum:

- A true clinically vertically integrated curriculum that both demonstrates the clinical relevance and application of the basic sciences from the start of the course and reinforces the importance of basic sciences during the clinical modules, through a spiral curriculum. Much of Years 1 and 2 learning is emphasised and supported by clinical cases using the principle of contextual learning. Discipline based subjects are embedded within the systems modules and are assured by a group of Module Convenors, with responsibility for embedded modules within the curriculum
- Within Year 3, students undertake a substantial research project, enabling the student to develop knowledge and skills in a range of disciplines as determined by the interest and needs of the student.
- The emphasis on professionalism, that is embedded throughout the course, provides a unique opportunity for students, in early years, focussing on reflective ability, communication skills training (including the use of specialist medical actors), and peaking in year 4 with teaching of business management and entrepreneurship; one particular aspect (the Business Game where students develop a business plan for a veterinary practice and they pitch their ideas in a Dragon's Den) has received attention from the national veterinary press. Assessment of professional behaviour is a core component of student evaluation in Year 5
- Integrating clinical skills into the early years of teaching, and developing clinical skills in later years before entrance into the clinical final year, combined with the explicit assessment of these clinical skills through Objective Structured Practical and Clinical Examinations (OSPEs and OSCEs) that link to final year Directly Observed Procedural Skills (DOPS), and to RCVS Day 1 Competencies functions to guide student learning and demonstrates a roadmap of clinical skills development throughout the programme to post-graduation.
- Key to the delivery of the School Intra-Mural Rotations (IMR) has been the identification of clinical situations in a community-based model that provide an appropriate and authentic learning and assessment opportunities for our students. Whilst our species-based hospital and ambulatory clinical services are second to none, we have also taken the opportunity to be creative and provide a similar level of excellence for all aspects of IMR. For example, students spend time at our Vets in the Community clinic which we have established at a Big Issue office (<https://www.bigissue.org.uk/>), here students assess and treat the pets of homeless people. In Veterinary Public Health we include practical teaching of bee husbandry and health on campus, make use of the School's small holding animals and abattoir (animals are reared by the students, slaughtered on-site and meat is sold to members of the School), and conduct site visits to local markets and food producing units.
- The entire body of curriculum materials are delivered electronically via the electronic learning environment, Moodle, which the students access by laptops provided by the school. It is supplemented by additional learning resources for example the video bank (MooTube), an online anatomy museum, a Twitter finals revision class (<https://twitter.com/VetFinals>), virtual patients (using Xerte toolkits) and the clinical image repository.

9.1.3 Strengths and weaknesses of the curriculum as a whole

Strengths

- Our outcome based student-centred curriculum encourages students to learn in an independent fashion, and they have responsibility for their own education. It encourages a more active approach to learning, building on prior knowledge, and learning by doing, in order to assimilate and accommodate their own learning
- By combining a clinically focussed basic science curriculum and providing clinical learning opportunities around first and second opinion cases the curriculum delivers true 'Day One' skills.
- An integrated research programme produces research-literate veterinarians

- Emphasis on professional skills ensures graduates have excellent problem-solving abilities and a commitment to lifelong learning, coupled with experience in business and management
- Utilisation of a wide range of eLearning initiatives such as online assessments, interactive voting systems in lectures, an extensive virtual learning environment (Moodle) containing all teaching material, our MooTube video library, high quality visualisation equipment in the dissection laboratory and iPad assessment of OSCEs
- A focus on student engagement, encouraging our students to develop beyond the boundaries of core curricular content, leading to enhanced employability skills (recognised by the ASPIRE award)
- Our position within a wider medical faculty, allowing us to learn from other clinical degree providers, and work together on a range of projects designed to enhance the student experience
- Engaging, innovative and committed teaching staff, evidenced by a large number of local and national teaching awards
- Our community based model of final year teaching, which exposes students to the right type of cases in order to develop professionally and practically

Weaknesses

- The university has recently moved to centralise some aspects of student services, which has led to challenges to our model of support. The school is working hard to ensure this does not impact on student experience

9.1.4 Major curricular changes that have occurred since the last visitation

There have been no major changes to the content of the curriculum, rather there have been some organisational changes as detailed below.

Term one of year one has been adjusted to increase the length of LCB1 to three weeks, allowing more time for delivery and consolidation of an area students were finding challenging. Musculoskeletal 1 was therefore reduced by one week, this was managed by moving some material to other modules and no learning objectives have been lost.

Veterinary Public Health, formerly taught as a long module in Year 4, has been moved to a two week block module in year 3. We recognised that the longitudinal nature of Veterinary Public Health module in year 4 was not helpful to student learning, and the decision was made to deliver this teaching in a block module and move it to year 3, where the content could be more appropriately delivered adjacent to the Principles of Veterinary Science module. This has been viewed as a success by staff and students. After a careful tracking exercise, some content has been re-integrated back into the year 4 systems modules. The change with VPH also resulted in the merging of Personal and Professional Skills 3 into Practical Techniques to form a new Clinical and Professional Skills module. The credit rating of the research projects has been slightly reduced to accommodate the movement of VPH to year 3.

There have been some changes associated with year 5:

- A compulsory introductory week prior to rotations starting has been restructured to offer all the health and safety information and pastoral support for the final year. The week has surgical, and anaesthesia refresher practical's timetabled, advice about DOPS and assessment, plus CV and financial planning sessions, and a visit from an RCVS representative
- Students no longer attend Dogs Trust Loughborough during their small animal PDSA rotation, instead they attend a newly established small animal practice (Pinfold Vets) as part of the PDSA Nottingham rotation
- Students are now able to choose to either spend 2 weeks at Dick White Referrals, or 2 weeks at first opinion small animal department at Oakham Veterinary Hospital
- The small animal rotations at Pride have significantly changed to further improve the student experience. Students now spend 2 weeks on a primary care rotation which is split between the Pride Hospital (1 week) and a branch practice (Shelton Lock), where the case load is a mix of private and Blue Cross clients. The Pride hospital is also the site for the 2-week small animal referral rotation, which now consists of medicine, anaesthesia (and pain clinics) and diagnostic imaging. Students can also spend time with other referral disciplines
- Students now undertake a 2-week equine skills rotation based at the School instead of at Scarsdale Vets. Within this rotation students spend 2 days undertaking ambulatory work at Scarsdale equine practice, 1 day performing dentistry at the DAC, and clinical pathology teaching at Pride laboratory

- Students with a particular interest in equine work can opt to spend some of their 4-week Oakham-based equine practice rotation at the DAC
- The Farm skills rotation has evolved since the last visit to include more teaching around the non-dairy species (sheep and pigs)
- The Zoo/exotics rotation has been reduced from 8 days to 5 days. Additional staffing at the zoo and the construction of a new purpose built veterinary facility has further improved this rotation. Students no longer spend a day at the Chine House practice
- All students now undertake a compulsory week of out of hours/emergency work at Pride in groups of 2 or 3 under close supervision of the out of hours' clinicians

In addition to curricular changes there have been some changes with assessment:

- We have introduced the use of learning objective based individual feedback for MCQ papers delivered through our eAssessment system Rogo.
- Following a review of practical assessment, the following changes have occurred: formative DOPS introduced to year 4, short formative OSPE in year 1 replaced with a large formative OSPE in year 1, synoptic summative credit bearing OSPE introduced in year 2 covering year 1 and 2 skills
- MCQ examination removed from AHW2 and replaced with longer short answer paper in order to test higher level learning objectives. Within several other year 1 and 2 modules SPOT tests have been replaced with online short answer papers e.g. CRS1, URI1 (See Supplementary Information for details)
- VPH short answer paper changed to a Clinical Reasoning assessment, to better align with clinical modules
- Finals year species examinations now consist of a Clinical Reasoning paper (40%) and an MCQ paper (60%)

9.1.5 Plans for future curriculum changes

We are currently changing our approach to assessment of student practical skills. Students currently undergo a summative OSPE in year 1 and year 2, which are "must-pass" but do not carry any marks. This year we trialled removal of the year 1 summative OSPE, and replacement with a new formative OSPE, with the intention of increasing immediate feedback and reducing student exam burden. A synoptic, mark carrying OSPE will be introduced at the end of year 2, assessing skills from across years 1 and 2 to try to increase student retention of their practical ability. The year 3 OSCE remains unchanged.

Our seven year curriculum review focussed on changes to years 3 and 4, and included changes to the organisation of Veterinary Public Health (detailed above). The review of years 3 and 4 is ongoing, and the next stage is consideration of the length of the research project and the possibility of extending the Clinical and Professional Skills module, which is key preparation for CEMS.

There are plans to revise year 5 teaching delivery from 2018/19 to allow students to have more opportunity to follow their particular interests and to be able to accommodate increased class sizes, whilst ensuring that the curricular content and ability to meet Day 1 competence is unaltered. These changes are summarised in Table 17. Total Intra-Mural Rotations are 26 weeks in 2017/18. In 2018/19 track rotations are being introduced such that core rotations are 19 weeks with a further 6 weeks track rotations, (2 weeks of 2018/19 track rotations will count as EMS). Track rotations will allow students to follow their personal interests and will include options around species (e.g. equine, poultry, small animal, pigs, etc) and research. Track rotations only are specifically assessed by DOPS and RPA, i.e. there will be no additional knowledge based assessments for these rotations.

Formalised compulsory Emergency and Critical care/Out of hours EMS will be extended to 2 weeks and will be based at Pride / Vets Now. Formalised compulsory Elective Specialist Clinical Practice will not be offered from 2018/19 as this will be replaced by the tracking system.

Core Rotation	2017/18 weeks		2018/19 weeks	
Small Animal	Primary care	2 weeks Pride / Shelton Lock	Primary care	2 weeks Pride / Shelton Lock
	Referral medicine, anaesthesia and imaging	2 weeks Pride	Referral medicine, anaesthesia and imaging	2 weeks Pride
	Charity/shelter	2 weeks PDSA/Pinfold	Charity/shelter	2 weeks PDSA
	Specialist / referral care or Primary care	2 weeks (DWR or OVH)	Specialist / referral care or Primary care	-
Equine	Equine skills	2 weeks School / DAC / Scarsdale / Bransby	Equine skills	2 weeks School/DAC/ Scarsdale
	Equine hospital practice	2 weeks Oakham	Equine practice	2 weeks Oakham
	Equine ambulatory	2 weeks Oakham		
Farm	Farm skills	2 weeks School	Farm skills	2 weeks School
	Farm practice	2 weeks Scarsdale	Farm practice	2 weeks Scarsdale / New CA
	Herd Health	2 weeks School		-
Veterinary Public Health		2 weeks School	Veterinary Public Health, ethics and biosecurity	2 weeks School
Anatomic pathology		1 week School 1 week Minster	Anatomic pathology	1 week School 1 week Minster
Exotics		1 week Twycross Zoo		-
Introduction		1 week School	Introduction	1 week School
Compulsory CEMS	Out of hours / Emergency and Critical Care	1 Week Pride	Out of hours/Emergency and Critical Care	1 week Pride 1 week VetsNow

Table 17 Current compulsory Clinical rotations and planned changes

9.1.6 Process for curriculum evaluation, review and revision and process for gathering and using feedback from stakeholders, reviewers and moderators and from assessment outcomes

The School has put in place significant mechanisms for ongoing curriculum review and assessment:

- Weekly debriefing of facilitators reviewing material delivered in Clinical Relevance sessions
- Annual module and rotation reviews (e.g. student feedback, external review, focus groups etc)
- Evaluation of individual teachers by student evaluation of teaching and peer, Module Convenor and Sub-Dean observation
- External Examiner reports on each assessment
- Annual programme reviews, including student feedback on their experience of the year
- 7 yearly curriculum reviews to consider major changes in strategy
- Periodic review and accreditation by the RCVS and EAEVE

Module reviews are the primary mechanism to identify good practice, overlaps, redundancies and omissions and are undertaken annually by the Module Convenor with the aid of contributors to the module. A Module review meeting is chaired by the Module Convenor and comprises:

- Consideration as to whether delivery matched published learning objectives: why were there differences, what may have impeded success, what may be improved, what worked well etc
- Review of feedback and comments from the multiple inputs collated for the meeting
- Plan for modification of both learning outcomes and proposed delivery strategies

A Module Review document is subsequently presented to TLA Committee for discussion. The document compiles information from the following sources:

- Informal comments received during delivery
- Output from meetings with technicians and key administrative support staff, observation of teaching delivery by Module Convenor, de-briefing of facilitators
- Feedback from external deliverers on the course
- Student Evaluation of Module (SEM) and rotation feedback¹⁷
- Student Evaluation of Teaching, where appropriate
- Student focus group
- Review of assessments

Thus, any ongoing required changes to outcomes on a module basis are proposed by the Module Convenor prior to review and approval by the Schools TLA Committee, to ensure the overall curriculum content is maintained. Learning objectives developed for each teaching session, link to RCVS, EAEVE and AVMA criteria and overall module learning outcomes. Changes in specific learning outcomes are reviewed in the module review process; when new learning objectives are proposed they are reviewed by the School clinicians on the TLA Committee to ensure that they are relevant to clinical outcomes. Programme and module specifications, defining aims, delivery methods, assessment and learning outcomes for a programme are reviewed annually as an output of the component module review process. The School is also required to submit a report as part of the University's Annual Monitoring process for all degrees.

During Examination Boards, performance data are considered by both internal and external examiners. Figures from the previous five years of examinations are available for comparison during this process. External examiners report annually to the school, and these reports are responded and changes implemented as required through the TLA committee.

There is a strong ongoing commitment to monitor delivery by individual teachers. Methods include:

- Evaluation of individual teachers by Student Evaluation of Teaching (SET)¹⁸
- Peer observation – both internally and through the university wide Peer Observation College
- Module Convenor observation
- Sub-Dean observation
- Module Convenor observation of external deliverers
- Module Review
- Informal Student feedback
- Yearly staff appraisal

Student Evaluation of Teaching scores are monitored by the Dean, TLA Sub-Dean and by the University PVC for Education and the Student Experience. Exceptional scores are rewarded and teachers scoring poorly develop an improvement action plan with the TLA Sub-Dean and their line manager.

Whilst the School operates an extensive curriculum annual review process, we also recognise the need for a broader review and this has been introduced on a 7 year cycle commencing in 2016. The process consisted of an away day involving all teaching staff and students. Specific areas of the curriculum were focussed on, and an external expert led the discussions. The proposed changes from this review are being implemented by the TLA committee and working groups as necessary.

In addition to School mechanisms, the University conducts Educational Enhancement and Assurance Reviews (EEARs) to ensure high quality, competitive, and well managed academic programmes are

¹⁷ Student Evaluation of Module (SEM) is completed to gather feedback from students on modules for curriculum development. A School-specific modified University standard questionnaire is used, and provided to students near the end of each module. Year 5 students are required to complete feedback on each rotation. This information is collated via a School specific standard questionnaire, and analysis of rotation evaluations is made by the Rotation Leader. A Student Evaluation of Year questionnaire is completed to gather feedback from students on their experience of the year of programme as a whole, and will be used to identify strengths and weaknesses, overlaps and deficiencies. A School-specific questionnaire based on the National Student Survey is used.

¹⁸ Academic staff are required to gather student evaluations on their teaching (SET). The SET process is carried out by a standard questionnaire comprising a set of seven compulsory University-required questions and other School-specific questions. Results are analysed by the University's Professional Development Unit.

maintained. Reviews are constructive and holistic exercises, covering quality assurance and quality enhancement. They operate according to a 3-year schedule (<http://www.nottingham.ac.uk/academicervices/qualitymanual/curriculum/teaching-and-learning-review.aspx>).

9.1.7 The Teaching, Learning and Assessment Committee

Acting on behalf of the Dean of the School of Veterinary Medicine and Science, the Teaching, Learning and Assessment Committee has responsibility for the design, development, implementation of teaching learning and assessment. Its role is to

- Advise the Dean of School or on all strategic issues relating to teaching and learning
- Advise the Dean of School on all aspects of teaching quality and assurance, and assessment while carrying delegated responsibility for dealing with day-to-day matters
- Ensure the implementation of University and School policies

Example activities include approval of Module Reviews and recommendations for any changes to teaching delivery within modules; consideration of the views of the student body raised through appropriate channels; reviewing the effectiveness and appropriateness of the curricula in helping students develop capabilities, skills and competencies.

The TLA Sub-Dean is the Committee Chair with the Quality Assurance Officer as Secretary. There are at least 2 student representatives from each year of the course. All academic staff, the Disability Liaison Officer, Head of Operations, Student Placement Officer and Technical and Facilities Manager are all members. The Committee meets once a month during term time

Voting is quorate when 30% of votes from membership have been cast using the University Workspace forum, post discussion of item at Committee. The Committee receives regular reports from Examinations Board, Postgraduate Committee, Clinicians Meeting, Rotations Leaders Meeting, Student Progress Committee, Clinical Review Panel and Faculty Teaching and Learning Board; it reports to Management Team.

9.1.8 Teaching training

The School identifies the need for any teacher training at appointment, at appraisal and an ongoing basis (either proactively suggested by staff member or in a response to a change in circumstances, for example taking on a new educational leadership role or attainment of a poor SET score). The TLA Committee provides input into teaching training needs identification and processes.

Section 8.1.4 details how training needs are met for school and external staff. Teacher training is compulsory.

9.1.9 Elective subjects

There are no elective subjects within the curriculum, however there are inherently elements of choice:

- Students are able to select the topic of their year 3 research project
- Flexibility in Extra Mural Studies allows students to focus their activities in species of interest
- Year 5 EMS includes Elective Specialist Practice rotations organised by the School
- Year 5 rotations provide choice in the ability to choose 2 weeks referral or 2 weeks Primary Care Small Animal rotation

Students may not always get their first-choice research project, clinical projects in particular tend to be over-subscribed, however a process is in place to ensure students get suitable alternative topics. There are no restrictions on EMS placements. Currently students have to choose Specialist Elective EMS in one of small animal practice, equine practice or farm animal practice. From 2018, the School will operate core and track rotations which will give students more exposure to specialist level practice in the area of their choice.

9.1.10 Arrangements for teaching in abattoirs and premises for food production

Students undertake a 2 week module on Veterinary Public Health in Year 3. Additionally learning objectives of veterinary public health relevance are embedded in body system modules in Year 4. The VPH module is delivered by School staff and external specialists. During Year 5 students undertake a 2 week VPH rotation. In this rotation visits are undertaken to a variety of abattoirs and food production units; in the most part these visits are undertaken with no payment to the host. Specific course teaching in VPH (and other modules) associated with abattoirs and food production includes:

Veterinary Public Health microbiology

- Demonstration of staining methods used for the identification of pathogenic bacteria in clinical specimens
- Showing how antibiotic resistance can spread between bacteria
- Tracing the spread of a marker organism through a human population
- Use of a multi-stage selective enrichment process to isolate a pathogen from contaminated food samples
- Identifying and categorising pathogens using slide agglutination tests with specific Antisera
- Explanation of the basic principles of bulk tank bacteriology
- Demonstration of how to undertake plate counts and calculate bacterial concentrations in milk

Meat and carcass inspection

- Ante-mortem inspection routine for ruminants, pigs and poultry
- Demonstrations of ante-mortem inspection routine for ruminants and pigs at the SVMS small holding
- Common pathological findings at post mortem of food animals
- Routine of meat and carcass inspection of ruminants, pigs and poultry in an abattoir
- Demonstrations of carcass inspection run in the on-site abattoir at Sutton Bonington and external sites

Humane slaughter

- Demonstration and hands on experience of the common techniques of humane slaughter: use of captive bolt, free bullet pistol, bleeding and pithing
- Basic slaughterhouse design, function and cleaning
- Cutting room traffic, function and cleaning
- Demonstration is run in the on-site University abattoir at Sutton Bonington

Case studies

- *Salmonella* on chilled pork carcasses
- *E.coli* 0157 on chilled carcasses
- Risk profiling of cooked, sliced, vacuum packed ham
- Small animal case studies (*Campylobacter*, ringworm)
- Equine case studies (horse passport etc)

Students are required to spend 2 weeks on a veterinary public health rotation in Year 5. This Veterinary Public Health rotation very much reinforces the teaching in Year 3 in a much more hands-on manner:

Red meat abattoir visit

All students visit the same medium throughput unit (R.B. Elliot & Son, Calow (35 miles)) in groups of 5 or 6 for a day (approximately 200 pigs, 150 sheep and 50 cattle daily). The students are accompanied by one staff member. Additionally the students spend 2 days in the on-site University abattoir at Sutton Bonington.

