ENGINEERING PRACTICE REPORT

JANUARY 2015

Applicant Details

Name :	Signature and Date :
[redacted]	[redacted]

Summary of Career – Episodes and Projects

1975-1979	**Technical Apprenticeship British Leyland UK LTD** Four year broad base engineering training specialising as a Jig and Tool design engineer within the drawing office Mentored by a principal design engineer Designed Jigs for both the Triumph Dolomite and TR7 Studied and gained Full mechanical technicians certificate at Old Swan Technical College
1979-1981	**Trainee Building Services Engineer Littlewoods Organisation LTD** Two year Traineeship specialising as a Mechanical building services design engineer Mentored by Chief Engineer together with principal engineers Understanding how to design a full range of mechanical services within projects for Littlewoods chain stores, distribution centres, catalogue shops , general offices, Littlewoods Pools and Everton football club.
1981-1982	**Progressed from Traineeship to assistant mechanical building services engineer** Reporting to principal engineer supporting with calculations and design elements worked independently on Hitchens stores and Everton Football Club
1982-1986	**Assistant Building Services Engineer Cheshire County Council Architects Department** Reporting to principal engineer on designing a full range of mechanical building services including Cheshire Fire Brigade Headquarters, Reaseheath College of Agriculture, various primary and secondary schools, homes for the elderly and sports centres. Studied and gained HNC/Polytechnic Certificate in Building Services at Leeds Polytechnic
1986-1991	**Promoted to Building Services Design Engineer** Responsible for Design & Management of Projects including Macclesfield Magistrates Courts, Mobberley Elderly Persons Home, Reaseheath College Sports Centre, Springview Special School and Sir John Deanes drama block together with many refurbishment & boiler replacement schemes
1991-1999	**Buildings Design Services Engineer Wirral Hospitals NHS Trust** Reporting to the Capital Projects & Estates Manager Responsible for the Design & Management of all Engineering projects within the Trust and all associated partners to the Trust including Arrowe Park Hospital, Clatterbridge Hospital, Clatterbridge Centre for Oncology, Victoria Community Hospital, St. Catherine's Hospital, Salford Hope Hospital, St. John's Hospice and Claire House.

1999-2009	**Promoted to Environmental Services Manager** Reporting to the Deputy Director of Facilities management Responsible for all above with the addition of managing the Energy & Waste budget of £5million
2009-2014	**Promoted to Capital Projects Design & Estates Manager** Reporting to the Director of Facilities Management Responsible for all above with the addition of the Capital budget £12million and the Estate Legal requirements
2014 to date	**Promoted to Associate Director, Estates** Reporting to the Executive Director Infrastructure and Informatics Responsible for all above with the addition of the Estates operational & Security budget £10million

Practice Report

The Technical apprenticeship was structured to deliver a fully prepared motor industry design engineer. The first year was attendance at an EITB training centre for broad base engineering training including milling and lathe work, welding, bench fitting, sheet metal work, electrics and drawing office. The technical apprentices specialised (12weeks) in the drawing office where I prepared detailed design drawings for my end of year project which was an engine hoist. I supplied the detailed drawings to other apprentices who used them to manufacture the hoist as part of their specialising. On completion of the project the hoist was tested and worked (no patent pending).	
Years two and three were spent in the factory plants and followed a structured training programme allowing time to work within all the manufacturing departments i.e. tool room, jig shop, press shop, quality engineering, maintenance engineering, paint shop, laboratory, etc.	
Year four I specialised within the drawing office as a Jig and Tool design engineer mentored by the Chief Draughtsman. I designed two jigs with detailed manufacturing design drawings the first being designed to allow for a consistent fixing point for mounting the windscreen wipers on the Triumph TR7. The second needed to be designed to allow more efficient spot welding of the front grille and wings of the Triumph Dolomite both of which were created in the Jig shop and both succeeded in improving manufacturing time. At the end of my apprenticeship I was offered permanent employment at plants in Bathgate (Scotland) or Coventry I chose to seek employment elsewhere.	
Whilst an apprentice in 1979 I achieved the Duke of Edinburgh Gold Award and spent time as a Sergeant Instructor in the Army Cadet Force.	
I started my traineeship with The Littlewoods Organisation Ltd in 1979 as a Mechanical Building services Engineer. I was mentored by the Chief Engineer Mr Fred Hough who expected a full design philosophy for any presented work. I worked for principal engineers and the training programme was designed to give the trainee maximum exposure to all of the aspects of mechanical building services design. One principal engineer tasked me with	

