Section F: - Stage 1 - Educational Standards

The educational experience and underpinning knowledge is based upon CIAT Accredited Honours and Masters Degrees and as such holders of these awards are exempt from this section as having achieved the necessary standard through study. However, those applicants who do not possess an Accredited award must demonstrate how their educational awards and/or experience satisfy the *Educational Standards (Stage 1) listed* ***within the Professional Standards Framework.***

The summary should specifically relate to the discipline of Architectural Technology and must consist of at least 3000 words but no more than 5000 words in total and provide references to any relevant supporting evidence that demonstrates your knowledge.

If you have a CIAT Accredited Honours or CIAT Masters degree you are exempt from this section.
Fill in to show experience gained is sufficient equivalency to formal educational qualifications

My journey into Architecture commenced with my first job at **XXX** and **XX** as a trainee Architectural Technician back in 1989. After starting work I was enrolled into the Building Technicians Ordinary National Certificate course on a day release basis which acted as an access course for the HNC in Architectural Technology. Attending the courses through the day release study enabled me to benefit from on the job experience whilst studying. The completed modules are covered in enclosed qualification certificates in **Appendix 1**.

Throughout my career my learning and increasing professional knowledge has been developed through the combination of formal learning at college, years of industry experience, whilst continuing my professional development through a variety of different avenues.

The CIAT defines CPD as "*the systematic maintenance, improvement and broadening of knowledge and skills for the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioners working life*"

My continuing professional development has been based on personal experiences developed in running a number of projects in multiple sectors with varying project sizes covered in CV – **Appendix 2**. I have also expanded my professional knowledge through on the job research, reading articles and technical papers, attending external conferences and courses, arranging and attending in house seminars, training events and online learning.

CIAT also states that "*any professional qualification has a limited shelf life when considered against the length of careers*" and that "*The knowledge obtained when qualifying does not remain current but is updated by training and personal experiences i.e. by continuing professional development*".

On the basis of this statement, I believe that whilst my formal education on its own may not meet the full educational requirement of CIAT accredited Honours and Masters degrees, my extensive professional experience and technical duties that have been successfully undertaken on multiple projects over my career demonstrates my achievement of the necessary educational standard.

a systematic understanding and critical awareness of topics which are informed by the subject of Architectural Technology;

While my time at college provided me with an insight into the topics which are informed by Architectural Technology my experience gained over many years in the job has given me a far more rounded understanding and awareness to supplemented my earlier formal learning.

The modules studied as part of the HNC Architectural technology and the earlier National certificate course provided my initial awareness for the breadth of subject matter and wider influences that Architectural Technology encompasses. (See certification - **Appendix 1**).

I have been fortunate enough in my career to be involved in the design and delivery of many complex projects (see CV, **Appendix 2)** and the variety of sectors covered as well as most types of project, varying from extensions through refurbishments to major new build projects, have enhanced my knowledge and understanding of the industry.

Having covered every aspect of the RIBA plan of work through these projects and with substantial experience gained through on the job learning I believe that this has provided me with an understanding of the core topics informed by Architectural Technology whilst a greater insight and understanding of the wider topics has come through experience of previous projects where involvement of specialist consultants or interaction with other organisations not obviously part of the core topics of Architectural Technology. (i.e. specialist consultants involved in many of my previous projects such as Fire Engineers, Archaeologists, Ecologists, Landscape Architects, BREEAM assessors, Conservation Architects, Acoustic Engineers, Temporary works designers, SEPA, Fire & Rescue Service, Environmental Health, Modelling/Visualisation specialists, Graphic Designers, etc.)

Examples of some previous involvements are as follows:

- Fire Engineers on a number of my previous projects including **XXXX** (enclosed example project – See **Appendix 4.14**) which was a fire engineered solution rather than being fully compliant with the Technical Standards. Here we proved by reference to the Eurocodes and fire engineering modelling software that despite escape being past the void (in the case of the central atrium in the school) it still allowed safe escape within the required timescales. This was accepted by Fire & Rescue Service and Building Control officers and set a precedent for other Secondary schools following the template model.

