

## JOB DESCRIPTION

### JOB DETAILS:

Job Title:	Clinical Scientist, Radiotherapy Physics
Band:	7
Service Group:	CSCS
Department:	Radiotherapy Physics
Base:	The Beacon Centre, Musgrove Park Hospital, Taunton
Responsible to:	Head of Radiotherapy Physics
JD updated:	March 2024

### Department Core Purpose

The Radiotherapy Physics Department at the Beacon Centre, Musgrove Park Hospital, consists of Clinical Scientists, Dosimetrists and a Radiotherapy Physics Assistant. The core purpose of this team is to:

- Maintain, update and develop the highly complex radiation science infrastructure upon which The Beacon Centre radiotherapy service depends.
- Produce and check treatment plans for patients undergoing radiotherapy.
- Regularly perform quality assurance checks on all relevant radiotherapy planning and delivery equipment.
- Contribute to and take a lead in the research and development activities of the Beacon Radiotherapy Service.

### Job Purpose:

The post holder provides specialist clinical scientist services to patients of the Radiotherapy Department such that they receive safe, accurate and efficient radiotherapy treatments.

The post holder will perform quality assurance and calibration procedures on radiotherapy treatment and radiation dosimetry equipment. They will also participate in the work of the Treatment Planning Section and undertake development projects as assigned by the Head of Radiotherapy Physics and Lead Clinical Scientists. The post holder will have a role in governance and quality management for the Department.

The post holder is expected to fulfil the role of an Operator under the Ionising Radiations (Medical Exposures) Regulations 2017 and is registered as a Clinical Scientist with the Health and Care Professions Council (HCPC).



## Duties and Responsibilities

### **Communication and Key Working Relationships**

This role requires the post-holder to work collaboratively with other Clinical Scientists, Dosimetrists, Radiographers and Consultant Clinical Oncologists.

The post holder will work alongside other users of clinical technology and radiotherapy dosimetry data. There is frequent liaison with clinicians and other clinical scientists to ensure that services are consistent with clinical, scientific, technical, legislative and quality requirements. It is necessary to communicate highly complex information on a daily basis, for example discussing technical issues pertaining to linear accelerators or treatment plans for patients undergoing radiotherapy.

The post holder is expected to:

- work well and flexibly as part of a multi-disciplinary team.
- demonstrate excellent communication skills with all staff groups.
- demonstrate high standards of personal conduct.
- act with honesty and integrity.

The role requires interaction with patients and their carers and so the post holder is expected to be compassionate and sensitive to the needs of the patient and to be able to explain technical matters at a level of understanding appropriate to them.

### **Planning and Organisation**

The post holder is expected to manage their own workload and that of the department, as agreed with the Lead Clinical Scientists or Head of RT Physics, working in a timely manner.

The post holder will manage their time appropriately to:

- adapt and meet the demands of the clinical service.
- participate in site-specific developmental work and clinical trial work.
- carry out relevant administrative procedures, appropriate to the service.
- Work independently with appropriate supervision.

### **Analytics**

To make accurate measurements with highly complex electronic equipment and evaluate results.

To perform trend analysis and audit in aspects of radiotherapy physics service provision as agreed with Lead Clinical Scientists or Head of RT Physics.

### **Responsibility for Patient / Client Care, Treatment & Therapy**

#### **Treatment Planning**

- To be part of the team providing external beam treatment planning service to radiotherapy.
- To assess the quality of patient imaging and suitability of patient immobilisation received from the Virtual Simulation Team prior to treatment planning.
- To undertake complex treatment planning and perform independent checks of plans produced by others prior to treatment delivery.
- To cross-check on the work of dosimetrists and other clinical scientists as appropriate.
- To perform complex calculations to check the output of radiotherapy treatment planning systems.
- To provide Medical Physics advice and support to other professionals involved in radiotherapy regarding treatment methods and individual patient treatments.
- To work as part of a group for specialist techniques, e.g. IMRT, VMAT, IGRT, SABR, in vivo dosimetry, etc. with the purpose of technique development and/or implementation.



- To assist in system management/administration, e.g. Treatment Planning, Virtual Simulation, Treatment Verification.