producing calculation files in both imperial and metric explaining it would make me a more knowledgeable engineer especially if I ever wanted to work in the USA. I believe it was that he understood imperial more than metric but it definitely helped me. I designed various ventilation systems for a multitude of varying requirements including Stockroom, Shop floor, restaurant, kitchen canopies and smoke evacuation. I designed the first induction kitchen canopy used in a Littlewoods store (Poole). I sized ductwork and plant using CIBSE Guide books, psychometrics, sizing charts, static regain constant pressure drop & constant velocity. The art of ventilation required a flair for the manipulation of velocities especially when designing the chain store restaurant systems in order to achieve the enticement of the food smell bringing the customer through to the rear of the store to eat and encourage more shopping on the way out. In the chain stores particular attention was given to air velocities and attenuation. I designed a full range of piped services including LTHWS, DHWS, CHWS, TCWS, MCWS and Gas, always working to the most current up to date guidelines. I designed all of the following: Replacement under soil heating system at Everton FC using the latest Swedish condensing technology and plastic pipe work. Pre-Contract estimate of a 5 year installation payback was re-evaluated to a 3 year payback post contract evaluation. Chilled water systems using state of the art Hitachi scroll compressors delivering superior performance and energy savings The mechanical services for the Private boxes at Everton FC which required me to utilise my skills gained from the automotive industry by creating a ventilation system that kept the box windows free from condensation. I used Barber Colman supply diffusers combined with Netaline return grilles to effect maximum efficiencies on both supply and extract systems. I have never been afraid to think outside of the box in order to achieve maximum cost effective performance. During my time at Littlewoods I also received a Queens Commission in the TAVR holding the rank of Second Lieutenant serving with 1st/51st Queens Own Highland Division(Liverpool Scottish)	A1 A1 A1 A1
I joined Cheshire County Council Architects Department as an Assistant Building Services Engineer in 1982 and quickly realised why it had achieved such high recognition within the Northwest Region. I was privilege to be mentored by such experienced engineers and work in multi- disciplined design teams which included Architects, Quantity Surveyors, Structural Engineers, Interior Designers. I supported the principal engineer on many major projects one in particular was a new Fire Brigade control centre this was a fantastic challenge because it was state of the art. The client briefing sessions were quite intense as this	

facility would be the Fire control centre serving the whole of Cheshire and had to be fit for purpose. The building operation was 24/7, the control room was sound proof, temperature and humidity for equipment was critical. The County's first integrated building management system (JEL) was installed and proved to be vital in controlling this highly serviced facility. I worked closely with JEL and the County's Maintenance Team to set up the dial up systems for remote monitoring. I was promoted to Design Engineer after gaining my professional qualification, Leeds Polytechnic Certificate in Building Services in 1986.	
The first solo project I designed was Macclesfield Magistrates Courts this was from inception through to final account the client briefing team was made up of Courts staff, the police and County legal team. I was supported by an apprentice engineer who I was mentoring and worked within a fully integrated in-house multi-disciplinary design team. The Courts were created within an old co-op bank building, the bank vault was to be turned into holding cells and the main courts needed to be air conditioned in order to meet the required design conditions. A great deal of ingenuity was required in integrating the services to match the Architects vision for this building which as located in the town centre i.e. make everything invisible. The project won a local award for the Architect with a mention in dispatches to the design team.	A2 D1
I managed the boiler replacement programme for East Cheshire Schools with £1million budget. After intensive market testing and value engineering I was able to introduce a standard boiler installation using various models of Strebel cast iron triple pass high efficiency boilers with a combination of hi-lo or hi-lo fully modulating burners. These boilers proved reliable, energy efficient and exceeded the European 'Blue Angel' standard for 'Low Nox' emissions. New pumps together with better controls and high efficiency boilers were making real measurable energy savings giving drastically reducing payback periods. I conducted a post project review which included the County Energy Manager, County Property Manager, Education Finance Manager and the Schools Advisor .The project was delivered on time within budget and accepted as meeting the brief for evidencing the County's green commitment.	C1 B3 A1 A2
I took the lead responsibility for the design team engaged to deliver a tropical growing facility at Reaseheath College of Agriculture which consisted of greenhouses with raised growing beds, controlled environments, irrigation systems, boiler house & water reclaim pumping station. All systems were monitored and controlled by a centralised BMS. I chaired all client and contract meetings and made a presentation of the scheme to the college independent board of governors I worked with Roy Ferguson who was a Principal Engineer and spent time helping me broaden my knowledge and encourage my ability through all aspects of project management especially cost planning, budget control, settlement of final accounts and post project reviews. I was ready for my next challenge.	C1 A2