Poultry abattoir visit

All students visit the same high throughput unit/processing plant in groups of 5 or 6 for 1 day. Students are accompanied by one staff member. The processing plant visited is Moy Park, Anwick (processes 100 million chickens each year) (57 miles). As an alternative site, students visit a small seasonal turkey processor, Leicestershire Farm Fresh Turkeys (200 birds a day) (27 miles).

Animal market visit

All students visit the same high throughput animal market (Melton Mowbray Animal Market (20 miles)) in groups of 5 or 6 for 1 day. Students go on their own but after the visit they discuss with School staff the official controls performed at the market, the types of animal welfare incidents that typically occur as well as biosecurity issues.

Food processing plant visit

All students spend a day visiting a dairy food producer – either a dairy farm that produces unpasteurised cheese, or a large dairy cooperative that produces a cheese with Protected Designation of Origin (PDO). Visits are groups of 5 or 6 for 1 day. Students are accompanied by one staff member. Sites include

- Leicestershire Handmade Cheese Company (28 miles)
- Long Clawson Dairy (19 miles)

Beekeeping

The SVMS has 5 bee hives on site. Each rotation group spends a day learning about beekeeping and the implications to veterinary public health. The sessions consist of lectures and a practical activity, which may include hive inspections and/or honey production and are delivered by staff members.

Case studies

Students also undertake a number of case studies whilst on the 2 week rotation.

- Epidemiology
- Human disease outbreaks
- Equine case study (horse passports)

In addition to the Year 3, 4 and 5 curriculum components, students also gain relevant experience and knowledge of food hygiene during other practical and theoretical areas of the curriculum for example muscle transformation to meat (Year 1 D11MSK). Across all years the course teaches students to determine the difference between healthy and unhealthy animals and to be aware of biosecurity and animal welfare issues.

9.1.11 External Practical Training (EPT)

The School considers that it does not provide EPT, rather it utilises a community-based teaching model as part of Intra Mural Rotations and also facilitates Extra Mural Studies as required by the RCVS.

9.1.12 Extra Mural Studies

Students are obliged to undertake a total of 12 weeks Animal Husbandry EMS and a total of 26 weeks Clinical EMS. The School organises EMS according to guidelines provided by the RCVS. EMS is supported by a 2FTE administrative team, with academic and strategic input from the Student Placement Sub-Dean. This team aids students in selecting suitable EMS placements from an extensive database if required, and provides administrative support around booking of placements, guidance for hosts, insurance and safety information and assessment of and feedback from, and about, students.

Animal Husbandry EMS

Twelve weeks of animal husbandry EMS are required to be undertaken in Years 1 and 2 in order to meet the requirements of the BVMedSci degree. Animal Husbandry EMS (AHEMS) allows students to gain experience of the management, husbandry and normal behaviour of animals in typical management systems during the early years of their course. Relevant topics in the wider curriculum prepare students for AHEMS (e.g. a lambing practical is held before Easter vacation in Year 1) and also encourage students to maximise their opportunities on placement.

Nature of work	Minimum period	Minimum number of animals on farm/unit
Lambing	2 weeks	200
Pig	2 weeks	60
Equine	2 weeks	Commercial establishment
Dairy	2 weeks	75
Free choice (e.g. vet nursing, cattery, zoo)	4 weeks	

Table 18. Animal Husbandry EMS requirements

Clinical EMS

Students are required by the RCVS to undertake 26 weeks of Clinical EMS (CEMS) in order to graduate with the BVM and BVS degrees. They can only undertake CEMS once AHEMS is completed, and are only able to complete up to 6 weeks before the end of Easter vacation of Year 3 of the course.

As per RCVS guidelines, clinical EMS comprises two phases:

- Preparatory phase – 6 weeks on completion of AHEMS. During this period students are encouraged to undertake a variety of different placements to experience a range of veterinary work, as defined by RCVS guidelines.
- Practical EMS – the remainder of student selected CEMS. This is entirely free choice for the students, the School does not insist a minimum number of weeks in different subject areas are completed. The view of the School is that it is the School's responsibility to deliver core teaching in all species areas, leaving EMS for students to concentrate on areas of particular interest OR on areas where they feel they would benefit from additional experience.

The majority of CEMS will be carried out at a first opinion practice. Students are encouraged to experience as many clinical situations as possible and to attend a range of practices, including specialist practices. This allows students to practice a wide variety of clinical, personal and professional skills, whilst experiencing a range of management systems and processes.

Nature of work	Type	Minimum period
Elective Specialist EMS	Formalised compulsory- the type of experience (farm, small animal or equine) is chosen by student but organised by the School at Specialist practices and attended by all students	4 weeks
Emergency and Critical Care/Out of hours	Formalised compulsory- organised by School at Pride Veterinary Centre and attended by all students	1 week
Other	Free choice - student selected based on learning needs, likely career choice and discussion with Personal Tutor, e.g. practice, research, veterinary business, veterinary education. An optional Specialist Elective Rotation is offered by the School, which covers various Small Animal related topics (e.g. dermatology, clinical pathology)	21 weeks

Table 19 Clinical EMS requirements

The School organises 4 weeks of rotations in Elective Specialist Practice in Year 5 as shown in Table 20. These placements provide a superb learning experience for the students, where they are hosted by dedicated motivated hosts, who benefit from receiving a regular supply of enthused students and a link to the university. Students are required to choose one of these options.

Rotation	Location	Weeks	Practical work
Small Animal	VetsNow	2	Emergency Small Animal Medicine and Surgery
	Dovecote Veterinary Hospital	2	Advanced small animal practice
Farm Animal	XL Vets	4	Advanced Farm Animal practice
Equine	Chine House	4	Emergency equine medicine and surgery
	Bell Equine		Advanced equine medicine and surgery
	Rainbow Equine		Advanced equine medicine and surgery

Table 20 Elective Specialist Practice EMS requirements

All Placement Hosts are provided with a Host pack covering logistical details of the placement, a commitment statement by the School, and a Health and Safety disclosure. Each placement provider will also receive details of the aims and objectives for the EMS. CEMS hosts also receive a pack that contains an overview of the course, a copy of an extract from the RCVS 'Clinical Extra Mural Studies: A manual for participating practices', and details of skills and techniques appropriate to the year of study of the student. Students are required to complete an Action Plan ahead of each placement, in consultation with their Personal Tutor. Whilst on EMS placement students are required to complete a Health and Safety Questionnaire, and are encouraged to complete pieces for the Portfolio and entries in their Skills Diary. Students are expected to discuss their action plans, experience and learning objectives for the placement with the host on arrival. After the placement students are required to complete a Placement Feedback Form to provide general feedback about their placement. Hosts are requested to complete feedback on the student's skills, attitudes and behaviours and areas for improvement. Feedback is discussed at Personal Tutorials (or earlier if specific immediate concerns have been raised). Placement Hosts will be contacted for more details if they have raised any specific issues or areas of concern. Experiences on Placement are thus assessed by:

- Host feedback on the student
- Review of outcomes of the Action Plan with the Personal Tutor
- Portfolio pieces reviewed by the Personal Tutor
- Review of Skills Diary by the Personal Tutor

9.2 COMMENTS

9.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 17 Embedded modules

- Anatomy and embryology
- Animal production
- Behaviour
- Biochemistry
- Clinical and practical skills
- Clinical Pathology
- Diagnostic imaging
- Epidemiology and statistics
- Emergency and Critical Care
- Ethics
- Genetics
- Immunology
- Microbiology
- Numeracy
- Nutrition
- Oncology
- Pathology
- Parasitology
- Pharmacology and toxicology
- Physiology
- Preventative medicine

Appendix 18 Digest of units of study (hours)

Module	Credits	Hours						
		Lectures	Tutorials, seminars & PBL	Online and Other	Labs and supervised practical's	Clinical	EMS	Total
Year 1								
D11MSK Veterinary Musculoskeletal System 1	30	43	49	0	35	17	0	144
D11LCB Lymphoreticular Cell Biology	10	18	15	1	16	0	0	50
D11CRS Veterinary Cardiorespiratory System 1	30	51	49	2	23	11	0	135
D11NEU Veterinary Neuroscience 1	30	52	47	2	28	14	0	143
D11AHW Animal Health and Welfare 1	15	32	2	2	25	0	0	61
D11PPS Veterinary Personal and Professional Skills 1	5	9	29	1	4	2	0	44
Extra Mural Studies	0	0	0	0	0	0	210	210
Total	120	205	191	8	131	44	210	787
Year 2								
D12GIL Veterinary Gastrointestinal System 1	40	78	68	0	37	19	0	202
D12URI Veterinary Urinary System 1	15	32	16	2	12	6	0	67
D12REP Veterinary Reproduction 1	20	35	29	0	22	11	0	97
D12ENI Veterinary Endocrine & Integument Systems 1	25	42	26	2	20	10	0	100
D12AHW Animal Health and Welfare 2	15	31	19	0	13	0	0	62
D12PPS Veterinary Personal and Professional Skills 2	5	25	23	0	5	3	0	55
Extra Mural Studies	0	0	0	0	0	0	210	210
Total	120	243	181	4	109	49	210	793
Year 3								
D13PRO Veterinary Research Project	40	0	0	384	0	0	0	384
D13PVS Principles of Clinical Veterinary Science	30	59	41	1	20	10	0	131
D13VPH Veterinary Public Health	20	15	13	2	5	5	0	40
D13CPS Clinical and Professional Skills	30	20	15	0	0	35	0	70
Extra Mural Studies	0	0	0	0	0	0	210	210
Total	120	94	69	387	25	50	210	835

Year 4								
D14ENI Veterinary Endocrine & Integument Systems 2	20	36	23	2	6	17	0	83
D14NEU Veterinary Neuroscience 2	10	30	21	1	1	2	0	54
D14LCB Veterinary Lymphoreticular Cell Biology 2	10	14	12	2	3	0	0	31
D14PPS Veterinary Personal and Professional Skills 4	10	13	4	0	14	0	0	32
D14MSK Veterinary Musculoskeletal System 2	30	40	37	2	6	18	0	102
D14GIL Veterinary Gastrointestinal System 2	30	54	34	0	8	24	0	120
D14CRS Veterinary Cardiorespiratory System 2	30	36	36	2	5	14	0	92
D14REP Veterinary Reproduction 2	30	41	21	12	6	19	0	100
D14URI Veterinary Urinary System 2	10	17	14	2	2	5	0	38
Extra Mural Studies	0	0	0	0	0	0	350	350
Total	180	281	202	23	51	99	350	1002
Year 5								
D15EQI Veterinary Clinical Practice: Equine	40	0	0	0	0	230	0	230
D15LAV Veterinary Clinical Practice: Farm and Veterinary Public Health	50	0	0	0	0	335	0	335
D15SMA Veterinary Clinical Practice: Small Animal	55	0	0	0	0	335	0	335
D15PPS Veterinary Personal and Professional Skills	35	0	3	0	0	9	0	12
Extra Mural Studies	0	0	0	0	0	0	350	350
Total	180	0	3	0	0	909	350	1262
Total	720	823	646	422	316	1151	1330	4679

Note:

- Data is completed for all teaching delivered for years 1 to 4 and for rotations in year 5 in the academic year 2016/17, and rounded to the nearest hour
- Practical classes in years 1 to 4 include clinical work, based on a proportion of classes a valid assumption has been made that 1/3 of the time of any practical class (except Animal Health and Welfare 1, Lymphoreticular Cell Biology, Clinical and Professional Skills, Veterinary Public Health and Personal and Professional Skills 4) is spent on clinical work in years 1 to 3, and 3/4 of the time of any practical class is spent on clinical work in year 4. Veterinary Public Health is assumed to be 50% clinical work. Year 3 Clinical and Professional Skills and all of year 5 rotations is assumed to be 100% clinical work
- The 'Other' category of delivery type includes timetabled formative assessments and Research Project
- The 'Tutorials, Seminars/Problem based learning' category of delivery type includes Clinical Relevance sessions, Self and Directed Group Learning
- EMS profiles are individual to the student however the data assumes 6 weeks in years 1 -3 and 10 weeks in years 4 and 5
- Curriculum hours have been assigned as accurately as possible using a bespoke database. Average hours per week are assumed to be 32 hours for the Research Project and 35 hours for year 5 and EMS.

Appendix 19 Digest of disciplines and subjects (hours)

Subject	Hours						Total
	Lectures	Tutorials, seminars & PBL	Online and Other	Labs and supervised practical's	Clinical	EMS	
Basic subjects and sciences							
Anatomy, histology, embryology	69	60	0	68	44	0	242
Biochemistry	16	14	0	2	1	0	33
Biology, cell biology	23	19	0	8	4	0	55
Chemistry	4	2	0	1	0	0	7
Physiology	85	53	0	10	7	0	155
Molecular biology	6	5	0	2	1	0	13
Scientific Method	1	1	384	0	0	0	386
Biostatistics	3	2	0	3	2	0	11
Genetics	6	6	0	3	1	0	16
Epidemiology	7	7	0	0	0	0	14
Immunology	18	9	0	1	0	0	29
Microbiology	26	17	0	12	5	0	60
Pathology, pathophysiology	55	49	0	14	14	0	132
Pharmacology	16	15	0	3	3	0	36
Pharmacy	8	8	0	1	2	0	19
Toxicology	4	3	0	0	1	0	7
Environmental protection and conservation	1	0	0	0	0	0	1
Parasitology*	23	17	0	9	5	0	54
Total	371	286	384	138	90	0	1269
Animal Production							
Agronomy	2	0	0	0	0	0	2
Animal nutrition	9	10	0	5	4	0	29
Animal husbandry & production, incl. aquaculture	29	20	2	22	6	0	79
Livestock production economics	16	7	0	2	1	0	25

Animal behaviour & behavioural disorders	14	13	0	5	2	0	34
Animal protection & welfare	6	5	0	1	0	0	12
Preventative vet medicine, health monitoring**	6	5	0	1	34	0	45
Reproduction & obstetrics**	24	21	1	12	22	0	80
Total	105	81	3	49	68	0	306
Clinical subjects							
Anaesthesia	16	9	0	6	36	0	67
Clinical examination & diagnosis	21	30	0	25	161	0	237
Clinical pathology	22	25	0	16	51	0	114
Diagnostic imaging	15	20	0	14	76	0	125
Clinical medicine	49	25	0	19	176	0	269
Surgery	33	17	0	12	68	0	129
Therapeutics	35	32	0	8	82	0	157
Emergency & critical care	9	6	0	2	34	0	51
Exotic & epizootic disease	1	1	0	0	9	0	11
Zoonoses & public health	1	1	0	0	30	0	31
Government veterinary services	13	6	0	3	23	0	45
Anatomic pathology*	0	0	0	0	67	0	67
Total	215	170	1	104	812	0	1303
Food hygiene							
Veterinary certification	2	1	0	0	15	0	18
Regulation & certification of animal & animal products	5	3	0	3	5	0	17
Food hygiene & quality	2	1	0	0	22	0	25
Total	9	5	0	3	42	0	60
Professional knowledge							
Professional Ethics & behaviour	10	12	0	0	53	0	75
Veterinary legislation	7	4	0	2	4	0	17
Communication skills	22	36	8	5	48	0	119
Practice management & business	7	3	0	7	17	0	33
Information literacy & data management	3	2	0	2	12	0	18
Total	48	55	8	16	133	0	262

Other							
Learning, group working and interpersonal development	66	26	26	6	6	0	130
Tutorial	1	23	0	0	0	0	24
Career planning and opportunities	7	0	0	0	0	0	7
EMS	0	0	0	0	0	1330	1330
Total	75	49	26	6	6	1330	1493

Note:

- Alignment of the curriculum has been calculated by mapping individual learning objectives for each delivery session; any differences in the totals between tables reflect rounding
- * Parasitology and anatomic pathology have been added as subject areas as we feel these do not map clearly to other areas
- ** Preventative vet medicine, health monitoring and Reproduction & obstetrics whilst listed under 'Animal Production' include significant clinical time
- 'Learning, Group Working and Interpersonal Development' represents generic objectives associated with the majority of delivery sessions (e.g. 'work as a group to solve a problem')
- It is not possible to map EMS to subject areas as the content varies on an individual student basis



10 ASSESSMENT

10 ASSESSMENT

10.1 FACTUAL INFORMATION

10.1.1 Overview of assessment practice, mapping and alignment to programme outcomes

The School is fully compliant with the University's Quality guidelines and procedures, which are set in the context of external quality assurance frameworks. To this end, there are rigorous rules, regulations and processes for assessment and progression including, for example, disability requirements, e-assessment, moderation, External Examiners, etc. The School is responsible for ensuring that the rules and regulations for progressing from one stage of a programme to another and for qualifying for an award are publicised to students through appropriate channels. Any changes to regulations or arrangements for examinations are ratified by the TLA Committee and if the change is outside normal guidelines, by the University Quality and Standards Committee.

The School assessment strategy is a coordinated program of assessment designed to align the progress of the student towards overall clinical competency in order to meet RCVS Day 1 competencies. The strategy is designed to assess day 1 competences and skills and underpinning professionalism and knowledge across all 5 years of the course by employing the most educationally valid assessment methods, applicable to the learning outcomes being assessed.

All members of staff teaching on a module or rotation are required to submit questions for the module formative assessment and summative online and other examinations. Staff are advised of the number and format of questions per module or rotation based on the credit weighting of the module or time allowance of a rotation. To ensure content validity, such that a representative sample of the taught course is examined, the assessment for each module is blueprinted to the module learning objectives (and therefore inherently programme outcomes) by the Module Convenor. All staff are trained in the relevant assessment technique prior to acting as an assessor for a summative assessment. All questions and papers are reviewed by the Module Convenor, and then by the TLA Sub-Dean and team before formal review and sign off with External Examiners.

In Years 1 to 4, skills, behaviours and knowledge are assessed through a variety of summative examinations. In Year 5 students undertake a range of work place based assessments examining practical and clinical skills and professionalism. End of year online examinations assess clinical reasoning ability and knowledge, and professionalism.

Years 1 to 4

Knowledge is principally assessed in the examinations which are held online (all modules also include a formative online knowledge based assessment). Online question formats are single best answers, EMQs, drag and drop, "fill in the blanks", unidirectional clinical reasoning and short answer papers. Our online examination software allows us to include images in questions, increasing the validity of questions. Other knowledge based assessment includes short answer clinical reasoning examinations, short answer exams, spot tests.

The School has aligned assessment with teaching ensuring an appropriately blueprinted range of skills and behaviours are demonstrated via examination and uses assessment forms such as coursework, presentations, OSPEs (Objective Structured Practical Examinations), OSCEs (Objective Structured Clinical Examinations), AHDOPS (Animal Handling Directly Observed Procedural Skills), individual research projects, reflective Portfolios, structured Portfolio viva assessments and completion of a Skills Diary. AHDOPS exams (held in years 1 to 3) assess animal handling in a realistic situation. There is no limit to the number of resits available. Students are required to demonstrate that they are competent in handling small animals (cat or dog, small mammal or exotics), horse, cattle, sheep or pig before progressing into year 4 of the course.

Specifically in relation to the Year 1 and 2 OSPEs a range of skills including clinical exam, diagnostic skills, lab skills, anaesthesia and surgical skills are tested. Year 3 OSCEs assess professional practice, clinical exam, emergency situations, diagnostic skills, lab techniques, anaesthesia and pain control, surgical skills and case management.

The school has an emphasis on the development and assessment of professionalism and this is carried out through a longitudinal portfolio tool. ePortfolio software 'PebblePad' is used by all students throughout the course, and the content is submitted for a "must pass" assessment at the end of each year. The portfolio is discussed with personal tutors and regular formative feedback is given. Annual qualitative feedback is provided to ensure the development of reflective writing skills.