- On many other projects including the **XXXX project**, I have been involved with specialist consultants such as Archaeologists and Ecologists to provide required information and reports to assist with the Planning process. Whether it's agreeing extent of archaeological investigations, providing an ecology report on site animal species or vegetation to supplement the planning submission or later in the process providing attendance to review excavations for items of historical interest to discharge planning conditions.

My past experience has proven the requirement and benefit of involving specialist consultants in the design and construction process. This has I believe certainly helped to increase my awareness of the wider range of topics which are informed by Architectural Technology.

a critical awareness of the history and context, and the political, economic, environmental, social and technological aspects that inform and influence the practice of Architectural Technology nationally and internationally;

Through a combination of lectures and coursework in my early years at college and my subsequent learning over the decades through project experience, peer discussions, seminars, Architectural visits & Research I believe that I have achieved the required level of awareness of these aspects and how they influence Architectural Technology.

History and context – My understanding is initially through my education in HNC modules of architectural design appreciation and communication; through peer discussions and by research for many previous historic projects with listed building status, such as **XXXX project** which was a Refurbishment of the historic Grade C listed building (see **Appendix 7**) and research for the **XXXX refurbishment** of the Grade A listed building currently on site where the Stage D design makes significant historical references to the original design of the building and landscaping which is reflected in current proposals, it also involves both Archaeologists and Conservation architects which further enhance my understanding of the History and it's context (see **Appendix 8**). Finally, architectural trips to visit many of the major European cities have further improved my knowledge and awareness of this subject.

Political - aspects inform the practice of Architectural Technology both nationally and internationally, as political decisions can impact directly on public sector budgets at national level and political decisions globally which can impact on world economies.

These global decisions in terms of trade agreements and tariffs that can be applied can have a direct impact on building materials and costs (i.e. steel/curtain walling prices etc.). Whilst nationally the level of confidence in the economy and the funding/grants available for developers can directly impact on Architecture and the wider construction industry.

Political decisions can also impact directly on our industry in situations like the Grenfell Tower Disaster where public opinion and concern can result in direct political action that results in work to existing building stock and future product specification through changes to Building Regulations/Technical Standards.

Personally, I have encountered the impact of political influence directly on the **XXXX** project when the European funding was unable to be provided to allow site start. This was due to issues with classification of the major projects through the with European funding, raised initially with the case of the Aberdeen by-pass it resulted in most major SFT projects being delayed until review by ONS, which led to delays in funding and programme for most major SFT projects.

A local experience of a political impact was on the **XXXX** Council Headquarter building which became the subject of political point scoring between the sitting political party and the opposition parties which eventually resulted in the project being abandoned.

Another impact of politics both nationally and internationally that is very topical is the Brexit issue. Whatever an individual's viewpoint the general consensus would appear to be that currently at least in the short term it's having a negative impact on the construction industry - caused directly by political decisions. Other potential impact on the industry of the political decision is immigration changes that could impact on staffing and resource availability.

Economy – is closely linked to the politics, however issues specific to the economy are market confidence levels, strength of the pound and interest rates which can all have a direct impact on public and private spending and the availability of funding to construction.

In terms of strength of the pound this exchange rate can have a direct effect to construction projects which I have personally experienced on the **XXXX** project, when the change in exchange rate over a six-month period led to huge uplift in the curtain walling package with materials and fabrication taking place in Europe. This was a significant risk on the project and demonstrated the direct impact of strength of the pound on construction projects.

Social - The quality and design of the buildings we construct can have a significant impact on the building inhabitants, we must ensure that the design process considers all aspects important to the end users and addresses them in the final design. The influence of society on the construction industry through both public perception of architecture both good and bad and society's continuously evolving requirements from buildings directly impacts on Architectural Technology.

