QUALIFICATION HANDBOOK

SVQ in Built Environment Design Management at SCQF Level 9

Qualification reference number: **GM3J 49**

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1. Introduction

1.1 This qualification has been developed to seek to ensure that those that wish to seek employment within built environment design management meet minimum requirements of technical competence and health and safety.

1.2 These requirements have been specified in the National Occupational Standards (NOS) developed by the Sector Skills Council (SSC) Construction Skills in liaison with employers and industry/ sector representatives. This qualification is based upon those NOS and incorporates the Qualification Structure approved by SQA Accreditation.

1.3 Successful completion of this qualification will allow candidates to show they have sufficient knowledge, understanding and skills to demonstrate competence in the management of built environment design.

1.4 This Handbook provides the information required to assist approved centres in delivering the qualification and preparing candidates for assessment. This includes some template forms that may be used / adapted by centres. Note that you are able to create your own, or use existing forms for this purpose. Alternatively QFI makes its E-Portfolio system available to its approved centres.

This document should be read in conjunction with QFI's policies and the Centre Handbook.

2. Qualification objective(s)

2.1 The qualification is suitable for apprentices / those already in employment that wish to develop their knowledge and skills in managing design of the built environment.

2.2 In order to do this, the qualification covers technical and health and safety standards, and supports roles relating to the managing the design of the built environment.

3. Progression

3.1 This qualification is primarily designed to allow candidates to progress to employment in roles relating to the management of the design of the built environment. Successful completion of this qualification may therefore lead to employment in built environment design management.

3.2 Candidates complete a total of 10 units, five of which are mandatory. Additionally, candidates must complete two technical optional units and three management units.

3.3 Completion of a number of units may enable the candidate to become multi-skilled, which may increase employment/ progression opportunities.

3.4 Candidates achieving this qualification may also wish to progress to higher level qualifications such as those aimed at supervisory/ management roles, e.g.

- CMI level 5 Award in Leadership and Management
- AVA level 5 Certificate in Management
- City & Guilds level 5 Certificate in Project Management Skills

3.5 Candidates may also choose to undertake qualifications in more generic subjects such as a health and safety in the workplace, e.g.

- Award in Health and Safety in a Construction Environment at SCQF level 4

4. Entry requirements

4.1 Candidates must be at least 18 years of age to be able to undertake this qualification.

4.2 Those that will be driving construction vehicles as part of their chosen pathway/ additional units must hold a full driving licence.

4.3 There are no other specific entry requirements, though the National Careers Service does recommend physical fitness.

4.4 Candidates taking this qualification must be made fully aware of what this entails. Centres must be satisfied that candidates have the experience and skills and will have sufficient assessment opportunities within their job role to provide evidence of competence for this qualification. Where this may not be the immediate case, candidates should check with their employer whether they are able to go out with departmental or immediate job role boundaries to gain the necessary assessment opportunities.

4.5 A sample induction checklist is included at Appendix 1.

5. Qualification structure

5.1 The structure for this qualification is set by the Sector Skills Council Construction Skills and approved by SQA Accreditation.

5.2 To achieve this qualification candidates must achieve 10 units to include:

- 5 mandatory units
- 2 optional technical units
- 3 optional management units

Mandatory Units

All candidates must complete the following <u>five units</u>

SSC code	Title of mandatory unit (must complete all four units)	SCQF level	SCQF credits
COSBEDMO01 V2	Prepare development team programmes and working methods in built environment design management	9	13
COSBEDMO02 V2	Develop and advise on design recommendations in built environment design management	9	22
COSBEDMO03	Develop and agree detailed design information in built environment design management	9	40
COSBEDMO21	Manage health and safety risks in built environment design development	9	14
COSBEDMO04	Develop and maintain professional relationships and practice in built environment design management	9	23

Plus <u>two</u> of the following technical units:

SSC code	Title of mandatory unit (must complete one unit)	SCQF level	SCQF credits
COSBEDMO05	Investigate and assess development options in built environment design management	9	22
COSBEDMO09	Conduct condition surveys in built environment design management	9	18
COSBEDMO10	Investigate development factors and solutions in built environment design management	9	14
COSBEDMO11	Specify, manage and analyse tests in built environment design management	9	16
COSBEDMO12	Establish regulatory requirements and secure consents in built environment design management	9	16
COSBEDMO14	Prepare specifications in built environment design management	9	14
COSBEDMO22	Assess and confirm alternative project energy sources and mechanisms in built environment design management	9	17
COSBEDMO23	Produce and recommend integrated conservation, repair and maintenance solutions in built environment design management	9	12

Plus <u>three</u> of the following management units:

SSC code	Title of mandatory unit (must complete one unit)	SCQF level	SCQF credits
COSBEDMO06	Manage the brief, development programme and project risks and opportunities in built environment design management	9	15
COSBEDMO07	Confirm project requirements and needs in built environment design management	9	14
COSBEDMO08	Form and induct a project team in built environment design management	9	13
COSBEDMO13	Manage project information and document requirements in built environment design management	9	14
COSBEDMO15	Obtain and select tenders in built environment design management	9	14
COSBEDMO16	Prepare and submit tenders in built environment design management	9	20
COSBEDMO17	Prepare and agree forms of contract in built environment design management	9	14
COSBEDMO18	Control projects in built environment design management	9	22
COSBEDMO19	Manage project completion and handover in built environment design management	9	16
COSBEDMO20	Develop self and other people in built environment design management	9	12
COSBEDMO24	Monitor budgets and contribute to improving services in built environment design management	9	12
COSBEDMO25	Manage project building information modelling protocols in built environment design management	9	18

All units are included in Appendix 2 of to this document.

6. Assessment

6.1 Roles and responsibilities

There are a number of people involved in the assessment process and the role of each needs to be clearly understood by each.

- Candidates – must familiarise themselves with the content of the units that they are taking and how these are to be assessed. They should co-operate with the assessment process, looking for opportunities to evidence the elements and gathering evidence where this arises. Candidates must take on board feedback from their assessor and work with their assessor to develop realistic plans for assessment. An Assessment Plan and Review template is included at Appendix 3.

- Assessors - must familiarise themselves with the content of the units that they are assessing and how these are to be assessed. They must assist candidates in identifying assessment opportunities, gathering, and presenting evidence. Assessors must assess all elements and record these assessments. Templates for recording elements, and for unit achievement, are at Appendix 4. Assessors must feedback and work with candidates to identify any gaps and develop realistic plans for assessment. They must also work with the Internal Verifier and External Verifier to ensure a common standard of assessment.

- Internal Verifiers – sometimes known as Internal Quality Assurers (IQAs), their role is to ensure that the assessment process is appropriate, consistent, fair and transparent; that assessors receive on-going support and that they are assessing to a common standard; and that awards are valid, reliable and consistent. IVs must develop a strategy that includes standardisation activities such as reviewing samples of evidence from each assessor, and countersigning the decisions of unqualified assessors.

- External Verifiers - sometimes known as External Quality Assurers (EQAs), are appointed by QFI and are independent of the centre. Their role is to check that internal processes are in place to ensure robust, consistent assessment. This includes sampling assessment evidence.

6.2 SCQF level 9 descriptors

This qualification is pitched at SVQ level 2/ SCQF level 5. The following are descriptions of what a candidate should be able to do or demonstrate at SCQF level 5. These are for guidance only – it is not expected that every point will be covered.

Knowledge and understanding

Demonstrate and/or work with: An understanding of the scope and defining features of a subject/discipline/sector, and an integrated knowledge of its main areas and boundaries; A critical understanding of a range of the principles, principal theories, concepts and terminology of the subject/discipline/sector; Knowledge of one or more specialisms that is informed by forefront developments.

Applied knowledge, skills and understanding

Apply knowledge, skills and understanding: In using a range of the principal professional skills, techniques, practices and/or materials associated with the subject/discipline/sector; In using a few skills, techniques, practices and/or materials that are specialised and/or advanced; In practising routine methods of enquiry and/or research; To practise in a range of professional level contexts that include a degree of unpredictability.

Generic cognitive skills

Undertake critical analysis, evaluation and/or synthesis of ideas, concepts, information and issues in a subject/discipline/sector; Identify and analyse routine professional problems and issues; Draw on a range of sources in making judgements.

Communication, IT and numeracy skills

Use a wide range of routine skills and some advanced and specialised skills in support of established practices in a subject/discipline/sector, for example: Present or convey, formally and informally, information on standard/mainstream topics in the subject/discipline/sector to a range of audiences; Use a range of ICT applications to support and enhance work; Interpret, use and evaluate numerical and graphical data to achieve goals/targets.

Autonomy, accountability and working with others

Exercise autonomy and initiative in some activities at a professional level in practice or in a subject/discipline/sector; Exercise managerial responsibility for the work of others and for a range of resources; Practise in ways that show awareness of own and others' roles and responsibilities; Work, under guidance, with specialist practitioners; Seeking guidance where appropriate, manage ethical and professional issues in accordance with current professional and/or ethical codes or practices.

6.3 The assessment process

Assessment for this qualification, and for individual units that comprise the qualification, must take place in accordance with '*Construction Skills Consolidated Assessment Strategy for Construction and the Built Environment: Craft, Supervisory, Technical, Managerial and Professional National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs)'* (published December 2016, approved by ACG February 2017).