#### **Equipment, Treatment Dosimetry and Quality Assurance**

- To carry out routine calibrations of radiotherapy treatment machines.
- To take part in the quality assurance and commissioning rotas for linear accelerator radiotherapy treatment machines and virtual simulators.
- To assist in data acquisition of new machines and in setting up and validation of treatment planning, virtual simulation and treatment verification systems for new machines.
- To assist in the development of dosimetry and QA procedures appropriate to new techniques.
- To assist in QA of dosimetry equipment.

#### **Clinical Service Development**

- To lead and participate in projects related to development and implementation of new and improved highly conformal therapy techniques, e.g. FFF VMAT, SABR, SGRT, as assigned by the Head of Radiotherapy Physics or Lead Clinical Scientists.
- To participate as required in physics and multi-disciplinary teams for the development and evaluation of new equipment, accessories, techniques and complex specialist radiotherapy software.
- To write specialised software for analysis of clinically acquired/scientific data or enter data into specific database.

#### **Policy, Service, Research & Development Responsibility**

To assist in the development and introduction of new treatment techniques in Radiotherapy.

To assist in the development and introduction of imaging modalities and techniques for Radiotherapy.

To assist in the development and maintenance of quality assurance systems for all the Radiotherapy Physics service including the ISO9001 accredited Quality System.

To assist with the implementation and development of changes in the service delivery as agreed with the Head of Radiotherapy Physics, and with the costing and resourcing of any such changes.

NHS service research and development is necessary for continuous improvement of radiotherapy delivery, the implementation of new equipment/functionality and the development of new treatment techniques and methods. This is a significant role of Clinical Scientists, in particular:

- Initiating and undertaking highly complex, clinically relevant, radiotherapy research and development.
- Publishing research in internationally recognised peer reviewed research journals and to communicate research through national and international conferences.
- Liaising with clinicians, other clinical scientists, etc. to support and participate in the Department's research and development programme, with the aim of continuous improvement of the clinical service.
- Supervising trainee clinical scientists, dosimetrists and students undertaking R+D projects as necessary.



### **Responsibility for Finance, Equipment & Other Resources**

Responsible for the safe personal use of all radiotherapy equipment including linear accelerators, CT simulators, kilovoltage X-Ray machines, and dosimetry equipment.

To assist with the implementation and development of changes in the service delivery as agreed with the Head of Radiotherapy Physics, and with the costing and resourcing of any such changes.

To undertake equipment evaluations as part of the planned equipment replacement programme, or as required to support new clinical innovations.

### **Responsibility for Supervision, Leadership & Management**

To supervise junior dosimetrists, clinical scientists or students carrying out training in Radiotherapy Physics.

To participate in Continuing Professional Development (CPD) to maintain registration with HCPC.

To keep abreast of the latest technical and scientific developments and their applications in medical and associated fields.

To attend suitable seminars and courses as part of training and personal development and to further the work of the department.

To be aware of the safety and reliability aspects of medical devices or other equipment with which they may be involved and take appropriate action to deal with any discrepancies including maintaining records and reporting the situation to relevant members of staff.

To ensure that safe working practices are employed at all times by themselves and any personnel who may come under their supervision.

### **Information Resources & Administrative Duties**

The post holder will participate in the production and update of written work instructions and procedures that are relevant to the jobholder's own area of expertise, in conjunction with the ISO 9001 Quality Management System.

They will:

- produce complex three-dimensional radiotherapy plans and reports using the dedicated treatment planning software.
- provide accurate radiotherapy data, including treatment planning, to clinical staff.
- keep careful records of all work performed on MOSAIQ and other appropriate records as required for statistical purposes on IT systems.