Year 5

End of Year 5 examinations (Finals) evaluate knowledge through an on-line MCQ examination. This is a higher level multiple choice around a series of cases scenarios or vignettes. The assessment tests integration and application of knowledge developed over the first 4 years of the course, and applied in a clinical context during Year 5. These skills are further examined via an online clinical reasoning (written) exam, which is delivered uni-directionally, ensuring consistency in the content being examined.

Core clinical skills are assessed through Directly Observed Procedural Skills (DOPS) using case material in the performance of normal duties and activities and assessed by an appropriate clinician. There are 52 skills each representing core skills defined by the RCVS day one competencies (Appendix 20). The students drive the assessment process for their DOPS examinations by indicating when they feel they have reached a level of competency comparable to a day-one graduate. To qualify to sit the Finals examination, students must have certified themselves as competent in all 52 skills, and 10 DOPS must have been examined and passed from each of 10 skill areas.

Each DOPS is either passed or failed and carries no marks towards Finals. If a student fails a DOPS examination they must undertake and pass an additional resit in that skill area, as well as a resit and pass of the failed skill.

At each clinical rotation a Rotational Professionalism Assessment assesses the professional skills and behaviours of each student. It is undertaken by all staff working with the student (including academic, Clinical Associate clinician and support staff), with reference to the RCVS Code of Professional Conduct. The outcomes are that the student either passes (with or without merit) or fails that assessment; failure results in an action plan which may or may not entail repeating that rotation. The professionalism of students is also assessed through the Portfolio viva on 5 portfolio pieces, and assessment of the written content which consists of case studies, action plans and reflective pieces.

10.1.2 Methodology for the assessment of clinical skills

Clinical skill development is assessed longitudinally through the curriculum. Early practical skills are assessed through Objective Structured Practical Examinations (OSPEs) in years 1 and 2. More clinically orientated skills are then examined through Objective Structured Clinical Examinations in year 3, which contribute 70% of the CPS modular assessment and are also a "must pass" requirement for progression to the clinical phase of the course. During final year, students undertake a number of workplace based clinical skill assessment – Directly Observed Procedural Skills (DOPS) – across the range of species.

There are 52 DOPS which are divided into 10 skill areas, and students are directly assessed on one from each area when the student self certifies themselves ready to be assessed. Students self-certify the remaining DOPS in order to progress to final examinations. Usually 1 or 2 DOPS is performed per rotation. Ten DOPS (1 per skills group) have to be passed at first attempt during rotations, one from each of the following skill areas:

- Communication
- Clinical examination
- Veterinary public health
- Emergency medicine and care
- Diagnostic imaging
- Laboratory diagnostics
- Anaesthesia
- Surgical skills
- Advanced paraprofessional skills
- Therapeutics

Once a DOPS from each of these skill areas has been passed correctly, the level of self-certification is deemed appropriate and no further DOPS assessments are performed in this skill area. However, if a DOPS is failed the student must re-certify themselves in that competency and a further DOPS in that skill area will be required to be passed. It is therefore possible for a skill to be evaluated a number of times until it is seen to be at the point of competence. Each DOPS is either passed or failed and carries no marks towards Finals.

DOPS skill areas map directly to the RCVS/EAEVE Day 1 Competences, and as these are “must pass” assessments students cannot graduate without passing these assessments. Further details on mapping of the curriculum and demonstration of Day 1 competences is detailed in section 12.1.2.

The DOPS process recognises the fact that different individual assessment opportunities will, due to the fact that they are conducted on real animals in a real clinical situation, be of variable difficulty. To address this potential variability:

- Assessors are trained in both the process and assessment of competency and there are video examples of DOPS being conducted for reference and benchmarking
- Assessor variability in terms of pass/fail is reviewed by a Clinical Sub-Dean

10.1.3 How assessment supports student learning and demonstrates progression and achievement

We ensure assessment is appropriately embedded and aligned to our curriculum so that as well as benchmarking performance, students can use assessment to inform their learning and map their progression to competency. Regular formative assessments, both in class (often utilising voting software) and as assessments in their own right, provide students with feedback which is then discussed in wrap up sessions and with tutors. Students are able to identify areas of strength and weakness, and plan accordingly assisted by tutors and module convenors. Summative assessments are also supported with timely individual feedback mapped to learning objectives, ensuring results feed forward into future study plans. Study skills can also be reviewed through the Student Progress Committee if additional support is required. All assessments are mapped to session and subsequently module outcomes, ensuring students can benchmark their achievements and map their attainment of the Day One Competencies. The portfolio further supports this process.

Assessment underpins decisions on progression; students are unable to progress if they do not pass examinations (it is not possible to ‘carry’ a failed module. Standard progression is a 50% pass mark per module, with one resit allowable, with the exception of students with Extenuating Circumstances. Additional must pass assessments required for progression are OSPE/OSCE exams and the portfolio and skills diary (further details below).

Assessments are carefully scheduled to try to minimise burden on students and this is supported by feedback from the student body – for example extending the year 4 assessment period after consultation so that load is minimised. Staff assessment allocations are planned annually by the TLA Sub-Dean in consultation with line managers and is included in the workload planning management system.

10.1.4 Development, implementation and review of the assessment strategy

The assessment strategy is a coordinated program of assessment designed to align the progress of the student towards overall clinical competency in order to meet RCVS Day 1 competences. The strategy employs the most educationally valid assessment methods, applicable to the learning outcomes being assessed.

The assessment strategy within the veterinary course has been devised by an Assessment Working Group of the TLA Committee, and is kept under constant review the Deputy TLA Sub-Dean. It is a coordinated program of assessment designed to align the progress of the student towards overall clinical competency in order to meet RCVS Day 1 competencies.

All assessments are implemented, coordinated and delivered by the TLA Team and Examinations Officer, in conjunction with academic and other staff as required, for example, for OSPEs. Various

contingency plans are in place to deal with any problems if they arise (e.g. queries over questions, loss of electrical power, injury, computer failure etc).

As detailed previously all members of staff teaching on a module or rotation are required to submit questions for module assessments, having been advised of the number and format of questions per module or rotation based on the credit weighting of the module or time allowance of a rotation. The assessment for each module is blueprinted to the module learning objectives by the Module Convenor. All questions and papers are reviewed by the Module Convenor /Rotation Leader, and another member of the module teaching team, and then by the Teaching, Learning and Assessment Sub-Dean before formal sign off with External Examiners.

MCQ questions are standard set, using Ebel's method which assigns an examination question to one of the nine categories based on its relevance and difficulty. Judgements are then made about the percentages of items in each category that borderline test-takers would have answered correctly, and a pass mark is calculated based on these percentages (such that an 'easy and essential' question contributes more to a pass mark than a 'hard, nice to know' question). A small working group specific to each module assesses all questions for the end-of-year examinations. The assessment marks and the standard set pass mark for a module are normalised to the required 50% pass mark.

Other assessments, for example OSPEs, OSCEs, spot tests are trialled against marking criteria, ahead of the assessment being delivered.

The end-of-year MCQ based exams are delivered online using bespoke eAssessment software (Rogo); this allows access pre- and post-examination and review of questions by External Examiners, and tracking of question modification and performance over time. The University has developed a system to track assessment of learning objectives which is integrated with Rogo, and provides increased feedback to students on the basis of their exam performance.

Examination guidelines are provided to all students in their Student Handbook, available online and in hard copy and is supplemented by information available online in the University's Quality Manual. In addition, the assessment type (and progression requirements) for the programme overall and each module is published on SATURN (the University's student administration system), and is further reinforced at the start of each module. Students also receive a detailed Assessment Addendum detailing times and dates of examinations, information on formats, extenuating circumstances, regulations and frequently asked questions. Mark schemes and criteria for non-online assessments are also normally provided to all students. The Student Handbook details clear criteria and expectations across the full range of available marks (i.e. 0 - 100%).

10.1.5 Procedures to ensure fairness, validity and reliability of assessment, including moderation processes

As detailed above there are significant quality assurance processes enacted prior to assessments being delivered which underpin the fairness, validity and reliability of assessment (blueprinting, trialling, External review etc).

Post assessment delivery all marks are moderated by someone other than the first marker. Methods of moderation utilised in the School include:

- A standardisation process has been put in place to ensure consistent use of mark schemes and to improve interrater reliability; this process is applied to all written assessments, including spot tests, clinical reasoning exams, short answer questions and coursework. A sample of scripts are marked by all assessors, this is followed by a standardisation meeting where allocation of marks is discussed in each of the sample scripts and the mark scheme is amended so that its interpretation is consistent between examiners. The remaining scripts are then marked using the amended mark scheme
- Sampling, either by an External Examiner or by an internal second marker
- Additional marking of borderline students, high marks and fails
- Additional marking where there is significant disparity between the different elements of assessment for an individual student, in a unit or across the programme
- Additional marking or standardisation where there is significant disparity between the marks of different markers in a particular unit or programme

There is a thorough internal quality assurance and control process associated with the marks for modules and rotations. This involves:

- Initial data input and review by the TLA Team
- Marks collation and calculation by the Examinations Officer
- Students being able to feedback on any assessment queries or issues directly to the Examinations Officer
- Review of the performance of each summative question for the module against available data (e.g. performance of cohort for each question against the standard or mark assigned, review of cohort performance against previous cohorts) by the Module Convenor, and further review by the TLA Sub-Dean
- Review meeting between TLA Sub-Dean, Examinations Officer and Module Convenor, at which any potential changes where problems have been identified (such as removal of poorly performing questions, student comments) are discussed in detail
- Verification checks of module marks and year marks by the TLA team
- Internal Exam Board review of marks and discussion of any changes
- Exam Board, with the attendance of External Examiners to review and confirm marks and progression

The University's Charter requires that all assessments for courses and modules must involve one or more independent External Examiners. The role of the External Examiner is to ensure that degrees and other awards are comparable in standard to those in similar subjects in universities throughout the UK, and that marking and classifications are of an appropriate standard in comparison with other universities. The School has appointed 2 or 3 External Examiners for each year of the 5-year course. The External Examiners contribute significantly to the assessment process and are key to ensuring a robust and appropriate assessment of the course. Comments from External Examiners are considered by the TLA Sub-Dean and reported at Exam Boards. The role of the External Examiner at Nottingham includes:

- Reviewing and approving draft examination questions
- Reviewing marking schemes to determine if they are of an appropriate standard
- Discussion of any post-assessment changes with individual Module Convenors
- Attending the relevant Examinations Board
- Considering failures at resit if a student is leaving the course
- Providing an annual written report
- Moderating a sample of scripts, with other scripts available to an External Examiner on request

10.1.6 Process by which grades are awarded including progression requirements

A Final Exam Board for each year of the programme, attended by External Examiners confirms the marks and/or any extenuating circumstances and the progression decision for each individual student.

All results from examinations are entered onto SATURN (the University's student administration system) and form the official University record of student performance. Students are able to access this transcript from their student portal through a system termed Bluecastle, however students in years 3 and 5, and all resitting students are required to meet or telephone their Personal Tutor to receive results. Failing students from all years are advised to get in touch with their Personal Tutor to receive information relating to resits or pastoral support; students are informed by letter of resit requirements and are offered an invitation to an appointment with the Student Progress Committee.

The pass mark for modules in the Preliminary/Gateway Year is 60%, and 50% on the 5 year course. Students have to pass all examinations before they enter later years of the course, and also gain a minimum of a 2.2 BVMedSci degree in order to progress to year 4. Students must complete the veterinary course within 10 years and cannot take more than 3 years to complete 1 year. Students are allowed only one retake opportunity for a module. For year 2 OSPEs and year 3 OSCEs students are required to pass 70% of stations.

Data on marks and pass levels are shown in Appendices 21 and 22.

10.1.7 Staff training in assessments

Assessment training is a core component of general teacher training. Staff undertaking the PGCHE qualification (a university requirement) will cover general principles of assessment during this training.

Specific school courses are then delivered throughout the year e.g. OSCE training, MCQ writing. Ad hoc training is also delivered as required e.g. Clinical Associate staff assessing DOPS. In addition generic and introductory courses are available through the University's Professional Development Unit.

Many staff participate in intra-University cooperation to share and learn from best practice elsewhere in the University, for example through the Faculty Education Research Group. The School also has strong links with a number of other veterinary schools, where there is collaboration in teaching development and training. In addition, many staff have attended courses and congresses run by the Higher Education Academy Subject Centre for Medicine, Dentistry and Veterinary Medicine, as well as presenting at national and international conferences on veterinary education

10.1.8 Appeal process

The School abides by the University policy for appeals against academic decisions and progression (<https://www.nottingham.ac.uk/academicservices/qualitymanual/assessmentandawards/academic-appeals-policy-and-procedure.aspx>). Students cannot appeal matters of academic judgement of an individual or Exam Board (i.e. a student's assertion that the result unfairly reflects the merit of their work or their ability is not a ground of appeal). In summary students make a written case which is initially reviewed by central university before the School makes a response (normally this is by the Examinations Officer or the Teaching, Learning and Assessment Sub-Dean). Should the School issue a revised recommendation which is not satisfactory to the student, or uphold the original decision, the case will then be considered by an Academic Appeal Panel. Once the internal academic appeal procedure has been completed, if the student is still not satisfied with the outcome, they may take their case to the Office of the Independent Adjudicator (OIA). The OIA operates externally to the University. It will not normally look at a case unless and until all relevant internal procedures have been exhausted.

Students are made aware of the appeals procedure through their Student Handbook, in an Assessment Addendum, detailing examinations timetable, progression information etc, (see Supplementary Information pack) and are also given advice as required by their Personal Tutor, Examinations Officer or Teaching, Learning and Assessment Sub-Dean.

10.2 COMMENTS

The School has great confidence in its assessment strategy which it believes has good validity.

10.3 SUGGESTIONS FOR IMPROVEMENT

Appendix 20 Year 5 Directly Observed Procedural Skills (DOPS)

Advanced Paraprofessional Skills

Apply bandage, casts or splints
Equine tooth rasping
Evacuate para-anal glands
Nutritional calculations and diet selection
Perform disbudding
Perform dental care and treatment
Perform foot trimming in cattle
Perform local anaesthesia
Prepare for aseptic surgery
Remove shoes from horses

Anaesthesia

Anaesthetic maintenance and monitoring
Perform anaesthetic induction and initial stabilization
Prepare animal and equipment for anaesthesia

Basic Surgical techniques

Perform a castration
Perform a laparotomy
Perform a multilayer wound closure
Perform a superficial biopsy
Perform ovariohysterectomy

Communication

Demonstrate effective advice with regards to post-surgical management of patients
Demonstrate effective verbal communication
Demonstrate effective verbal communication regarding husbandry
Demonstrate effective written communication

Diagnostic Imaging

Perform and interpret basic diagnostic ultrasonography
Obtain diagnostic radiographs
Report radiographic images

Emergency Medicine and care

Formulate an appropriate plan for fluid therapy
Jugular venous blood sampling in the dog
Obtain venous blood sample in large animal species
Placement of intravenous catheter
Triage of the emergency patient

Laboratory Diagnostics

Design and implementation sampling strategies for different animal or populations and interpret their results
Obtain appropriate urine sample and analyse in laboratory
Obtain milk sample, perform and interpret California Mastitis Test (CMT)
Process and evaluate samples for diagnostic cytology
Record and interpret ECG

Physical Examination

Examination of the alimentary system
Examination of the cardiovascular system
Examination of the dermatological system
Examination of the musculoskeletal system
Examination of the respiratory system
Examination of the urogenital system
Perform a neurological assessment
Perform an ophthalmic examination
Perform an otoscopic examination

Therapeutics

Develop a complete preventive health regime
Develop a therapeutic plan for the management of congestive heart failure
Develop an analgesia regime
Develop an antimicrobial regime

Veterinary Public Health

Perform a necropsy examination
Perform pre-mortem examination for food production animals
Preparation and staining of bacterial smears
Provision of veterinary certificates

Appendix 21 Scoring range (overall performance) (%) per year 2013 – 2017

		Year 1	Year 2	Year 3	Year 4	Year 5
2012/13	Mean	66	68	67	66	67
	Max	83	87	80	82	81
	Min	42	35	51	43	54
2013/14	Mean	65	66	67	65	67
	Max	84	91	80	83	81
	Min	45	42	53	50	52
2014/15	Mean	64	64	68	67	71
	Max	86	83	83	84	85
	Min	42	40	52	54	54
2015/16	Mean	68	68	69	71	71
	Max	89	92	83	86	83
	Min	46	43	50	50	49
2016/17	Mean	64	68	67	70	69
	Max	82	89	82	85	84
	Min	45	45	48	34	52

Appendix 22 Assessment data including failure rate per module 2016/17 (%)

Year 1

Module	MSK	LCB	CRS	NEU	AHW	PPS
Mean	68	62	60	64	67	64
Max	85	84	83	87	85	93
Min	47	31	37	36	47	42
% fail	0.6	8.1	13.8	10.7	1.2	10.0

Year 2

Module	REP	GIL	URI	ENI	AHW	PPS
Mean	67	65	73	71	68	68
Max	94	91	92	95	83	90
Min	35	37	46	48	52	46
% fail	2.2	5.2	1.5	1.5	0	0.7

Year 3

Module	PRO	CPS	VPH	PVS
Mean	68	75	58	64
Max	80	89	79	87
Min	52	52	35	25
% fail	0	0	13.2	6.3

Year 4

Module	CRS	ENI	GIL	LCB	MSK	NEU	PPS	REP	URI	VPH
Mean	68	72	74	74	67	67	77	71	78	63
Max	84	91	91	90	85	85	91	91	88	81
Min	34	28	39	52	33	37	62	44	60	31
% fail	3.4	3.4	0.9	0	3.4	0.9	0	0.9	0	3.4

Year 5

Module	SMA	LAV	EQI	PPS
Mean	70	66	64	80
Max	86	92	84	100
Min	50	41	49	45
% fail	0	2.6	0.9	1.7



11 RESEARCH PROGRAMMES, CONTINUING AND HIGHER DEGREE EDUCATION

11 RESEARCH PROGRAMMES, CONTINUING AND HIGHER DEGREE EDUCATION

11.1 FACTUAL INFORMATION

11.1.1 School research programme

The School of Veterinary Medicine and Science is dedicated to improving the well-being of animals and people through world-leading innovative research and technology transfer in basic, applied and clinical sciences. Our strategic mission is to enhance society by carrying out research to tackle key issues in fundamental science, animal health and global sustainability. Research is therefore central to the activities of the School, both in terms of maintaining itself at the forefront of national and international efforts in the field of veterinary medicine but also as an integral part of the training and education for undergraduate and postgraduate students.

The School has built a world-class reputation in its research achievements. In the 2014 national Research Excellence Framework (REF) exercise, the School, in a joint submission with the School of Biosciences, was assessed as being second in the UK for research power; 37% of our work was assessed as world-leading and 80% was of internationally excellent quality. The School provides a vibrant environment where cutting-edge research is facilitated by state-of-the-art facilities and specialist technical support. Our community includes internationally-recognised academics and research leaders who are undertaking high quality-research that advances the understanding of their field and also has wider benefits to society and the economy; international collaborations are a particular strength of the School.