An example of design progressing without sufficiently considering the community and societies requirements would be the **XXXX** Inner city Redevelopment in the 1950's aimed to clear almost 100,000 dwellings and relocate 60 per cent of the affected population elsewhere. Some were moved to new communities within the city boundaries, mainly the four peripheral "townships" of Castlemilk, Drumchapel, Easterhouse and Pollok.

However, the relocation proved to be flawed, with an urgency in house building where success was based on the number of houses built. This led to the provision of amenities being put on hold until the necessary houses were built. People were placed in housing estates the equivalent size of many towns in Scotland, but with none of the facilities to match.

Environmental understanding commenced during my early college modules (environmental design factors/building services 2) which provided an initial understanding. This has been significantly enhanced

over the years from dealing with both Sustainability specialists and BREEAM assessors on many of my previous projects and experiencing first-hand the direct impact this can have on Architectural Technology and the design process. This can be as simple as changing a specification to allow water saving type cisterns or as significant as fundamentally changing the ventilation strategy which impacts on elevations, floor to floor heights, ceiling voids, duct routes risers etc.

Technological – impact on Architectural Technology is constant and industry changing. My personal experience of technological advancements in design practices has led me from drawing board, to AutoCAD, then 3D modelling, to Revit / ADB software (**XXXX** – **Appendix 6.01**) to current BIM level 2 information used to check models and co-ordination between disciplines (**XXXX** – **Appendix 10**), the benefits of moving with the times to embrace new technology and advancements that are available is undeniable.

Other technological aspects such as use of online portals for document / drawing management and federated models being available remotely. Even developing communication technology such as e-mails, PDFs, mobile phone picture and video technology for use with snagging applications and tools have had significant impact on the industry.

From my own personal experience of being instrumental on changing attitudes from working on drawing boards to computer workstations, the further changes that have occurred even in my working life are astounding and proof that in this industry we cannot stand still and must utilise new technology to our benefit where we can.

an ability to problem solve and to identify appropriate methodologies to deal with complex problems and realise design into built form through the generation of detailed design solutions that respond to familiar, unfamiliar and unpredictable situations;

The ability to problem solve is a fundamental part of my job role and has further developed through the experiences and project's that I have been involved with throughout my career.

I believe this ability has been demonstrated through the successful delivery of my projects over the years. In architectural practice I always found that with various considerations such as affordability, programme, aesthetics, buildability, functionality, fire strategy and health and safety being influenced by even a single element of design especially with complex problems, taking a holistic approach always helped to find the optimum solution.

The first principle of resolving complex problems and realising design into built form is to fully understand the available options and alternative methodologies that are viable as a solution. In the past this has been achieved through keeping my own knowledge current (through CPD and on the job learning) but also through collaboration with specialist sub-contractors and consultants to benefit from the larger combined knowledge base. With the combined experience of previous projects and alternative methodologies which may be applicable this allows consideration of all options and ensures that the best solution is selected.

Developing design into the built form through detailed design solutions has been demonstrated in many of my previous projects such as **XXXX**, where significant consideration was provided to overcome issues with movement joints in the concrete frame due to size of building, façade fixings to end of PT concrete slabs and introduction of new penetrations in the PT slab through late client changes.

Whilst my perspective has changed since working for a main contractor, I still continue to work with design teams and bring together specialist supply chain members to engage with them to solve problems and identify methodologies on projects.

Another benefit of working on main contracting side is access to operational staff, commercial staff and Planners. They can often advise on alternative construction options and impact in terms of affordability, buildability and programme. This understanding often allows a more costly solution to be considered which can in turn be offset in terms of programme benefit and still be affordable within the project budget. This can

allow consideration of alternative methodologies that the design team may have themselves discounted in term of cost implications.

an ability to successfully complete substantial sustainable and inclusive design and research projects, systematic review or systematic case study informed by wider current understandings in the subject.

Through early design phases on most projects especially in more recent times, substantial consideration is given to the design being sustainable and inclusive. While this should be a consideration on all good design projects these elements have been given more prominence through BREEAM requirements, especially on major public sector and private sector projects. Also, the introduction of Disability Discrimination Act in 1995 and then the Equality act 2010 which has led to changes in the Building Regulations and Scottish Technical Standards that must be considered in the design process to provide a compliant design.