### **Any Other Specific Tasks Required**

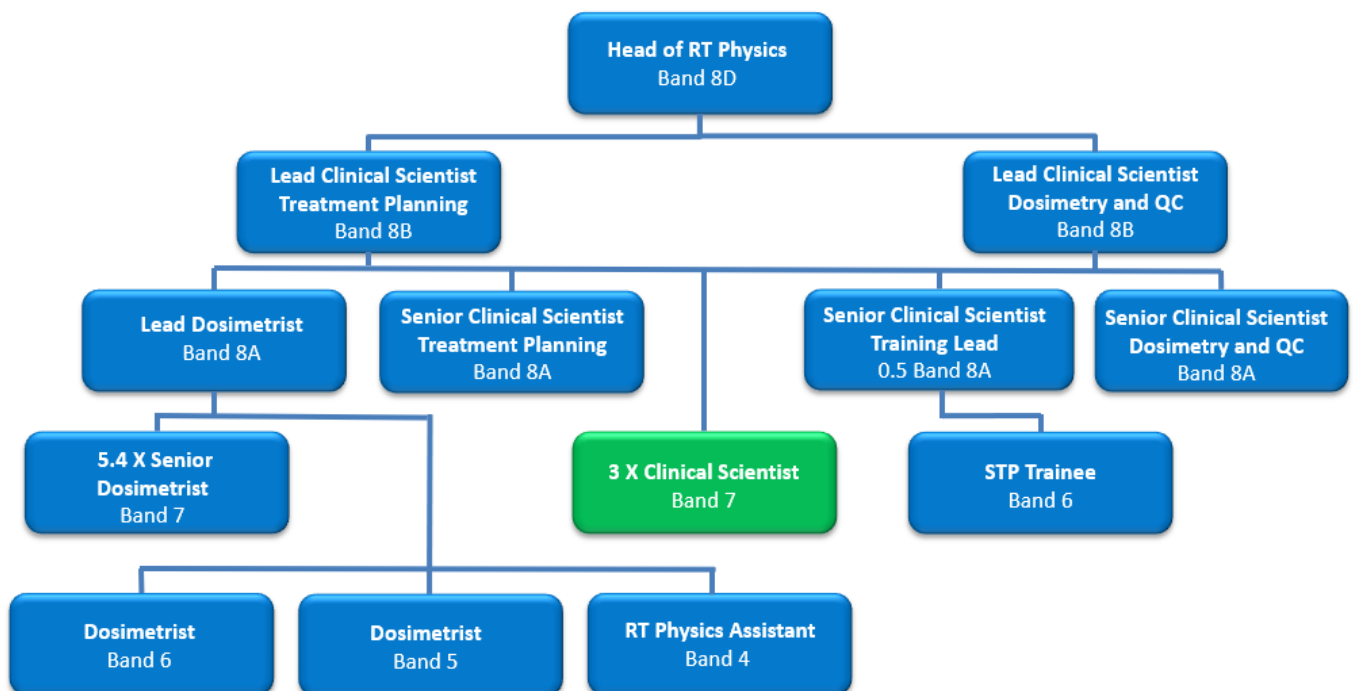
The Post holder will perform other appropriate duties that may be required from time to time by the Head of Radiotherapy Physics.

They will take all necessary precautions when dealing with ionising and non-ionising radiation hazards and when handling chemical waste.

They will operate and handle highly complex radiotherapy and test equipment e.g for radiation measurements requiring precision in setting up measurement equipment and fine attention to detail.



## Department Organisational Chart



### **General Information**

At all times promote and maintain the safety of children by working according the Trust's Child Protection Policy and supporting guidance. Being pro-active and responsive to child protection concerns by early reporting, recording and referral of issues according to Trust arrangements. Attending child protection training that is appropriate to your role.

### **Confidentiality**

The post holder will maintain appropriate confidentiality of information relating to commercially sensitive matters in regard to Trust business, and also to personal information relating to members of staff and patients. The post holder will be expected to comply with all aspects of the Data Protection Act (2018), the Staff Code of Confidentiality and the IT Security and Acceptable Use Policy.

### **Equality & Diversity**

Somerset NHS Foundation Trust is committed to achieving equality of opportunity for all staff and for those who access services. You must work in accordance with equal opportunity policies/procedures and promote the equality and diversity agenda of the Trust.

### **Safeguarding**

All employees have a duty for safeguarding and promoting the welfare of children and vulnerable adults. Staff must be aware of the Trust's procedure for raising concerns about the welfare of anyone with whom they have contact.

### **Risk Management / Health and Safety**

Employees must be aware of the responsibilities placed on them for ensuring the safety of our patients, service users, visitors and colleagues under the Trust's Risk Management Strategy and policy and under the Health & Safety at Work Act 1974. All employees are expected to be familiar with and comply with the Trust's risk and health and safety policies and procedures and all other policies and procedures relevant to their role

### **Records Management**

The post holder has responsibility for the timely and accurate creation, maintenance and storage of records in accordance with Trust policy, including email documents and with regard to the Data Protection Act, The Freedom of Information Act and any other relevant statutory requirements.



### **Clinical Governance**

The post holder will be expected to participate in clinical governance activities to assist the Trust to provide high quality services.