Four major Strategic Research Areas (SRAs) have been selected as foci for research excellence; these have increased visibility of the research activities of the school and provide a strategic focus for growth to drive high-quality discovery-led research outputs. All staff across all SRA's are encouraged to integrate latest research methods and results into teaching:

- **Diagnostics and Therapeutics** - Identification of novel diagnostic and therapeutic targets in human and companion animal disease, with a particular focus on cancer, cardiovascular, renal and neuro-degenerative diseases. The SRA integrates clinical, molecular and pathophysiological approaches to establish mechanisms of diseases in both animals and humans. By combining evidence based medicine and co-ordinated bio-banking with cutting-edge tools like next generation pathology/pharmacology and bioinformatics the SRA aims to develop advanced diagnostics for early detection of disease and to guide treatment decisions in medical practice. Students gain exposure to research work on early cancer detection during teaching throughout years 1 to 4 and also through clinical cases seen at specialist clinics on Small Animal year 5 rotations
- **Functional Pathogen Genomics** - Supports the development and implementation of novel methods for pathogen detection, control and treatment. Using functional genomics for identification of rational targets pathogen control by vaccinology, and control of bacterial infection using phage technology. Students are exposed to genomics research throughout the curriculum and particularly in infectious disease and disease control sessions.
- **One Virology** - One Virology brings together experts with an interest in virology from across the University of Nottingham. Working together, One Virology aims to enhance the understanding of viral diseases in order to improve diagnosis, treatment and control of viruses that affect people and animals. Given the importance of emerging infectious disease, One Virology is embedded throughout the curriculum, including in year 2 Personal and Professional Skills where examples of relevant research are used as exemplars of professional/scientific writing and are one the subject areas for the professional writing assessment (Schmallenberg and Equine coronavirus for example)
- **Ruminant Population Health** - builds on the national Centre for Innovation and Excellence in Livestock, hosted at Nottingham and brings together clinicians and researchers collaborating on areas of ruminant health, welfare and production. The group has key strengths in the areas of dairy and sheep health, farm animal epidemiology, on-farm applied research, statistical modelling, on-farm decision making and knowledge exchange. As a cohesive, collaborative group they have an international reputation for delivering high impact solutions to improve ruminant health, welfare and productivity. The outcomes of the research in this SRA is delivered across all years of the course

and is a special focus in year 5, including the integration of latest methods into herd health evaluations

In addition, the School hosts or co-hosts a number of University centres of excellence whose staff deliver research-informed teaching. These interdisciplinary centres provide reach into the wider research of the University and also provide a platform for growth externally, and include the Centre for Applied Bioethics <https://www.nottingham.ac.uk/bioethics>, Centre for Evidence-based Veterinary Medicine <https://www.nottingham.ac.uk/CEVM/Index.aspx>, Centre for Dairy Science Innovation, <https://www.nottingham.ac.uk/research/groups/cdsi/index.aspx> and the Advanced Data Analysis Centre <https://www.nottingham.ac.uk/adac/index.aspx>.

All staff are involved in research to varying extents (e.g. ranging from holding externally-funded competitive research grants, through educational research and supervision of year 3 students) with the exception of staff on 0.2 FTE facilitator contracts (Table 21). All staff are expected to teach on the curriculum with the exception of Research Associates/Fellows who are recruited on fixed term contracts to deliver on research grants, however these will normally be expected to contribute to the supervision of year 3 research project students in laboratory-based projects. The variance in research active staff is mostly related to fluctuations in the number of Postdoctoral Research Associates/Fellows.

Work has been published in a wide range of international high-impact scientific and professional journals, with wide readership. Within the last 5 years, staff have notably published: 2 articles in Nature; 3 articles in Nature Communications; 2 articles in the Proceedings of the National Academy of Sciences (PNAS); 2 articles in Science; 15 articles in Nature's Scientific Reports; 2 articles in Blood; and 8 articles in Clinical Cancer Research, Cancer Research and Oncotarget.

Year	Total academic staff FTE	Total FTE academic staff involved in research who teach on the veterinary degree	Total FTE research active staff	No. of original, peer-reviewed research publications	No. of original book chapters
2016	95.3	82.7	94.4	216	5
2015	107.8	88.2	106.7	225	3
2014	95.4	82.1	94.1	198	12

Table 21 Summary of research programmes in the veterinary school and outputs

Staff data taken at mid-year each year.

Data for research grant wins is shown in Table 22. There has been a recent reduction in research grant wins; reasons are discussed in section 2.3.

	UK Research councils		Charities		UK & EU government		Industry and commerce		Other		Patents
	No.	£k	No.	£k	No.	£k	No.	£k	No.	£k	No.
2016/17	5	73	14	641	12	1,778	10	296	1	54	1
2015/16	6	578	10	430	7	1,442	10	462	3	155	1
2014/15	12	1,756	4	281	6	643	3	118	1	35	0

Table 22. Research award data

In addition to measures shown in Tables 21 and 22, and to external review through REF, research activity and excellence can be demonstrated through the contribution our staff make within the external environment:

- External grant review, membership of the expert pools or committees of major grant funders such as BBSRC, MRC, Wellcome Trust, Prostate Cancer UK
- Membership of advisory boards and groups such as DEFRA EU AHR, UK Agricultural and Horticultural Development Board, Cattle Health and Welfare Group, Government of Canada's external review panel for Canadian Government Research Chairs Program, UK's The Frozen Ark Project, EU TSE-Strain typing expert group, UK Department for Health Advisory Committee for Dangerous Pathogens, Prostate Cancer UK
- Journal review and editorships including Nature, Frontiers in Veterinary Science, PLoS One, Equine Veterinary Journal, BMJ Simulation & Technology Enhanced Learning, Food Quality and Safety, Scientific Reports
- Organising and hosting of international meetings, invited talks, plenary/keynote speakers such as Emerging and Transboundary Diseases of Global Importance, European Wildlife Disease Association, UK Cattle Lameness Conference, International Society for Economics and Social Sciences of Animal Health, International Sheep Veterinary Congress, International Symposium on Canine and Feline Reproduction
- Research awards and prizes such as Fellowships e.g. FRCVS, Fellowship of the Royal College of Pathologists, Selbourne Medal for Veterinary Research, Veterinary Record Impact Award, PEXIEDER award winner, Fellow Hungarian Academy of Sciences

11.1.2 Postgraduate programmes

The research interests among academic and clinical members of School staff, together with the collaborative nature of our research, and extensive state-of-the-art research facilities and clinical opportunities facilitated by our Clinical Associates provides an excellent environment for academic and clinical postgraduate training and education. The School has a dynamic, vibrant and highly stimulating teaching and research environment which is achieved through an international blend of students and researchers who are committed to innovative learning and scientific discovery.

The School offers opportunities to study on an academic track for MRes and PhD degrees, in a wide range of veterinary, biomedical, biological and statistical research fields. Postgraduate studentships are established under the SRAs in the school. In addition the School offers a PG Certificate course in Veterinary Education. Studentships are available through University-funded and externally-funded sources. The School does not currently offer taught MSc programmes. The School has developed a clinical track which comprises a PG Certificate course aimed at new or recent veterinary graduates to develop further clinical experience through an Internship, and clinical MVM / MVS and DVetMed / DVetSurg degrees which are commonly combined with a clinical Certificate or Diploma (awarded by a European Specialty College), with students normally based for the majority of their studies at one or more of the Schools' Clinical Associates.

Programme specifications have been detailed for each of the postgraduate programmes offered (academic and clinical track). The assessment type (and progression requirements) for each programme overall and any components is published in the Quality Manual. All postgraduate students are provided with a Student Handbook that specifies examination regulations and guidelines; this is available online and in hard copy.

Applications are accepted in response to advertised studentships or following speculative applications for all academic and clinical track postgraduate positions. All applications must be made online and applicants must complete a personal statement for their proposed area of research, and forward copies of qualifications to the School. Applicants for clinical postgraduate programmes are required to hold a veterinary degree, and be a Member or Fellow of the Royal College of Veterinary Surgeons with a legal ability to practise veterinary medicine in the UK. They are required to have attended an EAEVE approved Veterinary School and have undertaken a minimum of 26 weeks EMS.

All postgraduate students are integrated into the University of Nottingham's Graduate School. The Graduate School based at University Park has a satellite centre at the Sutton Bonington Campus. This centre offers facilities including social and study spaces, computer facilities and seminar rooms. All postgraduate students are encouraged to develop a portfolio of generic skills. The acquisition of these skills is supported by a range of training programmes run by the School, the Faculty of Medical and

Health Science, the Graduate School and Professional Development. This ensures that students benefit from a high standard of education and generic skills that are approved by the UK GRAD Programme enabling them to become independent researchers with a range of specialist and transferable skills. The skill areas include communication skills, presentation skills, research management, time management and career development.

The Postgraduate Committee, on which there is student representation, monitors student progress and also discusses student welfare, support and operational issues associated with postgraduates. The TLA Committee is the main quality assurance process route for all programme matters associated with taught postgraduate programmes (PG Certificates and taught component of DVetMed DVetSurg), after review by the Postgraduate Committee. Postgraduate students are also represented on the Learning Community Forum and Safety Committee, which are able to discuss any matters (academic, welfare or social). Postgraduates are also able to specifically raise any issues directly to the Sub-Dean for Clinical Postgraduates and Sub-Dean for non Clinical Postgraduates and with a dedicated Senior Tutor for Postgraduates.

The Postgraduate Sub-Deans meet each postgraduate student individually on a needs basis; regular monthly coffee mornings are also held with the Postgraduate Administrator. The School requires all postgraduates to attend a quarterly meeting, at which students present work to their peer group and discuss progress and have an opportunity to meet each other academically and socially. In addition, postgraduates are assigned to a SRA and have the opportunity to present their work in a more informal setting amongst colleagues in their own discipline. All our postgraduates are required to present their work at an annual postgraduate symposium held in conjunction with the School of Biosciences.

Academic track postgraduate programmes

Data on 2016/17 academic track postgraduate students is shown in Table 23.

Qualification	No of students on Taught courses	No of students on Research courses	Duration of training
PG Certificate Veterinary Education	5	0	1 year
MRes	0	4	1 year
PhD	0	67	3 or 4 years

Table 23 Academic track postgraduates (2016/17)

PGCertificate Veterinary Education

There are 3 School funded places for intercalating students on the 1 year PGCertificate programme. Other studentships may be self-funded, or supplemented by external organisations.

This 60 credit course provides a basic level of knowledge and skills of veterinary education. Students spend their time being mentored in the workplace of the Veterinary School in order to develop their teaching skills. Students will be exposed to a wide range of teaching experiences, as well as being tutored in educational theory and different approaches to teaching and assessing veterinary medicine. Every student is allocated to a supervisor, or supervisors. Progression through the year of study is closely monitored through regular meetings (a minimum of 10 per year). The PGCert consists of 3 elements - an education-based research dissertation (up to 8,000 words), compilation of a teaching portfolio and production of a research plan. Students also have the opportunity to apply to be an Associate Fellow of the Higher Education Academy. The course is overseen by an External Examiner.

PG Certificate in Small Animal Rehabilitation

The School no longer offers this course, which was run in conjunction with 2 external providers, as it is not core business for the School.

MRes programme

There is no direct School funding available for MRes programmes, with the exception of 2 funded intercalated MRes studentships for current veterinary students; all other studentships are either self-funded, funded by external organisation or funded from research grants.

The 180 credit MRes programme is a one year course and provides a training programme in a specific research area, in 1 of 3 named routes (veterinary science, veterinary business and management and veterinary education). The course aims to enhance awareness and understanding of the latest veterinary science research developments, whilst providing tailored in-depth training relating to the research interests of the student. Every MRes student is allocated to a supervisory team or supervisors. The MRes degree course consists of two elements - a single research project which runs continuously throughout the duration of the programme (160 credits) and generic training in key skills (20 credits) , although it is possible to take advanced taught courses, with the research project element reduced accordingly. Progression through the year of study is closely monitored through regular meetings (a minimum of 10 per year. Students are required to produce a dissertation of a maximum 35,000 words (or equivalent) which is examined by one Internal Examiner and one External Examiner.

PhD programme

The School is able to offer a range of PhD funding opportunities; studentships may be self-funded, funded or supplemented by external organisations or funded from research grants, for example BBSRC, Zoetis.

A 3 or 4 year PhD degree involves specialist study, postgraduate training and original and independent research on a specific topic under the supervision of academic members of staff in the School. Additional supervisors consisting of at least one other experienced member of staff (up to a maximum of 3 staff members) are also appointed to form a Supervisory Committee. The research project may be carried out in the School or in collaboration with industrial partners, other university departments in Nottingham or other universities and private or publicly funded research institutes. In some cases students may spend time at international academic establishments or research institutes. Students undertaking the 4 year PhD programme normally complete a structured training programme in the first year of study.

PhD students are subject to review annually, with progression through the year being closely monitored through regular supervisory meetings (a minimum of 10 documented meetings per year). At their end of the period of study students are required to submit a thesis of not be more than 100,000 words. Normally each research submission will be examined by one Internal Examiner and one External Examiner.

Clinical track postgraduate programmes

The School has currently a low but appropriate level of Interns and Residents. There are no issues with the availability of clinical postgraduate training or appropriately qualified staff.

Clinical postgraduate training is carried out either in conjunction with the clinical services offered by the school (e.g. pathology residencies) or in the Clinical Associate practices. In all cases the primary supervisor is a recognised Specialist within their field of interest. Additional support may be given by other clinical veterinary surgeons.

Students completing MVM or MVS degrees will typically undertake programmes which have been approved by the relevant European college. Typically DVetMed/DVetSurg degrees are offered in fields where there are no specialty colleges, however where possible meeting the requirements of specific residency training programmes is encouraged (for example, European College of Zoological Medicine).

Data on 2016/17 clinical track postgraduate students is shown in Table 24.

Clinical Discipline	No of Interns	No of Residents	No of DVetMed / DVetSurg students	Diploma title
Farm	0	3	0	DipECBHM
Small Animal	10	1	0	DipECVIM
Pathology	0	3	0	DipECVP
Equine	2	2	0	DipECVS
Zoo	0	0	2	

Table 24 Clinical track postgraduates (2016/17)

Note: 1 student shown as a Farm Resident is now studying for PhD not MVM MVS alongside a Diploma.

PG Certificate in Veterinary Medicine and Surgery

Junior Clinical Training Scholars (Interns) are registered for a 1 year Postgraduate Certificate (PGCert) in Veterinary Medicine and Surgery. Studentships may be self-funded, funded by the School or supplemented by external organisations, including Dick White Referrals, Merial and Hills Pet Foods.

This 60 credit course provides appropriate focussed training in the candidates' chosen clinical subject area. This is facilitated by appropriate exposure to clinical case load and scholarly activity. Students are required to complete clinical practice (training and study) under the direct supervision of specialist academic or Clinical Associate staff, spending between 75% and 85% of their time engaged in supervised clinical activities. Students select a species or discipline as the focus of their clinical activities. Clinical training is through the management of cases under the supervision of specialist academic staff and provides candidates with experience in their chosen field, and provides exposure to an appropriate clinical caseload. Students gain comprehensive experience in all aspects of the diagnosis, treatment and care of patients in the chosen area of speciality, and are provided with an opportunity to undertake research in their area of interest. The PGCert consists of 4 elements - a research plan, clinically-based research dissertation (up to 8,000 words), compilation of a clinical portfolio and production of a clinical case report.

The clinical PGCertificate programme has annual monitoring, assessment and progression and the appointment of External Examiners are on the same basis as those of the PGCertificate in Veterinary Education.

MVM MVS programme

Senior Clinical Training Scholars (Residents) are registered on a 3 or 4 year Master of Veterinary Medicine (MVM) or Master of Veterinary Surgery (MVS) programme. Studentships may be self-funded, funded by the School (2 Farm, 2 Pathology Residents yearly) or supplemented by external organisations (e.g. Crown Pet Foods). The MVM and MVS degrees are to provide appropriate training to equip the candidate to work at a specialist level in their chosen field, under the direct supervision of specialist academic or Clinical Associate staff. The programme provides appropriate exposure to meet the criteria for assessment for the specialist clinical qualification in their field. Students select a species or discipline as the focus of their clinical activities, and are considered for either the MVM or MVS degree as appropriate. There are three elements of MVM and MVS programme:

- Generic training to support the development of personal and professional skills associated with clinical practice and research (20 credits)
- Clinical training is through the management of cases under the supervision of specialist academic staff and will equip candidates to work at a specialist level in their chosen field, and provide appropriate exposure to the clinical caseload. Students gain comprehensive experience in all aspects of the diagnosis, treatment and care of patients in the chosen area of speciality. During clinical training students study their chosen subject area, participate at rounds and seminars, and present case reports. Students may also attend other centres of excellence in the field, and participate at conferences and courses. Students are normally expected to undertake residency training for membership of the relevant specialty RCVS, European and/or American Boards. Candidates are required to demonstrate that at least 75% of their time during the course is focussed on clinical activities through the compilation of a clinical Portfolio.
- Clinical Research is conducted, requiring the design and execution of a 35,000 word research project in the chosen area of speciality (160 credits)

The MVM MVS programme is allied to the programme specification of the MRes and as such as such annual monitoring, assessment and progression and the appointment of Internal and External Examiners are on the same basis as those of a MRes.

DVetMed / DVetSurg programme

Students on the 3 or 4 year DVetMed DVetSurg programme may be School funded (with 2 Zoo DVetMed yearly) self-funded, funded by an external organisation or funded from research grants. The programme comprises a taught component of 1 year and 1 or more major research projects over a minimum of a further 2 years. The aim of the programme is to develop research and clinical excellence in veterinary-qualified staff and engage veterinarians from clinical practice into research. The degree involves specialist study, postgraduate training and original and independent research on a specific topic under the supervision of academic members of staff in the School. Students are expected to

undertake 120 credits modules at Master's level in research methods, critical appraisal of literature and research planning. In addition students are required to submit a research thesis. The research project may be carried out in the School or in collaboration with industrial partners, other university departments in Nottingham or other universities and private or publicly funded research institutes. In some cases students spend time at international academic establishments or research institutes. Every DVetMed and DVetSurg student is allocated to a supervisor, or supervisors. The programme is allied to the programme specification of the PhD and as such annual mentoring, assessment and progression and the appointment of Internal and External Examiners are on the same basis as those of an PhD.

A candidate for the degree of DVM or DVS must:

- Submit and pass a research portfolio (60 credits)
- Produce a 10,000 word critical appraisal of literature (30 credits)
- Develop a 8,000 word research plan (30 credits)
- Submit a thesis of up to 60,000 words

11.1.3 Integration of research activities with the veterinary programme

Our curriculum is research-informed. All academic staff are engaged in research and this expertise is exploited to ensure the curriculum is updated as necessary. From year 1 and throughout the curriculum, our students learn the methodologies, concepts and rigour required in research and how this relates to veterinary medicine. We embed in students the value of critical evaluation of evidence and guide them as they use these skills to embrace a passion for lifelong learning.

As outlined below, all undergraduate students participate in a formal research project. This research-based learning experience enables students to acquire practical research skills and develop professional independence and resilience that will benefit them throughout their careers. To this end all undergraduate students are supervised by two academic staff members. These projects are developed as a partnership between the student and academic and student involvement in these projects often continues beyond graduation.

Undergraduates are also able to attend the school's weekly research seminar series where the School hosts local, national and international guest speakers. The School also works closely with the school's NextGeneration Scientist Society to involve our undergraduate students in research outreach activities. This involves visits to local secondary schools and hosting local primary schools at the School. These outreach activities serve to further embed the concept of research-informed education in our students.

The School has taken a number of opportunities to link undergraduate and graduate education with the outcome that undergraduates are enthused into considering research as a career option. Exposure to postgraduate researchers (clinical (Intern and Resident) and non-clinical) through teaching and other opportunities such as embedding student research projects within research groups.

11.1.4 Nature and level of participation of students in clinical and research training

The School believes that it is vital for undergraduate students to gain knowledge, understanding and skills in contemporary research in order to develop problem solving abilities and develop a penchant for lifelong learning. Research related topics are taught:

- Year 1 using the library
- Year 2 writing a literature review on a research topic and planning of the year 3 project
- Year 3 conducting a substantial 12 week research project
- Year 5 conducting BestBETs

Specifically, the School has incorporated a significant 40 credit Research Project module into Year 3 for all students. The aim of the Research Project is to provide students with:

- An appreciation of the value of research in modern veterinary medicine and science – particularly how research contributes to furthering veterinary knowledge and continuing professional development
- An understanding of the possibilities for a career in research whether this be pure research, governmental or commercial or other forms of applied research
- Skills in discovery and hypothesis-driven veterinary science that will be of value in practice and which forms the basis of understanding the practice of evidence based veterinary medicine
- Acquisition of new technical skills

- Transferable skills relating to planning, project management, analysis, evaluation and writing of a research project from the point of inception to publication and to illustrate to students that this is something that that could be achieved while in practice
- Development of critical thinking skills
- Development of lifelong learning skills, professional independence and resilience

The Research Project module requires students to design and enact a research programme over a maximum of a 12 week period in the Autumn term, with supervision and oversight by 2 School academics. Prior to starting their research projects students are provided with an introductory week of didactic and practical sessions covering diverse aspects of research methods, study design and statistics. Weekly timetabled advice sessions are also provided to students to ensure adequate support for their research projects. It is normal for the workload to be uneven during the project, but students are expected to spend at least 30 hours per week working. In 2017/18 formal statistical support will be offered in week 6 to consolidate the material covered in the introductory week. Students conduct their research projects at a variety of locations, dependent on the choice of project:

- Placement in a research group at the SVMS, working in collaboration with existing academic, post-doctoral and post-graduate scientists
- Placement in a research group at the SVMS in a joint project with a second school e.g. Biosciences, Biomedical Sciences, Biology, Mathematics, Pharmacy or another relevant School. This will be either as a result of existing collaborations or a new collaboration set up for a specific project.
- Placement at one of the Clinical Associate Institutions
- Placement with other institutions in the UK or abroad¹⁹, including, for example, the Animal Health Trust
- Other options (by discussion with Project Supervisor), including at international centres

All academic staff are expected to supervise undergraduate projects.