In terms of research projects and case studies, these were carried out on two of my example projects (**XXX**/ **XXX**) through detailed research of the Building Bulletins for schools (particularly BB93 for acoustic requirements and BB98 for secondary school design and BB100 for Fire Safety) to ensure that the proposed design solutions would meet the requirements and guidance of the Building Bulletins as well as complying with the statutory standards.

Case studies were also carried out for the client team on the **XXXX** project in terms of options for Low and Zero carbon technologies to be used on the project (which dictated viable BREEAM credits to be targeted on the project) This is demonstrated in the enclosed report for use of Earth Tubes on the project (see **Appendix 4.15**). We also carried out extensive reviews and case studies on the **XXXX** project on the benefits of Concrete frame vs a steel frame solution and provided examples of projects using each type of solution and arranged site visits for the client to review. (see **Appendix 5.07**)

As part of all feasibility and concept design stages there is usually a requirement to carry out such research and provide case studies for the client / design team/ contractor whether it be to confirm which kind of Low and Zero carbon technologies could be used and if they are suitable for the site in question (i.e. ground source heat pumps may not be suitable to some sites dependant on the specific ground conditions) or to decide what if any BREEAM level is to be targeted on a project. This information will help the client to make an informed decision on setting fundamental parameters and requirements to allow the project design to progress.

an awareness of building elements, components, systems, and methods used for different building typologies;

During my early years at day release in college the modules for construction technology, building materials, building services, architectural design technology all provided me with an initial awareness of components, systems and methods for differing building types.

Subsequent to leaving college the experience of working on projects of varying types and sector has provided a further understanding and awareness. Full extent of differing building types are covered in detail in my CV (see **Appendix 2**) and have included work in demolition projects, refurbishment projects, extensions and new build projects. The sectors worked in are Research buildings, Hospitals, Further Education, Secondary education, Primary education, Residential, Retail, Hotels, Offices, Leisure and sports facilities, Art galleries and Industrial buildings.

The type of site and existing factors on many of my previous projects has raised my awareness for the need for different components, systems and methods. As previous projects have been on heavily contaminated ground (**XXXX project**), directly above Subway lines (**XXXX Street project**), over rail tunnels that were Network Rail assets (**XXXX project** and **XXXX National Gallery refurbishment**), on historic listed buildings (**XXXX refurbishment/XXXXproject /XXXXRefurbishment**) as well as projects that were carried out in live

environments (**XXXX Refurbishment / XXXX Hub project/ XXXX /XXXX, the majority of schools**) it has enhanced my awareness.

This experience and varying project type and sites have exposed me to a great deal of alternative methods, components and systems over my career, some examples of which are listed below.

The use of "rubber anti-vibration mountings" was required on the residential development at **XXXX** Street which was situated directly above the Glasgow underground tunnel. These were introduced to the substructure to mitigate the vibration from the underground trains being felt in the flats and the retail units above.

Similar principles were developed on the Haymarket project to ensure that the trains running below the site in the Network rail tunnels would not be felt in the office buildings above. This was developed with input from acoustician, design team and specialist sub-contractor (**XXX**) to provide an acoustic and vibration isolation between the floor structure, frame and lift shafts passing through the floors.

On other projects I have been fortunate enough to be able to work with some uncommon components and methods and some nonstandard construction elements. In terms of structural frames, I've experience on projects with timber kits/ Steel frame/Concrete frame structures. I have experienced of working with post tensioned slabs (**XXXX**), Piled solutions (**XXX**/ **XXX**), Pod solutions for Hotels and Student residences (**XXXX**&**XXX** bid), Unitised curtain walling solutions on commercial offices (**XXX**), Swimming pool construction (**XXX/ XXX**, **XXX** Clubs), **XXX** construction (**XXX** Hub, **XXX** Centre at the **XXX**).