### **Prevention and Control of Healthcare Associated Infection**

The post holder is expected to comply with Trust Infection Control Policies and conduct themselves at all times in such a manner as to minimise the risk of healthcare associated infection.

### **Policies & Procedures**

Trust employees are expected to follow Trust policies, procedures and guidance as well as professional standards and guidelines. Copies of Trust policies can be accessed via the staff intranet or external website or via your manager.

### **Sustainability Clause**

Somerset NHS Foundation Trust is committed to creating a sustainable business. Staff employed by the Trust, are required to think about their actions in the course of their work and make positive steps to reducing, reusing and recycling wherever and whenever possible.

### **Review of Job Description**

This job description is not an exhaustive list of duties, but is intended to give a general indication of the range of work undertaken within this new role. Work will vary in detail in the light of changing demands and priorities, and therefore the duties identified will be subject to periodic change/review, in consultation with the post holder. All employees have a responsibility to abide by all Trust Policies.



## Person Specification

Requirement	Essential / Desirable	How Assessed
<b><u>PROFESSIONAL REGISTRATION</u></b>		
Registration as Clinical Scientist with HCPC	E	Application
<b><u>QUALIFICATIONS &amp; TRAINING</u></b>		
<ul style="list-style-type: none"> <li>• Good (1<sup>st</sup> or 2<sup>nd</sup> class) Honours degree in a relevant subject</li> <li>• Relevant MSc or higher degree</li> <li>• Certificate of completion of Post-qualification Training, e.g. through STP or IPEM route 2.</li> <li>• PhD in relevant subject</li> </ul>	E E E D	Application Certificates Application
<b><u>KNOWLEDGE</u></b>		
<u>Clinical:</u> <ul style="list-style-type: none"> <li>• Knowledge of normal physiology and anatomy for treatment planning</li> <li>• Good knowledge of CT and MRI anatomy for treatment planning</li> <li>• Understanding of pathology and mechanisms of disease</li> <li>• Understanding of medical terminology</li> <li>• Knowledge of the principles of the cancer patient pathway and the associated clinical procedures</li> <li>• Knowledge of the principles of external beam radiotherapy</li> <li>• Understanding of the needs of patients and clients</li> <li>• Understanding of the required standards for appearance and behaviour</li> </ul> <u>Scientific and Technical:</u> <ul style="list-style-type: none"> <li>• Broad and in-depth knowledge of radiation and associated areas within Medical Physics</li> <li>• Advanced level of knowledge across the full range of working procedures and practices in Radiotherapy Physics</li> <li>• Specialist knowledge of a wide range of radiotherapy equipment</li> <li>• Theoretical and practical knowledge within Radiotherapy Physics.</li> <li>• Specialised knowledge of clinical issues and their implications for radiotherapy physics practices</li> <li>• Broad and developed knowledge of clinical procedures and practices in radiotherapy</li> <li>• Understanding of patient and staff risks arising from equipment failure and staff error</li> <li>• Understanding of relevant legislation, national standards, professional and other guidelines, including: <i>IRR, IR(ME)R, ISO</i></li> </ul>	E  E E E  E E  E E  E E E E E E E E E E	Application and Interview





<p><i>9001:2000, other relevant BSI and ISO standards, professional and regulatory body reports and guidelines</i></p> <p><u>Organisational:</u></p> <ul style="list-style-type: none"> <li>• Knowledge of associated disciplines and their inter-relationships</li> <li>• Knowledge of relevant NHS &amp; Trust procedures</li> <li>• Knowledge of quality management system - QPulse</li> </ul>	E E D	
<p><b><u>EXPERIENCE</u></b></p> <p>Experience working as (or working towards becoming) a state registered clinical scientist specialising in radiotherapy physics, to include:</p> <ul style="list-style-type: none"> <li>• Completion of a wide range of routine QC checks of radiotherapy equipment, including imaging system QC checks</li> <li>• Completion of patient specific QC checks</li> <li>• Production and checking of a wide range of clinical radiotherapy treatment plans in a modern treatment planning system</li> <li>• Developing new procedures/processes and producing appropriate associated documentation</li> <li>• Commissioning new radiotherapy equipment</li> <li>• Problem solving in the context of a multi-disciplinary radiotherapy team</li> <li>• Using Pinnacle TPS and Mosaiq R+V systems</li> </ul>	E E  E  E D  E D	<b>Application and Interview</b>
<p><b><u>SKILLS &amp; ABILITIES</u></b></p>		
<p><b>COMMUNICATION SKILLS</b></p> <ul style="list-style-type: none"> <li>• Able to demonstrate a good standard of English language.</li> <li>• Effective written and oral communication</li> <li>• Able to communicate effectively when relating complex, technical concepts and advice.</li> <li>• Show good interpersonal skills when dealing with patients or carers, leaving a positive impression.</li> <li>• Proven ability to train groups of other professional staff in radiotherapy physics.</li> <li>• Well-developed negotiation skills and effective influencing skills: in general and when dealing with complex medical equipment and equipment interaction issues at organisational level.</li> <li>• Able to present scientific papers at national and international conferences.</li> <li>• Listening, influencing and persuading skills.</li> <li>• Motivational skills.</li> </ul>	E E  E  E E  E  E E E	<b>Application and Interview</b>