In addition to the research project there are several opportunities for undergraduate students to be formally involved in research both within and outside the School, including:

- Students are able to undertake 6 weeks of research as part of EMS
- Students are able to undertake summer research projects at the School, either unpaid or subsidised by a stipend by the supervisor. Competitive funding has been available from the University and commercial and charitable organisations such as the Wellcome Trust, BBSRC, MSD Animal Health, Wellcome Trust, Academy of Medical Sciences, INspire award, The Genetics Society, World Horse Welfare and RCVS Trust for students to undertake vacation research projects
- Students are able to volunteer to assist with research projects, for example, >10 students per year participate in pedigree dog genetics-linked longitudinal health studies involving Irish Wolfhound, Rottweiler and Spaniel breeds coordinated by our internal medicine specialist
- The School has funded 2 intercalated PhD students, and on an ongoing basis funds 2 MRes and 3 PGCertificate (Veterinary Education) positions for intercalating year 3 or 4 students
- The School won a substantial INspire grant from The Academy of Medical Sciences to give further opportunities for undergraduate students to attend evening research lectures and receptions, present their research at conferences, undertake paid studentships and participate in year round research
- The School is able to help students achieve recognition for their extracurricular research activities. Staff developed and run a 10 credit (non-academic) module which contributes towards achieving the 'Nottingham Advantage Award', this is formally stated on their degree paperwork and awarded at the graduation ceremonies. Therefore all students can get formal recognition for organising, volunteering at or attending research related activities
- Support for research activities does not cease once our students have graduated. The School runs a research programme for graduates who wish to be actively involved in further research even if they are not undertaking internships/further education/research positions. For example veterinarians in practice can write papers with staff, collect samples to contribute. This programme is being extended after consultation with our alumni and will include mentoring opportunities and further research activities

¹⁹ To date students have conducted projects in the USA, Switzerland, Norway, Australia, Cyprus, Chile, Tunisia, Morocco, Gambia, New Zealand, Spain and India.

Table 25 shows veterinary students involvement in research projects. The involvement of research-active staff in all teaching and especially in supervising Year 3 projects ensures that this part of the course is often carried out at a level which is sufficiently high for scientific publication in peer reviewed journals and is additionally quality assured through the university quality system. A number of national research awards have been won by undergraduates including prestigious British Undergraduate Research Conference awards and European and International conference awards. Students have the opportunity to present their work at national/international conferences, these may be funded by the School (either as prizes, or directly) or research grants. To date over 200 students have been named on national and international conference abstracts, with over 90 students being co-authors on high impact peer-reviewed publications. In addition to being given funding for conferences throughout the UK and abroad, students have been able to attend national conferences at the university for free or have been supported in achieving funding, these have included activities by The European Association of Veterinary Anatomists, The Society for Reproduction and Fertility, and The Nutrition Society.

Academic year	Total number of students on 5 year veterinary programme	No. of students in funded and unfunded research projects				No. of peer reviewed publicns in which UGs are authors/co-authors	No. of students in joint postgraduate programme (intercalating)		
		Year 2	Year 3	Year 4	Year 5		PhD	Masters	PGCert
2016/17	663	10	131	5	0	79	0	3	3
2015/16	599	16	116	5	0	76	2	1	0
2014/15	579	21	121	7	1	88	2	0	0

Table 25 Veterinary student's involvement in research projects and levels intercalating.

At least 53 of our 657 alumni (8.1%) have undertaken PhD or Masters level study post-graduation or have undertaken Internships or Residencies.

11.1.5 Continuing Education

The School aims to provide the highest quality Continued Professional Development (CPD) for veterinary surgeons and allied professionals. This engages the school with the wider veterinary community, perpetuating the philosophy of lifelong learning developed in the undergraduate curriculum and further developing the School as a centre of educational excellence.

We offer face-to-face, high quality one- and two-day courses covering a wide range of subject matter across all disciplines of veterinary medicine and surgery. We provide courses at the basic, intermediate and advanced levels to suit the CPD requirements of the profession. The programme is strategically overseen by the CPD Sub-Dean and operationalised by the CPD Manager who undertakes all aspects of the programme administration (communication with deliverers and attendees, scheduling, organisation and evaluation analysis). The CPD Sub-Dean and Manager have undertaken a number of national surveys to determine the needs of the veterinary profession and within this context, individual courses are initiated by individual clinicians in discussion with the Sub-Dean.

Quality assurance is similar to undergraduate teaching and ensures:

- Learning objectives are defined
- Teaching materials are developed and available to all attendees
- Peer observation of teaching delivery

Quality control involves

- Consideration of feedback from participants, by means of a paper based questionnaire
- Consideration of feedback from session leader (encompassing consideration as to delivery format, whether delivery matched published learning objectives, what may be improved, what worked well etc.)
- Evaluation of any improvements or changes for future sessions

Table 26 shows courses provided by the School in 2016/17

Course title	No. of participants	Course hours
Avian medicine and surgery	11	8
Engaging with your sheep farmer clients - providing a veterinary service they will value	11	8
Small animal geriatric medicine	11	8
Applied musculoskeletal anatomy of the dog	9	6
Practical exotic and avian day	12	8
Bovine mastitis	20	19
Intermediate small animal abdominal ultrasound	20	16
All you ever wanted to know about immune-mediated diseases	15	8
Sources of evidence for practitioners	6	8
A surgical tour of the abdomen	16	8
Masterclass in the surgical management of laryngeal disease in the dog	10	8
Just give it a wiggle and a push! - Getting the most out of small animal endoscopy	20	8
Back yard poultry	12	8
Introduction to small animal ultrasound	46	8
Polyuria and polydipsia	23	8
Practical farm animal surgery	10	8
Critical care for small animals	16	8
Ouch that hurts! - a practical approach to acute and chronic pain management in small animals	12	8
Best practice at lambing time	8	8
Using an evidence-based approach in your practice	9	65
Basic medical and surgical oncology	17	8
Bovine lameness	7	19
Endoscopy masterclass	10	16
Practical hip surgery	5	8
Practical stifle surgery	7	8
Raptors - emergency care and rehabilitation	7	8
Anaesthesia - the next steps: Practical ways to improve your anaesthetic practice	30	8
Canine fixation masterclass	6	16
Ruminant mineral nutrition investigation incorporating copper: deficiency and two toxicities	13	16
Husbandry, medicine and surgery of the pet rabbit	5	8
Bleeding small animals!	11	8
Focussing on frustrating felines	6	8
Practical small animal echocardiography	12	8
All you ever wanted to know about diseases of the liver and pancreas	19	8
Masterclass in the surgical management of ear disease	2	8

Table 26 CPD courses run in 2016/17

We have recently established a commercial partnership with an external industry partner to develop and deliver bespoke surgical courses for our newly created Veterinary Surgical Training Academy. We are currently in negotiations with the Royal Colleges of Surgery, the professional membership organisations for human surgeons. Our aim is to be the first veterinary college in the UK to have a number of our courses accredited by these Colleges. This will bring integrity and standardisation to the teaching of basic veterinary surgery. Our long term aim is to provide credits for these courses leading to a Postgraduate Certificate qualification.

Our Centre for Evidenced-based Veterinary Medicine have recently launched a new CPD opportunity for promoting the use of an evidenced-based approach in clinical practice. This blended learning course

has three components and is delivered over a 3-4 months period using a combination of in person workshops and real-time online tutorials.

The School is also part of the BBSRC funded Advanced Training Partnership which provides postgraduate level professional development in the area of agriculture and food production for industry specialists across the UK. The training is aimed at individuals employed throughout the agri-food sector. The School assists in the delivery of a 20 credit Poultry Health course as part of a full MSc in Agrifood.

Our Alumni community now stands at more than 500 individuals and we provide learning opportunities for these individuals at preferential rates. We strongly adhere to our philosophy of life-long learning and we are committed to supporting our Alumni members throughout their professional careers.

The School does not offer CertAVP modules.

11.1.6 Involvement of interns, residents and research students in student teaching

Residents, Interns and DVetMed students are integrally involved with year 5 clinical teaching, they may work closely with the students on an informal daily basis, and may be involved in scheduling activities, but ultimately feedback, with academic staff and other members of Clinical Associates about student performance to Rotation Leaders. Residents may undertake year 5 DOPS assessment but otherwise no students are involved in assessment. Other non-clinical postgraduates (e.g. PGCertificate, MRes, PhD) act as demonstrators in practical sessions in years 1-4. It is normally expected that students undertake university courses in teaching and demonstrating and school teaching induction courses. Some students, for example Residents may undertake the Associate Teacher Program and gain HEA status.

Interns and Residents are involved in case management and teaching at several Clinical Associates. Interns and Residents in all cases work as part of a team managed by a senior clinician, typically a board-certified specialist, who will manage conflicts in relation to case management. All Residents have a supervisor who is a senior clinician, typically a board-certified specialist, who will ensure any research elements required of the residency programme are completed.

11.2 COMMENTS

11.3 SUGGESTIONS FOR IMPROVEMENT

The School is seeking to redevelop Containment Level-2 and 3 laboratories, recently vacated by APHA. These facilities will initially support the EU-funded research into bluetongue virus (BTV), but will subsequently support a wide range of research in partnership across the University into the control of key viral and bacterial pathogens.



12 OUTCOMES ASSESSMENT

12 OUTCOMES ASSESSMENT

12.1 FACTUAL INFORMATION

12.1.1 How outcomes monitoring is used to improve the educational program

The School uses a number of quality-related outcome assessment measures in order to achieve the following outcomes:

- To assure the quality and standard required for a veterinary degree as determined by the RCVS, EAEVE and AVMA
- To ensure the highest standards and implementation of best practice across the School's operations
- To facilitate delivery and dissemination of high quality, internationally recognised, education and research which addresses the needs of stakeholders

Decisions regarding curriculum development are driven by the exit learning outcomes that students are required to display at the end of the course. The veterinary curriculum at Nottingham has thus been designed to meet the RCVS Day One competences, QAA Subject Benchmark and EAEVE Subject Areas, as well as being driven by the need for students to have a grounding in basic science, to be research literate and to develop as professionals.

Outcome assessment at School level is an ongoing activity that results in a regular appraisal of data in order to monitor and inform curriculum development and graduate competency and associated School strategy and includes data collected from students, staff and external stakeholders. Data are collected at year, module and activity level (e.g. facilitated sessions, practicals), methods employed are:

- Surveys (School/University managed: Year survey, SET, SEM, graduate survey, employers, University all student survey (NSES). External: NSS)
- Data analysis (assessment results, admissions qualifications)
- Individual feedback (e.g. student, staff, External Examiners, EMS host)
- Committees (e.g. Student Progress, TLA, LCF)
- Ad-hoc focus groups convened around particular topics
- Peer observation (e.g. teaching)

Outcome findings are considered and responded to through ongoing operations (e.g. in the case of requirements for additional resources or equipment) or through the appropriate Committee. Examples of outcome findings which have improved the educational programme include:

- Veterinary Public Health has been moved from year 4 to year 3 and delivered as a block module rather than a long module – decision informed by lower assessment attainment compared to other courses, student SEM feedback, External Examiner feedback
- Accommodation provided by the School for the Oakham Veterinary Hospital rotations – decision informed by student NSS and rotation feedback
- Compulsory out of hours emergency care rotation incorporated into year 5 rotations – decision informed by graduate survey
- Students are able to gain online assessment feedback based on attainment against module learning objectives – decision driven by student feedback in year survey, NSS and staff feedback
- Clinical nutrition teaching is now better incorporated into the curriculum following feedback from the graduate outcomes survey

12.1.2 Student outcomes

Employment rates of graduates

HESA collect information on the destinations of leavers and shows information for all UK domiciled graduates. The average employment (and further study) rate is 98% over the last 5 years and ranges from 97% to 100%). These data (Appendix 23) only show employment rates 6 months post-graduation, and thus it is important to note that whilst figures for further study appear low, it appears that some students are employed as Interns but have classed themselves as employed rather than

further study and also it is common that graduates prefer to undertake employment in veterinary practice initially and may return to study later.

We recognise that the HESA data do not provide the granularity on employment sector and further study we would wish, and as such have instigated a process to collect destination data from our 2011 and 2012 alumni and also on Graduation Day. Data for the 2017 graduates show 78.9% employed in veterinary practice, 11.9% undertaking advanced further study (Internships/Residencies) and 0.9% in advanced academic training. Of the 109 respondents, 8.3% have not found jobs by Graduation. All but 4.8% are working in the UK.

Our employment rates are high, and our graduates are keenly sought by employers, reflecting the knowledge, skills and professionalism attained on the Nottingham course (for example, see <https://www.bva.co.uk/professional-development/vet-record/articles/whats-so-good-about-nottingham>). We review the outcome data and feedback direct from students to inform decisions on careers support provided to graduating students, for example we have provided "transition to practice" sessions for final year students.

Demonstration of achievement of RCVS Day 1 competences

As detailed previously the School has put in place a wide range of mechanisms to collect outcomes data around Day 1 competence, including an extensive assessment strategy designed to test knowledge, skills, professionalism and clinical competence, benchmarking by External Examiners and feedback from employers.

Our whole curriculum is carefully mapped to the RCVS Day 1 Competencies and summative assessments aligned with teaching ensure the Day 1 Competencies are taught, assessed and achieved by all students (Appendix 27). For example:

- Our final year assessment strategy examines practical competencies and professionalism in the workplace (through DOPS and the Rotation Professionalism Assessment), mapping to RCVS DAY 1 competences and RCVS Guiding Principles
- Knowledge and clinical reasoning skills are assessed in final examinations which are blueprinted to ensure species and topic coverage, mapped to RCVS Skills, Knowledge and Professionalism
- Students link all Portfolio assets to Competences; the Portfolio is defended in a viva

Assessments of graduating final year students

We recognise alumni-based evaluations as an important part of the process of ongoing evaluation for our outcomes based curriculum. There has been a rolling programme of alumni assessment since the first graduating cohort in 2011 (see <http://vetrecordopen.bmj.com/content/2/2/e000116>). Year 1 graduates have been surveyed annually by the School and asked how well prepared they feel for different aspects of clinical practice and on their general experience post-graduation and also space for free text comments. Response rates have ranged from 32% to 47% over the last 5 years. Data are shown in Appendix 24. No clear overall trends are discernible, however there are areas of lower scores.

The data from the graduate survey are considered at TLA Committee, and changes are made to the curriculum as necessary, for example:

- Increased opportunity for surgical experience: developed a relationship with RSPCA for EMS; improved surgical experience through Small Animal primary care rotation
- Clinical nutrition: working group established with Year 4 Gastrointestinal Module Convenor to identify areas for improvement
- Anaesthesia and Emergency and Critical Care: changes to anaesthesia teaching in new Year 3 Clinical and Professional Skills module; addition of anaesthesia teaching time to Year 4 Cardiorespiratory module, and specific inclusion in the year 5 Pride Referral rotation

In addition the Higher Education Statistics Agency (HESA) collects data annually from graduates 6 months after completing their veterinary degree. The mean 5 year percentage for those who felt 'very well' or 'well' prepared for employment by their overall experience in higher education was 96% (Table 27)

Year of graduation	No. of respondents	Very well	Well	Not very well	Not at all	Can't tell
2011/12	32	59%	38%	3%	0%	0%
2012/13	42	60%	38%	0%	0%	2%
2013/14	39	79%	21%	0%	0%	0%
2014/15	46	80%	13%	7%	0%	0%
2015/16	54	67%	26%	2%	4%	2%

Table 27 HESA data 'how well did the graduates overall experience in higher education prepare for employment'

The School has also recently undertaken a survey of graduates 5 and 6 years post-graduation, and will continue to do this on an ongoing basis. Data will be available during the visitation.

The School is unaware of any students that have undertaken NAVLE examination.

Employer satisfaction with new graduates

The School has undertaken interviews to gain feedback from employers about graduates (data is being collated and will be available during the visitation). The School is part of the Veterinary Schools Council which has, this year, launched a survey of employers on behalf of all UK Veterinary Schools to employers. This new survey has been informed by the 'Day One Competences' defined by the RCVS, and by the AVMA domains of competence. Veterinary schools will use the information to make analyses of their own graduates. The data will be available during the visitation.

12.1.3 Institutional outcomes

School evaluation of progress in meeting its mission

The School has yearly performance targets in common with all University Schools which relate to NSS overall satisfaction, entry tariff score, research awards and margin, research income per academic staff pay and actual vs. budget contribution (£ and %). The School's strategic plan also includes a number of School strategic objectives; these, together with Faculty objectives are tracked on a quarterly basis and considered by Management Team and Faculty Executive Committee. The School also has a risk register that is reviewed on a quarterly basis. The strategic plan and risk register will be available for review during the visitation.

The School undertakes a wide range of activities to gain outcome information, however benchmarking is provided through 5 main mechanisms.

- National Student Survey (NSS). The NSS is carried out across all UK degree courses by Ipsos MORI on behalf of the Higher Education Funding Council. Students in their final year complete a standard set of questions, and can also provide free text feedback. Data are provided to the School for all UK veterinary courses and is also available on the Unistats website <http://unistats.direct.gov.uk/>. Since the School's establishment it has been consistently ranked as the top UK Veterinary School for overall satisfaction (and normally every other category as well), with a 6 year average of 98%, compared to a University average of 88%. Appendix 25 shows 2016/7 data for UK veterinary schools; response rate was 100%, in summary the School is top in each of the 27 categories, with 100% overall satisfaction with the course. Data from the survey have resulted in a number of changes, for example an increase in feedback mechanisms and volume
- The Association of Veterinary Students survey is conducted every 3 years and evaluates various aspects such as teaching, learning and support. Again the School has been top of this survey, with data feeding into teaching and welfare reviews
- External Examiners provide benchmarking and assurance that the programme outcomes are of a comparable level to other Veterinary Schools. The School acts on any feedback received as part of the report provided by Examiners
- The University undertakes Educational Enhancement and Assurance Reviews (EEARs) to ensure high quality, competitive, and well managed academic programmes are maintained – these 3-yearly reviews include external representation to ensure benchmarking.
- The University provides benchmark data to support strategy and plan development, this includes, degree classifications and entry tariff data

Less formal feedback is obtained from staff acting as External Examiners, members of accrediting teams, membership of cross-University and Veterinary School Committees.