This document translates the requirements of the assessment strategy and gives guidance to ensure that centres meet these.

Centres delivering the qualification must ensure that assessors and Internal Verifiers are aware of the assessment strategy and how to access this. External Verifiers may check this requirement during monitoring visits to centres.

Assessment involves the following key stages: planning; producing evidence; assessing evidence; recording. Each of these is considered in more detail below.

6.3.1. Planning

The assessor must create an Assessment Plan with each candidate that he/ she will be assessing. The Assessment Plan will need to be reviewed as the candidate progresses through the units. A template for assessment planning and review is at Appendix 3 of this document.

A wide range of assessment methods exist that can be used to assess knowledge and skills. Methods of assessment that are commonly used for assessing competence based qualifications such as N/SVQs include the following:

- Product evidence – this relates to the outcome of the candidate's work, and the actual product that is generated as a result of their work.
- Direct observation – where an assessor (or credible witness) will directly observe the candidate undertaking certain tasks/ creating products that occur as part of their role. Observations must be referenced to the elements covered
- Question/ answer – these will often supplement the methods above, for example the assessor may ask the candidate a number of questions whilst they are undertaking a task. Questioning is a useful way to establish knowledge and to generate evidence of this
- Witness testimony – credible witnesses may be identified who can for example testify that the candidate can successfully undertake certain tasks
- Personal statement – declaration made by the candidate that should be referenced to elements

Centres should ensure that their Assessors use the methods above to assess candidates for this qualification.

Template assessment documents including an Assessor Report can be found at Appendix 3.

6.3.2 Producing evidence

The methods of assessment must generate evidence to demonstrate the candidates' competence. Evidence produced in the workplace is central to Construction Skills Consolidated Assessment Strategy. Workplace evidence is vital to ensuring that the candidate is competent to industry standards and a suitable way of recording this must be used.

The following indicates the type of evidence generated by the methods on the section above:

- Product evidence –Photographic or video evidence is often used to record this, or it may also be recorded via the method below. Labelled photographs and/or videos that clearly show the candidate are sources of evidence for this purpose.
- Direct observation –observations must be recorded via an Assessor or other report (e.g. witness statement)
- Question/ answer –both the questions and the candidate's responses to these must be recorded either in writing or via some audio or visual device (e.g. part of a video recording).
- Witness testimony – this may be written, audio or visual recordings
- Personal statement – the declaration made by the candidate must be recorded

All of the above must be referenced to the evidence that they cover.

Templates that may be used for recording evidence are at Appendix 3. QFI's E-Portfolio system may also be used for this purpose.

Feedback should be given to the candidate on an on-going basis and where there are any gaps or shortfalls in evidence then these should be incorporated into the Assessment Plan.

Assessment must meet the requirements of the performance criteria, knowledge and understanding documented for each unit of assessment. Methods of assessment must ensure coverage of all elements, scope and range, and generate sufficient evidence to demonstrate competence.

A holistic approach towards the collection of evidence is encouraged. The focus should be on assessing activities generated by the whole work experience rather than focusing on specific tasks. This would show how evidence requirements could be met across the qualification to make the most efficient use of evidence.

Direct evidence produced through normal performance in the workplace is the primary source for meeting these requirements. This includes naturally occurring evidence, direct observation of activities and witness testimony as relevant, all of which must be recorded.

Workplace evidence must be supported by the required evidence of knowledge and understanding. This evidence may be identified by:

- questioning the candidate
- recognised industry education and training programme assessment or professional interview assessment that has been matched to NOS requirements
- performance evidence/ completed work

All of which must be recorded and made available for verification purposes.

Simulation

Evidence for competence qualifications must be work-based. Simulation for this qualification is only allowed for items detailed below. For a competence outcome, simulation must be conducted in accordance with the Construction Consolidated Assessment Strategy.

Simulation is acceptable for:

UNIT COSBEDMO12

Simulations are considered to be acceptable for producing evidence for the following items(s) which are considered to be rare, but key/critical to demonstrating competence.

Product Evidence:

(1) Appeal(s) against a refusal to grant a consent

(2) Record(s) of appeal negotiations

(3) Record(s) of proposals which have been changed following the results of appeals

Process Evidence:

(1) appeal negotiations

The following conditions of realism should be present

- Contingencies
- Standards and quality specifications
- Communication methods and media
- Information and data

6.3.3 Assessing evidence

Evidence must be assessed against the units/ elements to establish whether the candidate is competent with regards to their performance and knowledge. In order to achieve the qualification candidates must achieve a 'pass'. The evidence must show that the candidate consistently (i.e. on more than one occasion) meets all of the elements across the scope/range of each unit.