I was appointed Building Design Services Engineer for Wirral Hospitals NHS Trust in 1991 My role was to take full responsibility for all engineering services provision or re- provision on behalf of the Trust this would be through both the Capital and Operational budgets. The Trusts Capital work was carried out by one multi-disciplinary project team supplemented by external consultant or contract staff as required.	A2
I was tasked with introducing new technology into the design department within twelve months we were using `Hevacomp' having previously worked with it in Cheshire for calculations, `AutoCAD' for drawing and electronic standard specification. I trialled both` Acropolis' and `AutoCAD' drawing systems but settled on` AutoCAD AEC' because of the easy to use architectural design package and competitive price. I created an electronic drawing database with automated backup in order to support our electronic data storage this in turn allowed information to be shared through an accessible drive I arranged a training programme enabling the in- house design team to be trained in AutoCAD at Cadskills to an advanced level. The introduction of this new technology & new way of working dramatically improved production efficiencies.	B2
I engaged a consultant to develop the BS5750 quality system within the design office for which we received accreditation and thus being one of the first design offices in the country to achieve this status. We maintained the system through to ISO 9001 eventually after five years of external accreditation with the systems now operating as second nature within the department we chose to be audited & managed internally appointing a quality manager. I worked closely with nuclear physicists at Clatterbridge Centre for Oncology on a number of nuclear medicine projects including Cobalt unit, gamma camera & linear accelerator installations. All had their own requirement for creating unique services installations in order to meet their exacting environmental requirements. I project managed an MRI scanner installation procured through Philips Medical using external consultants Rodney Environmental Services.	C3
I designed the mechanical services for an orthopaedic theatre (no.5) at Clatterbridge Hospital this was to be only the second 3.5mX3.5m Ultra Clean canopy installed in the country & the first with the primary air designed independently of the canopy supplier The installation was vigorously tested for compliance with HTM2023 by Craig Mackintosh a microbial scientist and a leading light in clean air ventilation. Through our endeavours we perfected a template which through the primary air system design, pressure relief and general theatre layout met the requirements for velocity at 1m and 2m and air entrainment tests. We were able use our findings and template for the design of Orthopaedic Theatre 6 at Clatterbridge using a 3.5mx3.5m canopy this installation passed all the compliance testing with flying colours and actually forms the basis for the recommended Ultra Clean Theatre layout in HTM03-01.	B2 A1
I went on to design four more Ultra Clean Theatres at Arrowe Park Hospital as well as a bespoke Aseptic Unit.	B2