Significant indicators of quality of the educational processes

A number of other indicators of quality have been made internally and externally in the form of awards and achievements, we would use these outcomes in assessing that the School is delivering on educational strategy and quality:

- The School has received a number of teaching awards including the ASPIRE award for student engagement and the Guardian Award for Employability.
- NSS and AVS survey results (as detailed above)
- Eighteen staff have received the prestigious University Lord Dearing award for teaching.
- Three staff are Principle Fellow of the Higher Education Academy, with a further 44 staff Fellows/Senior Fellows
- One member of staff is a National Teaching Fellow
- Research Excellence Framework (4 yearly review), the School together with the School of Biosciences, was 2nd in the Agriculture, Veterinary and Food Science Unit of Assessment for research power, and top for research environment
- Staff serve as Presidents, Members of Council or on Committees of e.g. RCVS, BEVA, BCVA, Society of Reproduction and Fertility, UK Government Advisory Committee - the Elephant Welfare Group, Society for Veterinary Epidemiology and Preventive Medicine
- Professional recognition and awards such as FRCVS, CEVA Animal Welfare Vet of the Year, BBSRC Innovator of the Year, Selbourne Medal

Staff and students can raise comments on their perception of adequacy of resources, facilities and equipment which support the educational process by a number of mechanisms within the School:

- Directly to relevant technical and administrative staff to resolve operational issues, and through line managers, Module Convenors as relevant and/or ultimately to the Senior Technical and Facilities Manager or Head of Operations for discussion regarding any development or investment requirements; approval above £5k spend requires Management Team approval
- Through various Committees (TLA, Research, LCF, Staff Meeting, etc) with onwards decision making by Management Team
- As part of surveys such as SEM, Year, NSS, University or School staff surveys
- Anonymously through a feedback box in reception

The University Director of Estates meets with the Dean and Head of Operations on a half-yearly basis to review ongoing strategy and any operational issues.

Results of surveys/analysis of outside opinion (including alumni and other stakeholder groups) as to whether the school is achieving its objectives

There are a number of surveys and data analysis that demonstrate that the School is achieving its educational objectives, both internal and external to the University detailed previously in this chapter, e.g. EEAR, alumni surveys, employer surveys, NSS Survey, AVS survey. External validation of research through the Research Excellence Framework provides a view of the achievement of the research objectives.

12.1.4 Professional competences that students must achieve

The intellectual, clinical, personal and business competences that students must achieve by the end of the veterinary degree are described in Appendix 27. Evidence that the students have achieved these outcomes is through summative assessment throughout all years of the course as detailed previously in Chapter 10. Example assessments are shown in Appendix 27 for each learning outcome.

The Portfolio links to and leads into PDP so that students have demonstrated competence in reflection which is essential for PDP.

12.1.5 Other

Education research in the School has conducted in-depth projects, for example on communications skills, outcomes based assessment and anatomy teaching.

12.1.6 Compliance with ESG standards

Policy for quality assurance

The School has embedded quality within the culture of the School such that there is a wide recognition of the importance of quality, and quality is implicit in the normal activities of the School. The School's quality assurance and control policy and strategy is detailed below:

- Operating to high standards with clear and measurable quality assurance and control is crucial to the operation of the School and therefore our strategic position has been to provide defined Standards to which we operate, clear Procedures that enable these standards to be maintained and where necessary measurable Goals for us to achieve
- The principal Standards are provided in the University Quality Manual but are supplemented by additional Standards defined by the School and by defined Procedures to which we operate; these govern our teaching, research and operational activities. Internal monitoring by the School enables short-term changes in quality to be effected, whereas involving external stakeholders and benchmarking externally beyond the University facilitates sharing of good practice and longer-term changes in quality to be achieved
- Our key objectives are to operate at a high standard whilst being transparent, fair and efficient, ensuring confidence and validity in all that we do, whilst facilitating satisfaction for all of our stakeholders and achieving the potential for early detection of problems should these arise
- Our philosophy for quality is a cycle of activities for quality assurance, commencing with adopting (University) and developing (School) quality assurance Standards and Procedures, and following this with quality control, monitoring outcomes, taking appropriate actions, and establishing or revising Goals
- Commitment to quality by all staff is essential to an effective standards and quality assurance and control programme, and ensuring quality therefore requires that all staff are involved and educated in quality procedures, and are empowered to improve quality, or recognise the first port-of-call for information when this falls outside of their area of experience

The strategy is designed to achieve the following outcomes to:

- Ensure the highest standards and implementation of best practice across the School's operations
- Assure the quality and standard required for a veterinary degree as determined by the RCVS and EAEVE
- Facilitate delivery and dissemination of high quality, internationally recognised, education and research which addresses the needs of stakeholders.

The School, as part of the wider University, is guided by the quality-related strategies, policies and procedures set at Faculty and University level. These cover all aspects of the University's operations and whilst some policies and procedures relate to legal obligations (e.g. in the areas of safety, employment), others reflect the University's first guiding principle to "provide excellence in all we do: from top quality teaching, research and professional management that provide rounded support to all our students and staff, to our relationships with our alumni and communities, we aim for excellence in all areas".

The University works within national policies and procedures affecting Higher Education in the UK. Three key national bodies impacting on teaching are the Quality Assurance Agency (QAA), Higher Education Funding Council for England (HEFCE) and Higher Education Academy (HE Academy). The University Learning and Teaching Committee has overall responsibility for the University's academic quality and standards, and reviews, develops and implements the University's teaching and learning strategy. It receives reports from and advises University Quality and Standards Committee, Academic Appeals and Academic Misconduct Committees and from Faculty Teaching and Learning Committees, and has representatives from all Faculties, Senior Tutors, international campuses, undergraduate and postgraduate students.

The University Quality and Standards Committee oversees the application of all University regulations, policies and procedures in respect to quality and standards, including programme and module approvals and withdrawals, appointment of External Examiners, review of annual monitoring reports. It also oversees the application of the Quality Manual (www.nottingham.ac.uk/quality-manual) procedures across the University. The University's Quality Manual is a valuable source of information for staff and for students. It tries to set out as clearly as possible the University's policies and procedures relevant to both teaching and supervision of undergraduate and postgraduate students (both taught and research). It was established in 1995 and aims to support the University in its aim to assure the quality of its learning, teaching and supervision. The Quality Manual provides the regulatory framework governing teaching and learning at The University of Nottingham and its provisions have regulatory force. Primary responsibility for compliance with the Quality Manual lies with Schools. The various sections of the Quality Manual state those circumstances where a School must seek approval at the University level for an action. The Registrar's Department has responsibility for interpreting the Quality Manual and therefore for determining whether the action of a School is in accordance with the Quality Manual and whether approval at the University level is required.

It is the Dean of School's responsibility to keep his/her School's practice under review and in line with the Quality Manual. The Dean of School may delegate those responsibilities but where this is the case it should be formally documented and appropriate protocols established. Compliance with the Quality Manual is checked by the University School Educational Enhancement and Assurance Review. The Quality Manual is consonant with the Quality Assurance Agency's Quality Code for Higher Education and the European Standards and Guidelines.

The University is committed to maintaining the highest standards of integrity, rigour and excellence in all aspects of research. There are two University Committees associated with the quality of research. The Research Board reviews strategy and implementation associated with research and research postgraduates. It comprises representatives from academic Schools together with University Heads of relevant Professional Service teams. The Research Ethics Committee ensures quality assurance of the process and procedures for providing ethical review, and has representatives from academic Schools, University Heads of relevant Professional Service teams, student representation and external lay members. The University ensures that all research is conducted according to the appropriate ethical, legal and professional frameworks and standards, through a Code of Research Conduct and Research Ethics. This Code provides a comprehensive framework for good research conduct and the governance of all research carried out across the University. The Code underpins the University's commitment to maintaining the highest standards of integrity, rigour and excellence in all aspects of research. The Code outlines the duty of researchers including their responsibilities towards all participants of research including humans, animals, the environment and cultural materials, and it provides a basis for the transparent and appropriate communication and dissemination of research findings. The University welcomes the national framework for good research conduct and governance published as the Concordat to Support Research Integrity and endorses the Concordat as a recipient of public funding for research. The Code has been reviewed to be consistent with the commitments and aims of the Concordat and is the basis for applying research integrity across the University. The Code and its implementation are reviewed on an annual basis by the University's Research Ethics Committee and on a tri-annual basis by consultation across the institution. These reviews take into account changes and recommendations from external research funders, Acts of Parliament and other legislations. All reviews are undertaken by the University's Research Ethics Committee in conjunction with and ratified by the University's Research Board, and coordinated by Research and Graduate Service.

Quality management in relation to internationalisation and stakeholder engagement are managed by University Professional Services.

Documents associated with the University's quality management processes are available on the University website and internal Workspace (intranet).

In addition to the University-level Committees mentioned above, at Faculty level, there are a small number of Committees that relate to quality of teaching and research. On a weekly basis an operational Faculty Management Meeting (Dean of Faculty and Heads/Deans of Schools) and monthly Faculty Board and quarterly Administration Board meetings review strategic and operational issues common across the Faculty. The monthly Faculty Teaching and Learning Board ensures two-way communication on the University's Teaching and Learning Strategy information on teaching and learning. The monthly Faculty Research Board considers strategic and operational research issues across the Faculty. All Committees

will receive input from relevant School Committees and will provide feedback to and from the relevant University-wide Committees in order to inform revisions to the University's quality assurance system.

The School complies with all university-level processes and procedures but has, within the context of University quality management system, some limited autonomy to develop and implement further quality assurance mechanisms and controls specific to local requirements (such as to meet professional body (RCVS and EAEVE) requirements) or areas out with the University system (such as clinical education). The quality management system that has evolved in the School integrates processes where possible (particularly in relation to undergraduate education). The School has established a number of focussed Committees for quality assurance and control, normally chaired by either a Sub-Dean or a Head of Division (Appendix 2). All Committees ultimately report into the School Management Team which comprises the Dean of School, Heads of Divisions, Research Sub-Deans and Teaching, Learning and Assessment Sub-Dean, and also to any Campus, Faculty or University Committees for review, monitoring or audit purposes. These Committees are responsible for quality assurance and control, with operational support by functional teams in the Academic Support and Administration Division, including a dedicated Quality Assurance Officer. Sub-Deans and their Committees will normally therefore develop process and policy frameworks to assure quality, and receive data and reviews from operational teams, individuals and central University functions to monitor standards through quality control. A quality feedback loop is enacted so that quality assurance frameworks can be refined where necessary.

Documents associated with the School's quality management system are available on the Schools intranet (Workspace) and shared electronic folders.

Staff are supported with operational procedures and guidelines for internal quality control and quality assurance of the teaching and research programme. Responsibility for quality and standards ultimately rests with the Dean and the School Management Team, with the delegation of responsibility for the assurance, monitoring and enhancement of quality to relevant School Committees, operationalised by all functional teams and enacted by all staff.

Further information on how the system is organised, implemented and revised is shown in Appendix 26.

Design and approval of programmes

As detailed in above, the University Quality Manual provides the regulatory framework governing teaching and learning. It has defined processes and requirements around the design and approval of programmes and component modules to ensure that appropriate academic standards are set and maintained and that the programmes offered to students make available learning opportunities which enable the intended learning outcomes to be achieved.

Schools are required to draw on relevant sources including subject benchmark statements, QAA level descriptors and appropriate professional, statutory and regulatory body guidance when designing a programme. Schools are required to take advice from an academic peer external to the organisation (who reviews market, validity and relevance of the programme with reference to external points such as QAA or regulatory requirements, effectiveness of curriculum and assessment, definition and appropriateness of standards). Schools must involve students in the design and approval of the programme. A template is completed which requires educational aims, level of qualification, learning outcomes, assessment details, programme structure, admission requirements, subject benchmark and accrediting body information and a curriculum map

Programme specifications are reviewed and approved by the University's Quality and Standards Committee, after approval at the School's TLA and/ or Postgraduate Committee. Module specifications, comprising the same information as programme specifications albeit at a module level are reviewed and approved at the TLA Committee. Programme and Module specifications are updated annually. Once confirmed at School level the programme specification for a new course is reviewed by Student Services to provide an assurance that the document adheres with the requirements of the Quality Manual, before submission to the University Quality and Standards Committee for review and approval.

In parallel to the programme specification the School is required to compile a business case. This business case is reviewed by relevant Professional Services teams before consideration by the Faculty

PVC. The business case considers academic rationale, planning intake, evidence of demand, recruitment strategy, income and delivery resources required.

New programmes require approval of both the business case and the programme specification before confirmation of full and definitive approval is reported to the Quality and Standards Committee.

Student centred learning, teaching and assessment

As detailed in sections 9.1.1 our outcome based student-centred curriculum encourages students to learn in an independent fashion, and they have responsibility for their own education. It encourages a more active approach to learning, building on prior knowledge, and learning by doing, in order to assimilate and accommodate their own learning.

The curriculum is delivered in an integrated programme using a range of innovative teaching methods. The curriculum structure helps students to activate their previous knowledge acquired across years and also to appreciate how clinical aspects inter-link with normal structure and function. A problem-oriented approach ensures integration is emphasised appropriately. Delivery methods are diverse and include core 'signposting' didactic lectures and practical classes, alongside facilitated small group problem-based learning sessions. The development of lifelong learning skills is supported through the inclusion of self-directed and group work. Clinical teaching allows students to further develop clinical skills, reasoning, knowledge and professionalism in the context of the workplace. Clinical teaching and learning is based upon practical experience, observation and discussion and may also include seminars, case rounds, practical classes and self-directed learning.

The University is committed to ensuring that methods of assessment are effective in measuring student attainment of the intended learning outcomes and that assessment policy and practices are effective in monitoring the validity, equity and reliability of assessment.

The School is fully compliant with the University's Quality guidelines and procedures for assessment and progression, which are set in the context of external quality assurance frameworks. To this end, there are rigorous rules, regulations and processes which apply to the School including, for example, disability requirements, e-assessment, moderation, external examiners, etc. The School is responsible for ensuring that the rules and regulations for progressing from one stage of a programme to another and for qualifying for an award are publicised to students through appropriate channels. Any changes to regulations or arrangements for examinations are ratified by the TLA Committee and if the change is outside normal guidelines, by the University Quality and Standards Committee. There are highly developed procedures around assessment (section 10.1.5) including assessor training, moderation methodologies etc, to ensure that methods of assessment are effective in enabling every student to demonstrate the extent to which they have achieved the intended learning outcomes in an equitable, valid and reliable way,

The assessment strategy is a coordinated program of assessment designed to align the progress of the student towards clinical competency ultimately to meet RCVS Day 1 competences. The strategy employs the most educationally valid assessment methods, applicable to the learning outcomes being assessed. The use of assessment to encourage learning supports the development of students as lifelong learners. Therefore, in addition to measuring student attainment, the School emphasizes the use of assessment to facilitate student learning and individual progress. This is achieved through the use of formative assessment followed by timely and constructive feedback in all modules of the 5-year course; feedback is also provided for all summative assessment.

Students are provided with information on assessment criteria and progression requirements (section 10.1.4), and have extensive opportunities and pathways to submit comments, and feedback and there is a defined complaints and appeals process and students are able to submit claims for extenuating circumstances (section 6.1.3).

Student admission, progression, recognition and certification

The School admits students in line with the University's admissions policy. Pre-defined entry criteria are set by the School which are transparent and justifiable. The admissions process has been designed to assess a range of personal and practical skills including animal orientation, communication,

enthusiasm and professional potential as well as academic ability for our courses. The admissions process has been developed with consideration of attributes and qualities required of a new veterinarian as articulated in the RCVS 'Day One Competences' and 'Code of Professional Conduct for Veterinary Surgeons'. Admissions regulations are reviewed yearly by the Admissions Committee, which includes external and lay representation, and the regulations and requirements are widely published (section 7.1.1).

Student induction processes are well defined and start immediately post-acceptance to ensure enculturation and smooth transition into life as a veterinary student (section 6.1.3)

The School progression criteria exceed the standard requirements defined in the University Quality Manual (see section 7.1.2). Progression criteria are defined in the programme specification and additionally detailed information is publicised to students in their handbooks and in a yearly Assessment Addendum. Processes are in place to ensure data on assessment information and progression is collected and reviewed on a modular and year basis to identify any potential improvements required with admissions criteria, teaching or any other aspect by the relevant Module Convenor, Sub-Dean and/or Committee.

At Graduation, students receive their degree certificate and a 'Diploma Supplement – Record of Achievement' which states the Qualification and Level gained, ECTS equivalencies and provides links to the programme specification (which details information about the achieved learning outcomes, context and content), module specifications, University Regulations and the Quality Manual.

Teaching staff

The University Human Resources Department provides strategy, policy, procedures and advice around staff recruitment to ensure that recruitment process are clear, transparent and fair and meet all legal obligations. The recruitment and selection process utilised in the School (section 8.1.2) includes review of teaching ability for roles with teaching commitments, and includes for example, a presentation at interview to staff and undergraduate students; new staff are subsequently expected to possess or attain a PGCHE and / or HEA Fellowship. Staff can be appointed to a teaching only track, however all staff are expected to contribute to teaching delivery. Staff induction will include an introduction to the veterinary curriculum, and quality-related teaching processes.

Staff are reviewed regularly through appraisal (section 8.1.9), and their contribution to and attainment in teaching is considered (for example consideration of SET scores, attainment of education-related qualifications). Professional development opportunities are promoted to all staff and include attendance at School, University or external courses, attendance at conferences and the provision of a teaching buddy. The School encourages all academic and support staff to consider attaining Fellowship of the Higher Education Academy. The importance of teaching is recognised through promotion processes which consider the contribution made to teaching for all staff (for example, a member of School staff has been promoted over 10 years from Teaching Fellow through to Professor of Veterinary Education on the basis of her excellence in teaching).

There is a strong ongoing commitment to monitor delivery by individual teachers. Methods include:

- Evaluation of individual teachers by Student Evaluation of Teaching (SET)
- Peer observation – both internally and through the university wide Peer Observation College
- Module Convenor observation
- Sub-Dean observation
- Module Convenor observation of external deliverers
- Module Review
- Informal Student feedback
- Yearly staff appraisal

Research is central to the activities of the School, both in terms of maintaining itself at the forefront of national and international efforts in the field of veterinary and comparative medicine but also as an integral part of the training and education for undergraduate students (section 11.1.1). The University is research-led and the School delivers research-informed undergraduate teaching together with postgraduate clinical and research programmes. Staff research includes basic science and subjects which form the foundations of our veterinary curriculum and also clinical research, linking with Clinical Associates such that research is relevant to both the local and wider veterinary, biomedical and

bioscientific community. The School believes that it is vital for undergraduate students to gain knowledge, understanding and skills in contemporary research in order to develop problem solving abilities and develop a penchant for lifelong learning. The undergraduate degree is therefore research-integrated such that all undergraduates undertake a 12 week research project in Year 3 and graduate with a BVMedSci degree at that time (section 11.1.4). All staff contribute to research projects and as such there are strong links between education and research.

The School is keen to encourage innovation in teaching methods and the use of new technologies, with staff being given freedom to consider and progress new developments, in consideration with relevant Sub-Deans or other staff as necessary. The School horizon scans to identify ideas, methods and applications both with the veterinary and medical sector and wider afield. New ideas are identified by both staff and students. Staff in the School have been recognised both internally in the University and externally in their promotion and use of new technology (e.g. by University Lord Dearing Awards and one member of staff was recognised by JISC as a Social Media Top 50 influencer in Higher Education).

Learning resources and student support

The School is adequately funded and there are extensive learning resources available to both staff and students. In particular the School makes extensive use of IT resources to provide for the needs of our diverse student population. For example all students on the 5 year course are provided with a laptop computer from the School for their own use at any time through which they access a variety of course resources. The Virtual Learning Environment (VLE) Moodle is used to organise and distribute course materials and schedules from a central location, as well as enhance students learning through interactive activities and resources. Communication between students and with staff is facilitated via question/discussion forums and the dissemination of information to all students is easily accomplished. No paper handouts are provided to students, instead all relevant resources are available online, including presentations, briefing notes, and links to relevant videos, databases and web resources. The School also uses audio recording (pod casting) and video recording (vodcasting) to support the learning experience and to disseminate information. Year 5 students have a dedicated bespoke IT system which students use to indicate when they have achieved a level of first day competency in each DOPS skill; to communicate with the School and each other. In addition there is an ability to make key announcements and for staff are able to flag areas of minor concern or weakness identified for a student on their rotation, so that these can be rolled forward and reviewed by subsequent Rotation Leaders; this information is naturally shared with the student.