These experiences and exposure to alternative methods and construction techniques have I believe increased my experience and understanding which allows me to better understand some of the inherent issues and benefits of each element which improves my ability to detail and specify these elements in future.

It has been insightful working for the main contractor to see things from a slightly differing viewpoint, in terms of the greater emphasis put on aspects such as Programme, Buildability, Health and safety, engagement with specialist supply chain. This new perspective combined with previous knowledge and understanding hopefully provides me with a far more rounded knowledge and understanding.

an awareness of current topics and practices which inform the discipline of Architectural Technology including new and emerging technologies;

I believe that my awareness of current topics, practices and emerging technologies is currently very informed. However, as the practices and technology are constantly evolving, we cannot allow our understanding and knowledge to stand still. My personal approach to keeping my awareness current is by continuing to learn through multiple sources. This is usually through CPD, personal research, seminars, training events & interaction with consultants and contractors.

In my current role at Interserve I personally arrange many of the CPD seminars and training events for the Regional business. This provides a good opportunity to keep aware of new technologies or practices and any changes to guidelines, Technical Standards or legislation. Notable CPD seminars amongst others have been the SER changes to Building warrant process, Summary of the outcome of the Cole Report into the brick ties issue in the historic Edinburgh schools (See CPD records for details – **Appendix 3**). I continue to arrange seminars that are topical or align with current project on a regular basis to improve the knowledge within our business and to upskill our workforce.

Being involved in multiple tender submissions also allows me the opportunity for involvement in more projects which allows introduction to new products/practices. This occurs either through initial design and specification by the Design Team or when investigating potential tender benefits through engagement of our specialist sub-contractors and wider supply chain that will often suggest or introduce me to new practices within the industry.

Continuously reading trade literature and publications (such as Architects Journal and Building Design) helps me to keep up to date with new practices or topics within Architectural Technology.

Use of many of the online portals for drawing and information management with capabilities to support central storage and access to the federated model on projects are emerging technologies which are continuously improving and adding benefit to the industry (products such as Oracle/Viewpoint/Project Vault etc.)

Finally attending external conferences and training courses improves my knowledge and awareness of new technologies that could provide benefit or enhancements. An example of this approach was meetings arranged with Multi-Vista to gain a better understanding of their product and the benefits it can bring to aspects of the design and construction process.

Other new technologies such as snagging tools such as **XXXX** own CDA system and Autodesk BIM 360 Glue and Field applications have also proven their worth to the industry.

Further new technologies such as the Trimble virtual reality goggles were investigated in more detail at **XXXX** recent Digital Day seminar (See CPD records for details – **Appendix 3**) which brought together a number of technology firms to demonstrate their products and new technologies and their value to the design and construction process.

an awareness of project and design management, project procurement and process, construction and contract management;

While many of the listed elements were covered initially in my college modules (i.e. construction contract procedure, Building Law 1 & 2) my knowledge in these subjects has been more fully developed through practical experience gained throughout my career and on the job learning.

In terms of design management, as a project lead on almost all of my projects in private practice, the experience of managing the design process and ensuring the flow of information is provided in line with programme and co-ordination is carried out both internally and within the wider design team, I believe shows my awareness. Following my change in career direction more recently working as a design manager, my understanding and awareness of this aspect has I believe increased further.

Considering my awareness and understanding of Construction and contract management, with experience of leading projects under a variety of JCT contracts for both Traditional and Design and Build contracts as well as involvement in projects managed under the NEC3 contracts. I believe that this has given me the appropriate level of awareness and understanding.

Having performed the role of Contract Administrator on my previous **XXX** School project, I carried out all appropriate actions, covering change control, issuing Architects instructions, determining extension of time claims, issuing Practical completion certificates and end of defects certificates on the project.

In my more recent role at **XXX** Construction we often provided clients advice on alternative procurement routes and options on both **XXX** Hub frameworks and **XXX** frameworks as vehicles to procure their projects within the OJEU requirements to allow funding to be provided.