<b>ANALYTICAL AND JUDGMENT SKILLS</b> <ul style="list-style-type: none"> <li>• Able to use Excel, Word etc to set up documents and spreadsheets.</li> <li>• Ability to make accurate measurements with highly complex electronic equipment.</li> <li>• Ability to concentrate for frequent and prolonged periods in all aspects of work.</li> <li>• Ability to deal effectively with unpredictable situations.</li> </ul>	E E E E	<b>Application and Interview</b>
<b>PLANNING &amp; ORGANISING SKILLS</b> <ul style="list-style-type: none"> <li>• Interpersonal skills – ability to make rapid assessments under pressure in a clinical environment, informing other team members/disciplines of appropriate courses of action.</li> <li>• Adaptability, judgement and decisiveness</li> <li>• Prioritisation and organisational abilities for own workload and awareness within the team.</li> <li>• Dynamism; self-confidence and decisiveness.</li> <li>• Organisational awareness.</li> </ul>	E E E E	<b>Application and Interview</b>
<b>PHYSICAL AND MENTAL SKILLS</b> <ul style="list-style-type: none"> <li>• Manual dexterity and accurate hand-eye co-ordination for work with submillimetre precision.</li> <li>• Ability to carry out radiotherapy quality assurance and other detailed experimental work associated with radiotherapy physics.</li> <li>• Able to stand for extended periods without aid (e.g. when making measurements on treatment equipment).</li> <li>• Able to lift and fit (at head-height) medium weight treatment machine accessories.</li> <li>• Able to push very heavy equipment with assistance (e.g. beam data acquisition system 500 kg)</li> <li>• Able to concentrate frequently when subject to unpredictable working patterns (e.g. when interrupted to provide urgent advice)</li> <li>• Able to concentrate for prolonged periods (e.g. when making complex measurements, investigating solutions to equipment/treatment problems and analysing data)</li> </ul>	E E E E E E E	<b>Application and Interview</b>
<b>EMOTIONAL SKILLS</b>  Ability to deal with: <ul style="list-style-type: none"> <li>• distressing circumstances when working with patients in clinical areas (e.g. patient set up in virtual simulator and overseeing patient plan set-up in radiotherapy treatment rooms);</li> </ul>	E	<b>Application and Interview</b>



<ul style="list-style-type: none"> <li>• issues either within own staff group or between groups of staff;</li> <li>• terminally ill and disfigured patients.</li> </ul>		
<b>OTHER</b> <ul style="list-style-type: none"> <li>• Willingness to use technology to improve standards of care and support to our patients.</li> </ul>	<b>E</b>	<b>Application and Interview</b>
<b>SUPPORTING BEHAVIOURS</b>  To carry out this role successfully the post holder needs to be fully aware of and adhere to Trust values. <ul style="list-style-type: none"> <li>• Kindness</li> <li>• Respect</li> <li>• Teamwork</li> </ul>		