The diverse needs of the student body are considered both holistically and on an individual basis for students when allocating, planning and providing the learning resources and student support. For example, on an individual student basis the School will put in place reasonable adjustments in order to ensure that a disabled or ill student is not put at a disadvantage compared to their peers. The School, the University centrally and other students provide extensive conventional and specialist academic and pastoral support to the students, with the aim that student support should engage with every student to help them maximise their potential. Student support is provided immediately from pre-acceptance and throughout the course. All staff are trained in student support according to the requirements of their role. Support is provided to students whilst on campus, on Intra-Mural Rotations and on EMS. Support is overseen and reviewed by the School Welfare Team.

Information Management

As detailed throughout this chapter, the School collects, analyses and uses relevant information for the effective management of the veterinary programmes and other activities. Quality control processes are underpinned by a continuous appraisal of data in order to monitor and inform curriculum development and graduate competency and associated School strategy and includes data collected from students, staff and external stakeholders. Data is collected at year, module and activity level (e.g. facilitated sessions, practicals). Information is considered and responded to through ongoing operations (e.g. in the case of requirements for additional resources or equipment) or through the appropriate Committee, which will include student representation as appropriate.

For monitoring of individual academic staff the University has a work load planning model (see section 8.1.9), which provides data to line managers along with research outcome data within the Academic Profile Tool.

Public information

The University publishes a wide variety of information for its stakeholders and the society at large; this encompasses the University Plan, and the Annual Review through to information for business, research funders, current and prospective students.

The School provides a range of information for stakeholders and society. Key stakeholders include potential applicants, veterinarians, animal owners, research funders, businesses, research collaborators, potential staff members and the wider public. Information resources are commonly developed in the School or in conjunction with University Communications and Marketing staff. The team aid the School in preparing and publicising press releases, brochures, promotional giveaways, website population, and maintenance and social media. The Dean and Head of Operations review information released to the public to ensure it is clear, accurate, and objective.

For students applying to the School a range of course information is available in hard copy regarding the programme; in addition electronic material includes information on admissions processes, course and module specifications, and current students' views of the course in video format, including those expressed in the BVA/AVS student survey. The School makes available quantitative data detailing programme quality on the Directgov website www.unistats.ac.uk

On-going monitoring and periodic review of programmes

The University Quality Manual defines University required process for programme review – periodic Educational Enhancement and Assurance Reviews and Annual Monitoring.

Educational Enhancement and Assurance Reviews (EEARs) are the University's approach to ensuring high quality, competitive, and well managed academic programmes. Reviews are constructive and holistic exercises, covering quality assurance and quality enhancement. They operate according to a published schedule. Panels will include at least one member who is appropriately qualified and external to the University to ensure there is an independent and objective view, and there will also be student representation. EEARs assess core teaching and learning activities in their institutional context, meaning they consider the communication, coordination, and management practices within the School. The review ensures:

- Qualifications offered by the School are in line with the University of Nottingham Qualifications Framework
- The School adheres to the provisions of the Quality Manual
- The School's systems and procedures for dealing with staff and students are as effective as possible and support the University's claims to provide high quality teaching and learning. The review identifies areas of strength and weakness, and offers support and guidance where appropriate
- Learning outcomes of programmes have an appropriate match to relevant QAA benchmark statements and are taught and assessed in a satisfactory manner

The last review in 2014 confirmed that the School was compliant with University requirements.

Schools are expected, on an annual basis, to monitor each of their programmes to ensure that no major difficulties have arisen and that appropriate opportunities for improvement have been identified. This annual information feeds into a wider cycle of quality assurance and in turn enhances the student experience on programme. The School complies with this policy and our annual monitoring includes:

- Handling and consideration of External Examiners' reports
- External confirmation of standards
- Review of modules, including changes to curriculum, delivery and assessment, and any changes (in response to changes in programme learning outcomes and otherwise)
- How changes have been communicated to students
- Quantitative Data Sets (QDS); used to evaluate student performance
- Statements of Responsibilities
- Feedback from students (facilitated by the Students' Union)

A proforma is completed and reviewed by the University Quality and Standards Committee.

At the module level, the University minimum requirement is for each module convenor to consider annually any changes needed to their modules and to submit these amendments to the School for

approval. The School exceeds these requirements and at School level we have put in place significant mechanisms for ongoing curriculum review (section 9.1.6):

- Weekly debriefing of facilitators reviewing material delivered in Clinical Relevance sessions
- Annual module and rotation reviews (e.g. student feedback, external review, focus groups etc)
- Evaluation of individual teachers by student evaluation of teaching and peer, Module Convenor and Sub-Dean observation
- External Examiner reports on each assessment
- Annual programme reviews, including student feedback on their experience of the year
- 7 yearly curriculum reviews to consider major changes in strategy

Module reviews are the primary quality control mechanism to identify good practice, overlaps, redundancies and omissions, and are undertaken annually by the Module Convenor with the aid of contributors to the module. A Module Review document is subsequently presented to TLA Committee for discussion. The document compiles information from the following sources:

- Informal comments received during delivery
- Output from meetings with technicians and key administrative support staff, observation of teaching delivery by Module Convenor, de-briefing of facilitators
- Feedback from external deliverers on the course
- Student Evaluation of Module (SEM) and rotation feedback
- Student Evaluation of Teaching, where appropriate
- Student focus group
- Review of assessment data

Thus, any ongoing required changes to outcomes on a module basis are proposed by the Module Convenor prior to review and approval by the Schools TLA Committee, to ensure the overall curriculum content is maintained. Learning objectives developed for each teaching session, link to RCVS, EAEVE and AVMA criteria and overall module learning outcomes. Changes in specific learning outcomes are reviewed in the module review process; when new learning objectives are proposed they are reviewed by the School clinicians on the TLA Committee to ensure that they are relevant to clinical outcomes. Programme and module specifications, defining aims, delivery methods, assessment and learning outcomes for a programme are reviewed annually as an output of the component module review process. The TLA Committee also considers any comments from External Examiners on the curriculum as a whole, actions resulting from feedback are reported at Exam Boards.

Changes to the programme are communicated to students via their representatives on the relevant Committee's, through email and also at a start of year feedback session held by the TLA Sub-Dean for each year group.

The programme is monitored on a continual basis by module and any overall areas of concern or good practice are highlighted by relevant working groups and fed back into TLA Committee. The module review process will also consider any graduate or employer data, and any changing needs of the profession and student expectations and satisfaction. The School undertakes a 7 year review which considers the curriculum holistically. The 7 year review process comprises a facilitated away day for all academic staff (with student representation), with the outcome being the identification of priority areas review and development by normal review processes such as working groups.

Cyclical external quality assurance

The University is reviewed through the Teaching Excellence Framework (highest award – gold – awarded in 2017) and periodically by the Quality Assurance Agency. The team of QAA reviewers visited the University in April 2016, as part of its remit to safeguard the public interest in the quality and standards of UK higher education. The review was carried out by experts from other universities and a student reviewer; the University was recognised as a provider of high quality and standards with the award of the Quality Mark and several areas of best practice highlighted (<http://www.qaa.ac.uk/en>).

External evaluations of the School are undertaken periodically by the Royal College of Veterinary Surgeons (2009, 2011, 2014) and the European Association Establishments for Veterinary Education (2011, 2014). None of the prior Visitations issued any recommendations for improvement, and there were several areas of commendation.

The quality of the Schools Research has been reviewed through the Research Assessment Exercise (2008) and Research Excellence Framework (2014). The 2014 REF recognised the power of the Schools research as being 2nd in its category (Agriculture and Food).

Outcomes from all external reviews are considered by the relevant Sub-Dean, Committee and the School Management Team.

12.2 COMMENTS

12.3 SUGGESTIONS FOR IMPROVEMENT

The School intends to align 7 year review process with RCVS visitation frequency.

The School intends to ensure greater involvement of Clinical Associate staff in planning and review of the programme.

Appendix 23 Employment rates (HESA data)

Graduating class	Full time employ	Part time employ	Further study only	Work and study	Unemployed	Other	Total respondents
2011/12	56	1	0	1	2	0	60
2012/13	58	0	3	1	1	0	63
2013/14	60	1	3	0	1	1	66
2014/15	72	1	1	0	0	1	75
2015/16	60	0	2	0	2	1	65

Appendix 24 Graduate outcomes data

Intended learning outcome	Mean mark					
	2011	2012	2013	2014	2015	2016
Knowledge of underpinning basic science	4.21	4.13	4.17	4.14	4.25	4.32
Veterinary clinical knowledge	4.11	4.26	4.15	4.11	4.13	4.09
Clinical and surgical skills	4.04	3.95	3.90	4.29	4.03	3.91
Clinical examination skills	4.61	4.55	4.44	4.59	4.75	4.51
Diagnostic reasoning ability	4.18	4.24	4.02	4.03	4.28	4.03
Case management and therapeutic strategies	3.96	3.79	3.88	4.16	3.91	4.09
Dealing with emergency and critical care cases	3.54	3.63	3.50	3.86	3.50	3.69
Promoting preventative healthcare	4.21	4.05	4.15	4.46	4.34	4.31
Population health and epidemiology	4.00	3.82	4.05	3.89	4.00	3.89
Veterinary public health and zoonotic issues	3.75	3.66	3.78	3.81	3.69	3.37
Recognition for need and implementation of euthanasia	4.50	4.50	4.55	4.62	4.61	4.54
Veterinary practice and financial management	3.86	4.19	4.05	3.84	4.09	3.91
Recognising own limitations and seeking advice	4.68	4.55	4.68	4.62	4.78	4.66
Ability to seek, evaluate and utilise new information	4.25	4.44	4.33	4.43	4.59	4.54
Knowledge of veterinary legislation	3.54	3.66	3.50	3.73	3.81	3.66
Compassion and the application of ethics to animal welfare	4.68	4.76	4.70	4.56	4.69	4.57
Awareness of professional responsibilities	4.50	4.47	4.53	4.62	4.50	4.68
Communication skills	4.82	4.63	4.58	4.65	4.88	4.54
Interpersonal and teamwork skills	4.36	4.42	4.40	4.49	4.66	4.55
Robustness and managing pressure and stress	4.11	4.13	4.03	4.00	4.09	4.06
Flexibility and ability to cope with change	4.39	4.18	4.31	4.19	4.34	4.17
Self-reflection and maintaining a work-life balance	4.29	4.10	4.21	4.05	4.31	4.11
Systematic approach to problem solving and critical thinking	4.32	4.21	4.20	4.30	4.34	4.37
IT skills	4.36	4.24	3.93	4.00	3.94	4.27
Research skills	4.04	4.03	3.83	4.05	4.38	4.20
Overall competence to do the job for which you were hired	4.36	4.11	4.13	4.19	4.45	4.26

Scoring ranges from 5 = excellent preparation and 1 = not at all prepared

Appendix 25 2016/17 National Student Survey data (% agree)

Institution	The University of Nottingham	The Royal Veterinary College	University of Bristol	University of Cambridge	University of Edinburgh	University of Glasgow
<i>The teaching on my course</i>						
1. Staff are good at explaining things	100%	96%	98%	89%	98%	97%
2. Staff have made the subject interesting	99%	93%	88%	74%	95%	89%
3. The course is intellectually stimulating	100%	98%	93%	91%	95%	95%
4. My course has challenged me to achieve my best work	96%	86%	79%	74%	91%	90%
<i>Learning opportunities</i>						
5. My course has provided me with opportunities to explore ideas or concepts in depth	97%	86%	69%	57%	83%	88%
6. My course has provided me with opportunities to bring information and ideas together from different topics	97%	94%	81%	71%	86%	88%
7. My course has provided me with opportunities to apply what I have learnt	100%	97%	95%	94%	94%	94%
<i>Assessment and feedback</i>						
8. The criteria used in marking have been clear in advance	91%	56%	60%	23%	80%	62%
9. Marking and assessment has been fair	97%	73%	79%	54%	88%	79%
10. Feedback on my work has been timely	94%	68%	39%	40%	77%	66%
11. I have received helpful comments on my work	95%	64%	50%	49%	67%	75%
<i>Academic support</i>						
12. I have been able to contact staff when I needed to	98%	89%	93%	77%	93%	94%
13. I have received sufficient advice and guidance in relation to my course	98%	78%	88%	66%	80%	85%
14. Good advice was available when I needed to make study choices on my course	97%	65%	80%	63%	78%	81%
<i>Organisation and management</i>						
15. The course is well organised and is running smoothly	98%	71%	54%	11%	81%	62%
16. The timetable works efficiently for me	98%	74%	66%	26%	76%	64%
17. Any changes in the course or teaching have been communicated effectively	97%	71%	69%	9%	73%	50%
<i>Learning resources</i>						
18. The IT resources and facilities provided have supported my learning well	97%	88%	85%	88%	79%	83%
19. The library resources (e.g. books, online services and learning spaces) have supported my learning well	97%	95%	93%	89%	85%	93%

20. I have been able to access course-specific resources (e.g. equipment, facilities, software, collections) when I needed to	100%	91%	99%	91%	88%	89%
<i>Learning community</i>						
21. I feel part of a community of staff and students	96%	80%	88%	80%	85%	89%
22. I have had the right opportunities to work with other students as part of my course	99%	97%	99%	94%	93%	95%
<i>Student voice</i>						
23. I have had the right opportunities to provide feedback on my course	100%	91%	89%	94%	92%	93%
24. Staff value students' views and opinions about the courses	99%	73%	66%	57%	83%	77%
25. It is clear how students' feedback on the course has been acted on	99%	68%	51%	49%	83%	71%
26. The students union effectively represents students' academic interests	74%	62%	43%	34%	46%	71%
27. Overall, I am satisfied with the quality of my course	100%	95%	89%	66%	93%	93%

Red text indicates highest score per indicator.

There are no data for Liverpool Veterinary School as they failed to reach the minimum 50% response rate threshold

Appendix 26 Quality implementation

The Teaching, Learning and Assessment Committee is the central focus point for ongoing assurance and enhancement of the quality of teaching as a whole. The TLA Committee is aided in quality assurance activities operationally by the Teaching Learning and Assessment Team and specifically by a Quality Assurance Officer (part of the TLA Team).

The Research Committee is the primary focus for all aspects of quality in relation to the research programme of the School. Postgraduate quality assurance is overseen by the Postgraduate Committee with links to the TLA and Research Committees as appropriate.

The School's policy is that staff are empowered to deal with issues as they arise, such that issues are resolved at the lowest levels, escalating as needed to Sub-Deans, line managers or senior School management.

School activities are based on the Strategic Plan. The plan details strategy and defines organisational performance objectives. Committees and their associated functional teams are the responsible units for implementing, monitoring and revising the components and activities of the quality policy for School activities, overseen by the School Management Team.

All School staff have a thorough induction process that covers critical aspects of quality assurance and standards, including signposting and training for the University and School Standards, and 'walking through' School Procedures by relevant Divisional, Sub-Deans and functional team heads. These activities are supplemented by information charts and flow diagrams that document the Standards and Procedures and which are located on the School's Workspace intranet site. Clear communication of our strategy for quality and updating of our progress is achieved via standing reports to the monthly Staff Meeting from various Functional and Divisional Heads and the Sub-Deans for Teaching Learning and Assessment, Research, Postgraduates, Admissions, and Extra Mural Studies.

At School level, annual performance monitoring against the School plan is undertaken by the University and results in formal review against university-wide performance measures associated with National Student Survey (NSS) overall satisfaction, undergraduate entry tariff score, actual vs. budget contribution, research income per staff pay and staff / student ratios. This review also evaluates the execution of the implementation plan developed to realise the Schools strategy.

Policy monitoring at School level is an ongoing activity that results in a continuous appraisal of the effectiveness of the quality policy, through ongoing evaluation of its component quality related procedures and processes. Data provision for ongoing and specific policy monitoring interventions (e.g. when a review of a certain procedure is specifically identified as being required) is provided by functional support teams or other individuals responsible for the activities as appropriate, and may include datasets provided by the University or from University systems such as the Management Information hub (which centralises various data including student numbers, applications, awards, and research funding).

Revision of the quality management policy at University level is a responsibility of University Committees – the School is able to feedback through Faculty Committees to relevant Committees and directly to responsible Professional Services Units through their ongoing feedback and review consultations (e.g. the Student Services, who have a responsibility for teaching and learning governance, frequently consult all Schools for feedback on proposed changes in the Quality Manual). Revision of the School quality policy and component standards, procedures and goals is undertaken by Committees and the School Management Team, based on ongoing monitoring. Periodically, Management Team or the Dean may also instigate a change or review of an aspect or procedure if it is believed that there is room for improvement (e.g. 2016 review of research laboratory support).

Exemplary School quality management systems associated with education include procedures associated with recruitment and admissions, curriculum and teaching development, module management and review mechanisms, assessment (from blue printing, results analysis and feedback), and student support. These systems all normally employ Deming's management system model of plan-do-check-act (PDCA). In relation to research we believe there are particularly good systems associated with grant and ethical review, and research mentoring.

The veterinary profession and wider public are involved in the quality management system of the School on a number of levels:

- Members of the veterinary profession and public are members of the Admissions Committee
- Veterinary professionals undertake admissions assessments for undergraduate students
- Appropriately qualified and briefed veterinary professionals and other individuals deliver elements of teaching in the undergraduate programme
- Members of the veterinary profession and academics act as External Examiners on both the 5 and 6 year programme
- Members of the veterinary profession (and farming and other animal-related industries) supervise students on EMS placements and provide feedback about the School's processes and individual students

Staff of the School are members of various regional, national and international professional bodies and associations and thus are able to develop working relationships with a variety of veterinary professionals ensuring that external views are adequately represented within the School. Two members of staff are members of the Council of Royal College of Veterinary Surgeons with other staff having a presence on other RCVS Committees (e.g. Primary Qualifications, EMS). The School founded the Council of UK veterinary Schools, which was established to share best practice and address common issues. In addition lay members are involved in the management of University (e.g. as members of the Ethics Committee, University Senate etc).

Students are involved in quality assurance at national, University and School level. The University student engagement policy covers the University of Nottingham's arrangements to ensure that students are fully involved and represented in all aspects of their learning experience, and have a range of opportunities to engage in the University's and Schools quality assurance systems.