Through this experience, my earlier formal learning and subsequent seminars and training I believe that my awareness of these aspects meet the requirements.

an ability to identify hazards and risks and develop and maintain safe systems of work and legal and relevant legislation and regulatory frameworks;

On all of my projects over the years the process of undertaking design risk assessments to manage and where possible design out risks has been a fundamental part of the design process. Along with other members of the design team and the principal designer (or previously CDM-C / Planning Supervisor) a full risk assessment for the project is carried out with all risks evaluated for likelihood (probability) and severity.

Under the CDM 2015 regulations all designers have a duty to manage risks by eliminating them completely or minimising them to an acceptable level. Risks should either be "designed out" or, if that is not reasonably practicable, mitigated to reduce and control risk through subsequent design processes.

A designer's decisions can fundamentally affect the health and safety of those who will construct, maintain, repair, clean, refurbish and eventually demolish a structure.

My ability to identify hazards and risks has developed with my experience and experience of similar risks repeating on many projects. However, reviews of construction publications and case studies of previous situation that have arisen or where risk has been addressed have also provided a further insight.

As well as the requirements under the CDM regulations we also have a duty to ensure that our design considers and addresses aspects of technical standard compliance as well as considering the building user's future maintenance access and cleaning access requirements of the buildings that we design have been fully considered.

an ability to develop critical discussion and analysis of complex concepts and to work independently with some originality and as a member of a team identifying personal development needs and to plan to meet these needs through relevant and appropriate methods.

Throughout my career I have progressed through increasing levels of responsibility on projects, firstly working as part of a team on a project under control by others (during my time at **XXXX & XXX**), then working on my own smaller projects (**XXXX** School, **XXX** Street, **XXX** Hotel refurbishment, **XXX** Infirmary etc.), to finally managing a teams of various sizes up to eight staff in latter projects at **XXXX** (**XXX** Community Centre, **XXX** Campus, **XXX** Campus **XXX**).

On all of my projects there has been a need to work independently to resolve design issues that have arisen during the design and construction process, as well as situations where there is a requirement to work with internal team members or external consultants to analyse and develop specific design solutions to resolve complex concepts.

The very nature of the design process ensures that all Architectural staff and particularly Architectural Technicians are able to work both as part of a team and independently to develop initial design proposals and to co-ordinate them with the wider design team to achieve the optimum solution for any specific project.

In terms of identifying personal development needs, this is something I have carried out for my staff during my time in architectural practice and subsequently with my technical staff since working for a main contractor. This is carried out through regular meetings and discussions as well as yearly staff appraisals where we discuss areas for improvement or potential training or courses that could assist them to carry out their roles.

In a similar manner, I also review my own personal development and assess what I could do to further

improve my knowledge and experience within this ever-changing industry. Currently in my case my learning tends to be more informal rather than set CPD workshops and structured training courses. It can be as simple as arranging site visits when new or unusual elements of works are taking place to witness installations or new techniques that I have not previously seen, to improve my understanding and knowledge of the activity (i.e. piling installations, extensive temporary works installations etc.) This type of learning is supplemented by close relations with our specialist supply chain and regularly meeting with them on current projects and tenders to assess if there are better or easier methodologies or products to benefit the design and construction process.

Conclusion

As with most people with similar experience in the industry, my formal education whilst providing a good basis and grounding in the industry has largely been overtaken through experiences of projects especially on site and dealing closely with contractors and sub-contractors looking to continuously improve the way in which we design and construct buildings to provide benefits in all aspects i.e. Health & Safety, durations and programme, cost, efficiency, resource, quality etc.

However, we all need to be wary of the current experience gained being overtaken by developing construction methodologies and technology as well as changes to legislation and standards.

As an industry I believe we all have a duty to continue to learn and that even after nearly thirty years in the industry “every day is still a school day” as learning of new methods, products or technologies continues to be important to keep our knowledge current.

Due to the responsibility placed on me throughout my career and the size of projects successfully delivered, through experience & knowledge developed over almost thirty years in the industry, I believe that this demonstrates I have achieved the educational requirement set by CIAT.