### SUPPLEMENTARY INFORMATION

Physical Effort	Yes	No	If yes – Specify details here - including duration and frequency
Working in uncomfortable / unpleasant physical conditions		✓	
Working in physically cramped conditions		✓	
Lifting weights, equipment or patients with mechanical aids		✓	Move beam data acquisition system around department – as required.
Lifting or weights / equipment without mechanical aids	✓		
Moving patients without mechanical aids		✓	
Making repetitive movements	✓		Use of keyboard, daily
Climbing or crawling		✓	
Manipulating objects	✓		Positioning equipment to sub millimetre accuracy, weekly.
Manual digging		✓	
Running		✓	
Standing / sitting with limited scope for movements for long periods of time		✓	
Kneeling, crouching, twisting, bending or stretching		✓	
Standing / walking for substantial periods of time	✓		While undertaking essential QC checks on equipment
Heavy duty cleaning		✓	
Pushing / pulling trolleys or similar	✓		Moving physics equipment on trolleys and beam data acquisition equipment as above
Working at heights		✓	
Restraint ie: jobs requiring training / certification in physical interventions		✓	
Mental Effort	Yes	No	If yes - Specify details here - including duration and frequency
Interruptions and the requirement to change	✓		The post holder is required to concentrate for prolonged periods but may be interrupted. e.g when performing checks on a computer produced radiotherapy treatment plan or



from one task to another ( give examples)			producing a complex report, the post holder may be asked to provide advice to clinicians or radiographers on another matter. The post holder may be performing safety critical QA checks on a radiotherapy treatment unit to have to leave to attend to a more pressing issue on another unit.
Carry out formal student / trainee assessments	✓		
Carry out clinical / social care interventions		✓	
Analyse statistics	✓		Analysis of radiation beam data, QC results, patient related dose data and statistics – daily.
Operate equipment / machinery	✓		Operate clinical radiotherapy treatment, imaging and QC equipment – daily.
Give evidence in a court / tribunal / formal hearings	✓		
Attend meetings (describe role)	✓		Attend and occasionally chair MDT meetings
Carry out screening tests / microscope work		✓	
Prepare detailed reports	✓		
Check documents	✓		Daily
Drive a vehicle		✓	
Carry out calculations	✓		Daily
Carry out clinical diagnosis		✓	
Carry out non-clinical fault finding	✓		Analyse clinical and non-clinical problems to deduce source of problems/errors – daily.
<b>Emotional Effort</b>	<b>Yes</b>	<b>No</b>	<b>If yes - Specify details here - including duration and frequency</b>
Processing (eg: typing / transmitting) news of highly distressing events		✓	
Giving unwelcome news to patients / clients / carers / staff	✓		Unavailability of equipment for clinical use due to service/breakdown or unable to meet clinical requests within requested timescale - occasionally
Caring for the terminally ill		✓	
Dealing with difficult situations / circumstances	✓		Occasionally required to meet seriously/terminally ill patients in order to advise on best treatment solutions as part of MDT
Designated to provide emotional support to front line staff		✓	
Communicating life changing events		✓	



Dealing with people with challenging behaviour		✓	
Arriving at the scene of a serious incident		✓	
<b>Working conditions – does this post involve working in any of the following:</b>	<b>Yes</b>	<b>No</b>	<b>If yes - Specify details here - including duration and frequency</b>
Inclement weather		✓	
Excessive temperatures		✓	
Unpleasant smells or odours	✓		Occasional - Clinical work in Mould room may involve patients who have fungating or infected lesions
Noxious fumes		✓	
Excessive noise &/or vibration		✓	
Use of VDU more or less continuously	✓		Daily computer use
Unpleasant substances / non household waste	✓		Occasional exposure in clinical areas and mould room/fabrication room.
Infectious Material / Foul linen	✓		Occasional - Clinical work in Mould room may involve patients who have fungating or infected lesions
Body fluids, faeces, vomit	✓		Occasional - Clinical work in Mould room may involve patients who have fungating or infected lesions
Dust / Dirt		✓	
Humidity		✓	
Contaminated equipment or work areas		✓	
Driving / being driven in <b>Normal</b> situations		✓	
Driving / being driven in <b>Emergency</b> situations		✓	
Fleas or Lice		✓	
Exposure to dangerous chemicals / substances in / not in containers	✓		Environments are controlled, but the hazards include: Ionising Radiation, working with imaging/treatment equipment, Radioactive sources Non-ionising radiation, e.g. microwaves Lead and lead alloy
Exposure to Aggressive Verbal behaviour		✓	
Exposure to Aggressive Physical behaviour		✓	



The Knowledge and Skills Framework (KSF) outline for this post which demonstrates the skills and competencies required once in post should be considered in conjunction with this document.

**Job Profile Agreement**

Agreed and Signed:	(Manager)	Date:	
Agreed and Signed:	(Post Holder)	Date:	
Date Role Description is Effective From:			