I was tasked with income generation so I arranged for the department to have professional indemnity insurance and managed to procure external design consultancy work with various design team partners for various clients including St. Johns Hospice with KKA Architects, Claire House with Wildblood McDonald Architects, Salford Hope Hospital Aseptic Unit with Jaymech Ltd to name but a few.	B1
I arranged attendance of training courses for the design team for the following:	E4
CDM Regulations, Asbestos awareness, Building Regulations part L2A andL2B, DDA and Fire Safety.	E2
I have always been acutely aware of the environment and have been the lead for the Trust regarding energy conservation. I prepared a paper for the board justifying the need for investment in energy conservation and carbon reduction which returned approval for the installation of a gas fired 800KwCHP at Arrowe Park Hospital. The project consisted of the complete installation of the following plant: 1Mw Absorption Chiller, Plate Heat Exchangers on both LTHWS & DHWS systems, Dump Radiators, Dry Coolers (2.5Mw), Gas Fired 800Kw CHP, Sub –station, BMS Outstations, all pumps and interconnecting services, controls and G59 protection. All designed to deliver a tri-generation of hot water, chilled water and electricity.	E3 D3 B2
I commissioned a report from NIFES Associates Consultants to determine the viability of decentralising the central steam boiler house at the Clatterbridge Hospital site. The report in essence indicated that for a £750K investment a 5 year payback could be achieved. I scrutinised their proposal and produced an alternative decentralisation solution. Drawing on my experience with Cheshire Schools I used proven technology and delivered a project at a cost of £493K(final account)which at the average rate of £28K/month saving paid back in less than two years.	B3
I delivered a project across both the Arrowe Park & Clatterbridge Hospital sites using Progressive Services Design Consultants for replacing fluorescent light fittings with high efficiency T8 fittings with a 3 year payback	A1
I delivered many schemes all reducing energy consumption which helped in my promotion in 1999 to Environmental Services Manager giving me the exciting challenge of controlling the£3.5 m energy budget.	
I installed AMR on the main utility meters and rolled out general metering across both sites. This, combined with a developed electronic system for recording electricity gas and water consumption across the two main hospital sites, allowed sub charging to all our site partners.	
I engaged the services of Flexible Management Services, a consultancy who procure utilities through an NHS framework agreement. They manage the provision of gas and electricity through a flexible purchasing agreement on behalf of the Trust and a large portfolio of NHS and private sector partners. This has saved the Trust 27% over the life of the agreement compared to comparable NHS procurement partners.	
I am the Trusts representative at the Wirral Climate Change group which was set up by Wirral Borough Council to engage with local partners within the public and private sectors as well as community groups and act as a catalyst for sharing ideas and innovations with each other with a view to help reinforce sustainability and reduce carbon emissions. The group meets quarterly and also arranges workshops, roadshows and issues regular bulletins.	D3

In the never ending search for viable energy conservation projects I prioritised the decentralisation of the main steam plant at Arrowe Park Hospital. I achieved this by introducing condensing boilers in combination with plate heat exchangers, inverter controlled pumps all linked through a Trend BMS which replaced steam to LTHWS calorifiers located in various plant rooms across the hospital site. Creating the required combustion ventilation proved to be the most testing part of the installation as the majority of plant rooms were located internally within the basement of the hospital however with a robust system of interlocks controlling both natural and forced ventilation the desired conditions were achieved. The most satisfying part of the project, apart from achieving a 3 year payback, was the installation of DHWS plate heat exchangers which allowed the removal of thousands of litres of stored domestic hot water whilst maintaining the whole service with the storage contained within the existing pipework system.	A2 A2 B2
The required improvement in managing waste was quite apparent. I procured a contract to install compactors across both main sites. I simplified and consolidated the existing waste streams and implemented recycling. In negotiating new contracts and actively reducing waste through controlled procurement we have seen reduced costs in the order of 70% over a 10 year period. The hospital induction programme now includes a short presentation on waste disposal.	A2
NHS Estates requires all hospitals to submit ERIC (Estates Return Information Collection). I have responsibility on behalf of the Trusts Chief Executive to collate information and make this return. The collected information is collated by the NHS Estates Information Service which provides information on a full range of Estates and Facilities services and is accessible by all Hospitals allowing comparisons of service costs for benchmarking.	C4
As part of my professional development I have undertaken and achieved the following: • Authorised person for Medical Gases. • CIBSE Low Carbon Consultant qualification course; • Display Energy Certificate qualification course. • BRE fire engineering course. • System air training course on fan engineering and air velocity patterns. • MHS principles of condensing boiler operation training course	 E4 E4 E4 E4 B3 B3
The Trust entered into its first Procure 21 contract which was the provision a three storey block to provide a ground floor fracture clinic together with first and second floor education facility. After the interview and bidding process Vinci Group were named as the Trusts preferred contractor. I led the briefing team and also became Vinci's preferred M&E design partner working as part of the design team with Nightingale Associates Architects and William Jones Partners Structural Engineers. The Fracture Unit comprised of clinics, x-ray rooms, plaster room, assessment areas, reviewing rooms, support areas, reception and waiting. The first floor Education Unit comprised of main reception, seminar rooms, main library, computer rooms, the second floor was main lecture theatre, Doctors study lounges, administrative offices,	D2