Appendix 27 Mapping of RCVS competences to programme outcomes

Programme outcomes – Knowledge and Understanding - BVMedSci	Example assessment	RCVS Competences	RCVS Knowledge and Understanding
Possess a knowledge of structure, function and developmental organisation of cells together with an understanding of biochemical and molecular processes and genetics (L1)	MCQ and short answer/spot papers across years 1-3		The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals
Possess a knowledge of the structure, development, function and processes of healthy animals, which will subsequently allow students to distinguish the pathological from the normal in all body systems (L2)	MCQ and short answer/spot papers across years 1-3		The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals
Understand and interpret a full range of invasive and non-invasive investigative methods (L3)	MCQ and short answer/spot papers across years 1-3 OSPE and OSCE practical exams years 1-3	22. Collect, preserve and transport samples, select appropriate diagnostic tests, interpret and understand the limitations of the test results 24. Understand the contribution that imaging and other diagnostic techniques can make in achieving a diagnosis. Use basic imaging equipment and carry out an examination effectively as appropriate to the case, in accordance with good health and safety practice and current regulations	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Possess a knowledge of common microbial, parasitic and zoonotic diseases, their transmission and prevention together with the development of observational and deductive skills in associating pathological events with the outcomes of disease or toxins (L4)	MCQ and short answer/spot papers across years 1-3	25. Recognise suspicious signs of possible notifiable, reportable and zoonotic diseases and take appropriate action, including notifying the relevant authorities	Veterinary public health issues, including epidemiology, transboundary epizootic diseases, zoonotic and food-borne diseases, emerging and re-emerging diseases, food hygiene and technology Awareness of other diseases of international importance that pose a risk to national and international biosecurity
Understand the basis of preventative and therapeutic medicine including	MCQ and short answer/spot papers across years 1-3	19. Develop appropriate treatment plans and administer treatment in the interests	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common

pharmacological intervention (L5)		of the patients and with regard to the resources available 37. Advise on, and implement, preventative programmes appropriate to the species and in line with accepted animal health, welfare and public health standards 30. Apply principles of bio-security correctly, including sterilisation of equipment and disinfection of clothing	diseases and disorders that occur in the common domestic species in the UK The principles of disease prevention and the promotion of health and welfare
Understand the husbandry, management, reproduction, nutrition, behaviour, welfare and health requirements of common species and the economics, organisation, legal issues and impacts of animal-related industries (L6)	MCQ and short answer/spot papers across years 1-3	21. Assess the physical condition, welfare and nutritional status of an animal or group of animals and advise the client on principles of husbandry and feeding	The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals
Understand the relationship between animal health and human health, processes within the food industry, zoonotic disease and public health, biosecurity, new and emerging diseases and associated legal and ethical implications (L24)	MCQ and short answer/spot papers across years 1-3 OSPE and OSCE practical exams years 1-3	25. Recognise suspicious signs of possible notifiable, reportable and zoonotic diseases and take appropriate action, including notifying the relevant authorities 26. Apply the RCVS Twelve Principles of Certification 30. Apply principles of bio-security correctly, including sterilisation of equipment and disinfection of clothing.	Veterinary public health issues, including epidemiology, transboundary epizootic diseases, zoonotic and food-borne diseases, emerging and re-emerging diseases, food hygiene and technology
Programme outcomes – Knowledge and Understanding – BVM BVS		RCVS Competences	RCVS Knowledge and Understanding
Demonstrate knowledge of veterinary pharmacology, pharmacy and toxicology (L22)	MCQ and Clinical Reasoning papers years 4-5 DOPS year 5	28. Prescribe and dispense medicines correctly and responsibly in accordance with legislation and latest guidance 27. Access the appropriate sources of data on licensed medicines	Medicines legislation and guidelines on responsible use of medicines, including responsible use of antimicrobials and anthelmintics
Understand normal physiology, the pathological basis and clinical manifestation of disease in common species (L23)	MCQ and Clinical Reasoning papers years 4-5 DOPS year 5	18. Perform a complete clinical examination 16. Obtain an accurate and relevant history of the individual animal or animal group,	The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed

		and its/their environment	animals The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Demonstrate a knowledge of the principles of surgical techniques (L25)	MCQ and Clinical Reasoning papers years 4-5 DOPS year 5	31.Perform aseptic surgery correctly	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Programme outcomes – Intellectual Skills – BVMedSci		RCVS Competences	RCVS Knowledge and Understanding
Possess skills in the experimental design, analysis and interpretation of experimental data, including understanding of the ethical and legal implications of the use of animals in laboratories (L8)	Research project year 3 Animal health and welfare presentation year 2	2.Understand the ethical and legal responsibilities of the veterinary surgeon in relation to patients, clients, society and the environment 11.Use their professional capabilities to contribute to the advancement of veterinary knowledge, in order to improve the quality of animal care and public health	Research methods and the contribution of basic and applied research to veterinary science
Demonstrate scientific curiosity, an understanding of scientific method and research, critical review of the literature and an ability to apply basic scientific knowledge through research design, collection and analysis of data to veterinary practise in order to advance veterinary knowledge (L10)	Personal and Professional Skills coursework year 2 Research project year 3	11.Use their professional capabilities to contribute to the advancement of veterinary knowledge, in order to improve the quality of animal care and public health 9.Be able to review and evaluate literature and presentations critically	Research methods and the contribution of basic and applied research to veterinary science
Programme outcomes – Intellectual Skills – BVM BVS		RCVS Competences	RCVS Knowledge and Understanding
Understand the principles of and demonstrate skills in clinical reasoning (L26)	MCQ and Clinical Reasoning papers years 4-5 DOPS year 5 Rotation Professionalism Assessment year 5	12.Demonstrate ability to cope with incomplete information, deal with contingencies, and adapt to change	Understanding of, and competence in, the logical approaches to both scientific and clinical reasoning, the distinction between the two, and the strengths and limitations of each
Be able to recognise, diagnose, and offer preventative healthcare advice for the common diseases of animals (L27)	MCQ and Clinical Reasoning papers years 4-5	37.Advise on, and implement, preventative programmes appropriate to the species and in line with accepted animal health,	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the

	DOPS year 5	welfare and public health standards 16.Obtain an accurate and relevant history of the individual animal or animal group, and its/their environment 18.Perform a complete clinical examination	common domestic species in the UK The principles of disease prevention and the promotion of health and welfare
Be able to offer medical and surgical treatment and prognoses for common disorders of animals (L28)	MCQ and Clinical Reasoning papers years 4-5 DOPS year 5	19.Develop appropriate treatment plans and administer treatment in the interests of the patients and with regard to the resources available	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Programme outcomes – Professional/Practical Skills - BVMedSci		RCVS Competences	RCVS Knowledge and Understanding
Demonstrate practical animal husbandry and management skills including the ability to restrain and handle a variety of common species to allow clinical examination making rapid risk assessments as necessary (L11)	Animal handling DOPS year 1 OSPE and OSCE practical exams years 1-3	17.Handle and restrain animal patients safely and humanely, and instruct others in helping the veterinary surgeon perform these techniques	The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals
Be capable of performing full clinical examination (L9)	OSPE and OSCE practical exams years 1-3	18.Perform a complete clinical examination	The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Understand normal and abnormal parturition and when intervention is indicated (L12)	OSPE and OSCE practical exams years 1-3	19.Develop appropriate treatment plans and administer treatment in the interests of the patients and with regard to the resources available	The structure, function and behaviour of animals and their physiological and welfare needs, including healthy domestic animals, captive wildlife and laboratory-housed animals The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common

			diseases and disorders that occur in the common domestic species in the UK
Be able to perform basic emergency medicine (L13)	OSPE and OSCE practical exams years 1-3	20. Attend all species in an emergency and perform first aid	The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK
Demonstrate an ability to perform routine health procedures such as animal identification, vaccination and administration of medication (L14)	OSPE and OSCE practical exams years 1-3	37. Advise on, and implement, preventative programmes appropriate to the species and in line with accepted animal health, welfare and public health standards 28. Prescribe and dispense medicines correctly and responsibly in accordance with legislation and latest guidance	The principles of disease prevention and the promotion of health and welfare Legislation relating to animal care and welfare, animal movement, and notifiable and reportable diseases
Display basic laboratory manipulative skills and techniques (L7)	OSPE and OSCE practical exams years 1-3	22. Collect, preserve and transport samples, select appropriate diagnostic tests, interpret and understand the limitations of the test results	Research methods and the contribution of basic and applied research to veterinary science
Understand the professional role of the Veterinary Surgeon and their role in wider society. Demonstrate a professional attitude, a high standard of professional behaviour and an understanding of the ethical framework within which veterinary surgeons should work (L15)	Portfolio years 1-3	14. Demonstrate a commitment to learning and professional development, both personal and as a member of a profession actively engaged in workbased learning. This includes recording and reflecting on professional experience and taking measures to improve performance and competence 1. Be fully conversant with, and follow the RCVS Code of Professional Conduct	Principles of effective interpersonal interaction, including communication, leadership, management and team working
Demonstrate a sense of care and responsibility to patients and their owners, including clinical case planning and review and all aspects of client communication (L16)	Portfolio years 1-3 OSPE and OSCE practical exams years 1-3	2. Understand the ethical and legal responsibilities of the veterinary surgeon in relation to patients, clients, society and the environment 5. Communicate effectively with clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned	Principles of effective interpersonal interaction, including communication, leadership, management and team working
Programme outcomes –		RCVS Competences	RCVS Knowledge and Understanding

Professional/Practical Skills – BVM BVS			
<p>Be able to undertake full clinical, ante- and post mortem examination and diagnosis including laboratory diagnosis and analysis (L29)</p>	<p>DOPS year 5</p>	<p>36.Perform ante-mortem inspection of animals destined for the food-chain, including paying attention to welfare aspects; correctly identify conditions affecting the quality and safety of products of animal origin, to exclude those animals whose condition means their products are unsuitable for the foodchain</p> <p>35.Perform a systematic gross post-mortem examination, record observations, sample tissues, store and transport them</p> <p>18.Perform a complete clinical examination</p>	<p>The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK</p>
<p>Be able to undertake practical techniques including anaesthesia, analgesia, euthanasia, cytology, diagnostic imaging, pregnancy diagnosis, basic surgery techniques and to manage common obstetrical and reproductive problems (L30)</p>	<p>DOPS year 5</p> <p>MCQ and Clinical Reasoning papers years 4-5</p>	<p>31.Perform aseptic surgery correctly</p> <p>32.Safely perform sedation, and general and regional anaesthesia; implement chemical methods of restraint</p> <p>24.Understand the contribution that imaging and other diagnostic techniques can make in achieving a diagnosis. Use basic imaging equipment and carry out an examination effectively as appropriate to the case, in accordance with good health and safety practice and current regulations</p> <p>34.Recognise when euthanasia is appropriate and perform it humanely, using an appropriate method, whilst showing sensitivity to the feelings of owners and others, with due regard to the safety of those present; advise on disposal of the carcass.</p> <p>33.Assess and manage pain</p> <p>22.Collect, preserve and transport samples, select appropriate diagnostic</p>	<p>The aetiology, pathogenesis, clinical signs, diagnosis and treatment of the common diseases and disorders that occur in the common domestic species in the UK</p>

		tests, interpret and understand the limitations of the test results	
Be able to responsibly dispense and administer medicines to animals, and report suspected adverse reactions as necessary (L31)	DOPS year 5 MCQ and Clinical Reasoning papers years 4-5	27.Access the appropriate sources of data on licensed medicines 28.Prescribe and dispense medicines correctly and responsibly in accordance with legislation and latest guidance 29.Report suspected adverse reactions	Medicines legislation and guidelines on responsible use of medicines, including responsible use of antimicrobials and anthelmintics
Be able to advise on husbandry, management, reproduction, nutrition, behaviour, welfare and health requirements of common species whilst considering the economics, organization, ethical and legal issues and impacts of animal-related industries (L32)	DOPS year 5 MCQ and Clinical Reasoning papers years 4-5 Business plan year 4	21.Assess the physical condition, welfare and nutritional status of an animal or group of animals and advise the client on principles of husbandry and feeding 8.Understand the economic and emotional context in which the veterinary surgeon operates 2.Understand the ethical and legal responsibilities of the veterinary surgeon in relation to patients, clients, society and the environment 30.Apply principles of bio-security correctly, including sterilisation of equipment and disinfection of clothing	A knowledge of the businesses related to animal breeding, production and keeping The principles of disease prevention and the promotion of health and welfare
Understand the ethical, legal and professional responsibilities required of a veterinary surgeon (L33)	Portfolio years 4-5 DOPS year 5 Rotation Professionalism Assessment year 5	2.Understand the ethical and legal responsibilities of the veterinary surgeon in relation to patients, clients, society and the environment 4.Promote, monitor and maintain health and safety in the veterinary setting; demonstrate knowledge of systems of quality assurance; apply principles of risk management to their practice. 26.Apply the RCVS Twelve Principles of Certification.	The ethical framework within which veterinary surgeons should work, including important ethical theories that inform decision-making in professional and animal welfare-related ethics
Possess an understanding of the structure of the veterinary industry and	Open book MCQ year 4	1.Be fully conversant with, and follow the RCVS Code of Professional Conduct	A knowledge of the businesses related to animal breeding, production and keeping.

potential career options, including the work of paraprofessionals, charities, governmental bodies and functions, and the RCVS (L34)	Business plan year 4 Portfolio years 4-5		
Possess business and management skills applicable to veterinary practice management (L35)	Business plan year 4	3. Demonstrate a knowledge of the organisation, management and legislation related to a veterinary business. 4. Promote, monitor and maintain health and safety in the veterinary setting; demonstrate knowledge of systems of quality assurance; apply principles of risk management to their practice 8. Understand the economic and emotional context in which the veterinary surgeon operates.	Principles of effective interpersonal interaction, including communication, leadership, management and team working
Understand the need for lifelong learning, the importance of continuing professional development, education, self-audit and peer review (L36)	Portfolio years 4-5 Rotation Professionalism Assessment year 5	14. Demonstrate a commitment to learning and professional development, both personal and as a member of a profession actively engaged in workbased learning. This includes recording and reflecting on professional experience and taking measures to improve performance and competence 15. Take part in self-audit and peer-group review processes in order to improve performance.	
Programme outcomes – Transferable/Key Skills – BVMedSci		RCVS Competences	RCVS Knowledge and Understanding
Develop learning and study techniques which promote life-long learning, and understand different methods of teaching and learning (L17)	Portfolio years 1-3	14. Demonstrate a commitment to learning and professional development, both personal and as a member of a profession actively engaged in workbased learning. This includes recording and reflecting on professional experience and taking measures to improve performance and competence 15. Take part in self-audit and peer-group review processes in order to improve	Research methods and the contribution of basic and applied research to veterinary science

		performance	
Demonstrate competence in a range of IT skills (L18)	Personal and Professional Skills coursework year 1 Personal and Professional Skills coursework year 2	3. Demonstrate knowledge of the organisation, management and legislation related to a veterinary business. 6.Prepare accurate clinical and client records, and case reports when necessary, in a form satisfactory to colleagues and understandable by the public	Research methods and the contribution of basic and applied research to veterinary science
Learn to search for, select and use information to solve problems and make decisions (L19)	Personal and Professional Skills coursework year 2 Research project year 3	9.Be able to review and evaluate literature and presentations critically 10.Understand and apply principles of clinical governance, and practise evidence-based veterinary medicine	Research methods and the contribution of basic and applied research to veterinary science
Demonstrate good written, verbal and non-verbal communication skills. Demonstrate good interpersonal skills and team-working ability (L20)	Portfolio years 1-3 OSPE and OSCE practical exams years 1-3	7.Work effectively as a member of a multidisciplinary team in the delivery of services 5.Communicate effectively with clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned	Principles of effective interpersonal interaction, including communication, leadership, management and team working
Be able to understand and mitigate time and stress demands (L21)	Portfolio years 1-3 OSPE and OSCE practical exams years 1-3	12.Demonstrate ability to cope with incomplete information, deal with contingencies, and adapt to change	Principles of effective interpersonal interaction, including communication, leadership, management and team working
Programme outcomes – Transferable/Key Skills – BVM BVS		RCVS Competences	RCVS Knowledge and Understanding
Possess the ability to communicate effectively with clients and with colleagues both in the veterinary profession and in other disciplines, including team working and leadership skills (L37)	Portfolio years 4-5 DOPS year 5 Rotation Professionalism Assessment year 5	5.Communicate effectively with clients, the public, professional colleagues and responsible authorities, using language appropriate to the audience concerned 23.Communicate clearly and collaborate with referral and diagnostic services, including providing an appropriate history 7.Work effectively as a member of a multidisciplinary team in the delivery of	Principles of effective interpersonal interaction, including communication, leadership, management and team working

<p>Be able to cope with uncertainty and be able to adapt to change whilst recognising personal limitations, and sources of advice and support and protocols (L38)</p>	<p>Portfolio years 4-5 DOPS year 5 Rotation Professionalism Assessment year 5</p>	<p>services</p> <p>13.Demonstrate that they recognise personal and professional limits, and know how to seek professional advice, assistance and support when necessary</p> <p>12.Demonstrate ability to cope with incomplete information, deal with contingencies, and adapt to change</p>	<p>Principles of effective interpersonal interaction, including communication, leadership, management and team working</p>
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13 ESEVT INDICATORS

13 ESEVT INDICATORS

13.1 FACTUAL INFORMATION

Data are shown in Table 28 with resultant ESEVT ratios in Table 29. Data is primarily compiled from information shown in relevant tables throughout the SER. No data from EMS is included. Companion animals seen on Intra Mural Rotations are also seen extra mural to the University (as we have no teaching hospital due to our community-based teaching model) and as such the same caseload data are shown in both intra and extra mural categories.

	Raw data from the last 3 full academic years	2016/17	2015/16	2014/15	Mean
1	FTE academic staff involved in veterinary training	99	105	99	101.03
2	Undergraduate students	687	623	605	638.33
3	FTE veterinarians involved in veterinary training	67	65	64	65.43
4	Students graduating annually	120	95	99	104.67
5	FTE support staff involved in veterinary training	70	66	67	68.03
6	Hours of practical (non-clinical) training	738	740	740	739.33
7	Hours of clinical training	1,151	1,170	1,170	1,163.67
8	Hours of FSQ & VPH training	179	182	182	181.00
9	Hours of extra-mural practical training in FSQ & VPH	30	30	30	30.00
10	Companion animal patients seen intra-murally	31,515	30,221	30,428	30,721.33
11	Ruminant and pig patients seen intra-murally	215	59	43	105.7
12	Equine patients seen intra-murally	7,527	7,494	6,797	7,272.67
13	Rabbit, rodent, bird and exotic patients seen intra-murally	2,147	2,015	2,542	2,234.67
14	Companion animal patients seen extra-murally	31,515	30,221	30,428	30,721.33
15	Individual ruminants and pig patients seen extra-murally	47,749	48,547	51,169	49,155.00
16	Equine patients seen extra-murally	5,662	5,952	5,550	5,721.33
17	Visits to ruminant and pig herds	172	170	163	168.33
18	Visits of poultry and farmed rabbit units	12	12	12	12.00
19	Companion animal necropsies	342	238	237	272.33
20	Ruminant and pig necropsies	107	111	108	108.67
21	Equine necropsies	36	50	49	45.00
22	Rabbit, rodent, bird and exotic pet necropsies	1,111	1,112	1,128	1,117.00
23	FTE specialised veterinarians involved in veterinary training	31	30	30	30.56
24	PhD graduating annually	12	12	9	11.00

Table 28 Raw data for ESEVT Indicators

Calculated Indicators from raw data		UoN values	Median values	Minimal values	Balance
I1	n° of FTE academic staff involved in veterinary training / n° of undergraduate students	0.158	0.16	0.13	0.032
I2	n° of FTE veterinarians involved in veterinary training / n° of students graduating annually	0.625	0.87	0.59	0.035
I3	n° of FTE support staff involved in veterinary training / n° of students graduating annually	0.650	0.94	0.57	0.083
I4	n° of hours of practical (non-clinical) training	739.333	905.67	595.00	144.333
I5	n° of hours of clinical training	1163.667	932.92	670.00	493.667
I6	n° of hours of FSQ & VPH training	181.000	287.00	174.40	6.600
I7	n° of hours of extra-mural practical training in FSQ & VPH	30.000	68.00	28.80	1.200
I8	n° of companion animal patients seen intra-murally / n° of students graduating annually	293.516	70.48	42.01	251.507
I9	n° of ruminant and pig patients seen intra-murally / n° of students graduating annually	1.010	2.69	0.46	0.546
I10	n° of equine patients seen intra-murally / n° of students graduating annually	69.484	5.05	1.30	68.186
I11	n° of rabbit, rodent, bird and exotic seen intra-murally / n° of students graduating annually	21.350	3.35	1.55	19.805
I12	n° of companion animal patients seen extra-murally / n° of students graduating annually	293.516	6.80	0.22	293.293
I13	n° of individual ruminants and pig patients seen extra-murally / n° of students graduating annually	469.634	15.95	6.29	463.339
I14	n° of equine patients seen extra-murally / n° of students graduating annually	54.662	2.11	0.60	54.067
I15	n° of visits to ruminant and pig herds / n° of students graduating annually	1.608	1.33	0.55	1.061
I16	n° of visits of poultry and farmed rabbit units / n° of students graduating annually	0.115	0.12	0.04	0.070
I17	n° of companion animal necropsies / n° of students graduating annually	2.602	2.07	1.40	1.202
I18	n° of ruminant and pig necropsies / n° of students graduating annually	1.038	2.32	0.97	0.068
I19	n° of equine necropsies / n° of students graduating annually	0.430	0.30	0.09	0.337
I20	n° of rabbit, rodent, bird and exotic pet necropsies / n° of students graduating annually	10.672	2.05	0.69	9.979
I21 *	n° of FTE specialised veterinarians involved in veterinary training / n° of students graduating annually	0.292	0.20	0.06	0.229
I22 *	n° of PhD graduating annually / n° of students graduating annually	0.105	0.15	0.09	0.017

Table 29 Calculated ESEVT Indicators

13.2 COMMENTS

The community-based teaching model ensures a high caseload.

The School meets the minimal values for all indicators.

13.3 SUGGESTIONS FOR IMPROVEMENT

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