kitchen, servery, dining room, board room, all floors had toilet facilities which were DDA compliant. The contract was delivered on time and under budget. The post contract review BREEAM assessment of excellent just short of outstanding.	C4
I was asked to lead on behalf of the Trust to explore the feasibility of entering into a joint venture with Northwest Hospitals for the provision of Decontamination services which was at the invitation of the Department of Health who were seeking to achieve a national standard for the provision of decontamination due to the potential outbreak of CJD. It required me to pull together a team of Trust Professionals comprising of Clinicians, Sterile Services Managers, Theatre Managers, Finance Manager, Procurement Manager, decontamination authorised persons and Engineers. Following a five year project a consortium of nine hospitals had agreed to move to contract with a preferred provider. Unfortunately the successful provider was acquired by a competitor who had been an unsuccessful bidder for our contract. We were therefore unable to continue with the procurement and the consortium disbanded. I was then tasked by the Trust to provide a fully compliant in house facility located at Arrowe Park Hospital. After identifying a suitable location and investigating the amount of enabling works required to free up this preferred site; the most expedient solution seemed to be to instigate a NHS procure 21+ framework contract. An invitation was sent to three framework contractors each of them were interviewed and invited to submit outline proposals with budget costs. All three proposals were marked in conjunction with NHS procurement procedure and IHP proved successful. IHP (Vinci) were contracted to provide the New Compliant Decontamination Unit.	C1 C1
I headed up the Trusts briefing team; we engaged an AED to advise and lead on washers, sterilisers and general compliance with HBN2013 and HTM2030. Visits were arranged to assess performance of equipment both in commercial operation and within factory test facilities. Procurement of all decontamination equipment followed strict NHS guidelines for selection and acceptance i.e. all equipment signed off by the Trusts project team including the Independent Authorising Engineer, Trusts Authorised Person, Trusts Chief Microbiologist, Trusts Environmental Services Engineer and Trusts Sterile Services Manager. Following the successful partnership with Vinci for the provision of M & E Design Services on the previous Procure 21 contract, we were invited to provide the service again. In order to generate income for the Trust. I contracted out our in house design team to provide the M&E design as part of IHP (Vinci) design team. The construction project consisted of the provision a facility that meets HBN 2013 conforming to the required accommodation and flow. One of the highlights for me was designing another steam system 10 years after my first. The project valued at £7 Million was delivered fully functioning and compliant 12months after the start date. Post contract evaluation scored the facility as BREEAM good. The Facility was externally audited as compliant with DoH and statutory requirements this gave the unit the potential ability to source external work for income generation.	E1 D1 B3 B1

A most important point to note: I have lived with all of my design projects for 20years so they needed to be right.	B3
In 2009 I was promoted to Capital Projects Design & Estates Manager with the added responsibility of managing the Capital budget together with its required administration and reporting. The management of the estate including all legal documentation became part of my responsibilities. In running this department I am supported by a Design Team, Estates Surveyor, Fire Officer, Administration Team, Capital Accountant and Finance Officer. I reported directly to the Director of Facilities Management. I became the Chair of the Capital Monitoring Group, Environmental Action Group, Space Management Group and Estates Strategy Group.	C3
I have written reports for presentation to the Hospital Executive Board on the hospital environment, backlog maintenance, the carbon and energy fund and sustainable development.	D2
I appraise senior managers and set objectives based on the Trusts objectives.	D3
All staff have training portfolios and are actively encouraged and supported to maintain CPD.	C3
On a monthly basis I review all capital accounts, report capital spend against profiled forecast ,report energy spend against forecast profile, set and agree all energy recharges, I settle all final accounts, I report on fee spend, I set and agree budgets for all departments within Estates and I approve all orders in excess £5K through Oracle.	C2 D2
I conduct interviews, negotiate fees, inspect examples of completed projects and review testimonials prior to engaging the services of external consultants. I review lease agreements and set and agree any yearly uplift in charges; re-negotiate any leases due for renewal, agree heads of terms on any new leases and deal with the Trusts Solicitors and the District Valuation Office for any estate matters.	B3
I am responsible for setting, agreeing and delivering the departmental CIP (cost improvement schemes).This can be a combination of cost reduction and income generation. I was promoted to Associate Director Estates in 2014 which added the Maintenance Department, EBME Department, Security Department and Car Parking together with a £10million budget to my portfolio.	C2
My first objective was to introduce an electronic web- based facilities management system. After extensive market research the choice of system was between MICAD and Premier Software Apollo FM after presentations and demonstrations an evaluation scored in favour of Apollo FM. The order was raised in May 2014 and the system went live in November 2014 the project is now being evaluated and first indications are increased operational efficiency.	C2 B2
I am responsible for 98 whole time equivalent staff with a budget of £15 million. I meet with the unions on a regular basis to discuss current and any proposed changes to terms and conditions. I have added the Chair of Water Safety Group, Transport Strategy Group and Medical Gas Committee to my list of responsibilities. I report on risk, approve action plans, write and update policies, I report through the following groups: Financial Management Group, Operational Management Group, Productivity Monitoring Group, Hospital Infection Control Committee, Health and Safety Group and Transformation Steering Group. I am responsible for delivering statutory compliance for all	C3 D3 D2 D3 E2 E1

estates services on behalf of the Trusts Chief Executive. I have written a plan detailing the Estates cost reduction schemes and income generation for 2015/16 in the order of £500K. I have recently submitted the Trusts Sustainable Development Plan for Board approval. I am currently negotiating the sales of Trusts Land and buildings with values in the order of £3.5million.	C2
I took the Trusts lead in procuring a £6.5million Carbon Energy Fund Contract which will deliver a guaranteed NPV of £3million over 15 years. It took twelve months working closely with the preferred bidders (ENERGI) project team, legal teams, the Trusts project and legal teams to get to contract with Board approval and 18months to deliver the project which goes live early in February 2015. The Investment revolves around the installation of CHP systems at both the Arrowe Park & Clatterbridge Hospital sites combined with replacement LED lighting, Inverter controlled motors, improved insulation and water conservation controls. The project has reduced the Trusts backlog maintenance by £500k and will reduce carbon emissions by approximately 6000 tonnes.	E3 D2 E3
I have delivered presentations to Trust Board, the Trusts Non-Executive Directors and Wirral Climate Change Group for prioritising maintenance and sustainable development.	E4 D3
Outside of my professional career I have designed and project managed the building a family property in Southern France I have attended college courses to learn the following Skills: Plastering, Wood Carving & French Language –Intermediate Level. I am currently involved with a Charity supporting great causes in Warrington & the Northwest called the Adam Lewis Effect which has been set up following the death of Adam Lewis due to Sudden Arrhythmic Death Syndrome SADS	
I have always supported CIBSE through attendance at seminars, apprentice awards, sporting events, luncheons and dinners. I won the Northwest region golf competition in Llandudno.	
The main reason for my application was after attending the funeral of one of my great mentors from the private sector, Len Hughes, I realised that I had received the greatest help and guidance from talented engineers, some of whom I have mentioned in my report, Fred Hough Chief Engineer past Chairman Northwest Region, Roy Ferguson Principal Engineer past Chairman Northwest Region and Len Hughes, Managing Director Townley Hughes past Chairman Northwest Region	
It was about time I gave something back to the profession that has given me the greatest pleasure throughout my entire working career.	