If there is insufficient evidence to make this judgement then plans must be made as to how the candidate can produce further evidence in order to demonstrate competence.

Assessors must check that the evidence produced is sufficient in volume, relevant and current. They must also be confident that the evidence has been generated by the candidate. Assessors and candidates normally sign documentation to declare that the evidence produced is that of the candidate and no other.

6.3.4 Recording evidence

Evidence (or reference to where certain evidence is located) is normally kept in a portfolio. This may be paper-based or electronic. All evidence contained within the portfolio must be clearly referenced to the units and elements. Candidates' progress can therefore be tracked. Note that certain pieces of evidence can be recorded across more than a single element. Tracking is important to show where this is that case.

It is helpful to give each piece of evidence a number so that this can be mapped across elements. See the template forms at Appendix 4. Assessment decisions made against the evidence must also be recorded so that an IV or an EV can see these. All evidence must be kept for internal and external verification.

7. Assessors

7.1 The occupational competence of assessors is defined '*Construction Skills Consolidated Assessment Strategy for Construction and the Built Environment: Craft, Supervisory, Technical, Managerial and Professional National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs)'* (published December 2016, approved by ACG February 2017).

7.2 The roles and responsibilities of assessors is outlined in the section above. Assessors must competent to perform their role and either hold the qualifications needed to carry out assessment – or achieve within 18 months of commencing their role:

- D32 or D33
- A1
- Level 3 Award in Assessing Competence in the Work Environment
- Level 3 Award in Assessing Vocationally Related Achievement
- Level 3 Certificate in Assessing Vocational Achievement
- an appropriate Assessor qualification as identified by SQA Accreditation

Assessors must also:

- have a sound, in-depth knowledge of, and uphold the integrity of, the relevant NOS and Assessment Strategy to enable them to carry out assessment to the standards specified
- have the occupational expertise (craft/ trade specific) before commencing their role so they have up to date experience, knowledge and understanding of the particular aspects of work they are assessing
- only assess in their acknowledged area of occupational competence
- maintain the currency of this for the duration of their role
- know QFI's requirements for recording assessment decisions and maintaining assessment records

7.3 Holders of A1 and D32/33 must assess to the current National Occupational Standards (NOS) for Learning and Development.

7.4 Assessors must be registered with QFI. The **Centre Handbook** provides details.

7.5 The assessment decisions of unqualified assessors must be countersigned by the IV.

8. Internal verification

8.1 Centres' internal assessment processes and practices must be effective and support the integrity and consistency of the qualification. This is achieved through the internal quality assurance that is undertaken by the approved centre, and the external quality assurance that is undertaken by QFI. Centres must operate explicit, written internal quality assurance procedures to ensure:

- the accuracy and consistency of assessment decisions between assessors operating at the centre
- that assessors are consistent in their interpretation and application of the qualifications or unit(s) learning outcomes

8.2 Centres must appoint IVs who will be responsible for:

- regular sampling evidence of assessment decisions made by all assessors across all aspects of assessment for the qualification. Sampling must include direct observation of assessment practice
- maintaining up-to-date records of IV and sampling activity (what was evidence was sampled or assessors / IV observed where there is more than one) and ensuring that these are available for external quality assurance
- establishing procedures to ensure that all assessors interpret the learning outcomes in the same way
- monitoring and supporting the work of assessors
- facilitating appropriate staff development and training for assessors
- providing feedback to the EV on the effectiveness of assessment
- ensuring that any corrective action required by QFI is carried out within agreed timescales.

8.3 Centres must ensure that the decisions of unqualified IVs are checked, authenticated and countersigned by an IV who is appropriately qualified and occupationally expert. QFI will monitor a centre's compliance with these requirements through monitoring visits and certification claims.

8.4 The IV is also responsible and accountable for arranging the checking and countersigning process. IVs may verify only evidence that they did not assess themselves. Further guidance on internal quality assurance/verification is provided in

the **Centre Handbook**. Appendix 5 of this document indicates suggested content for an IV strategy, and a template for sampling assessment evidence.

9. Internal verifiers

9.1 The occupational competence of IVs is defined in '*Construction Skills Consolidated Assessment Strategy for Construction and the Built Environment: Craft, Supervisory, Technical, Managerial and Professional National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs)'* (published December 2016, approved by ACG February 2017).

9.2 The roles and responsibilities of IVs is outlined above. IVs must competent to perform their role and either hold the qualifications needed to carry out internal verification – or achieve within 18 months of commencing their role:

- D34
- V1
- Level 4 Award in the Internal Quality Assurance of the Assessment Process and Practice
- Level 4 Certificate in Leading the Internal Quality Assurance of Assessment Process and Practice
- an appropriate Internal Verifier qualification as identified by SQA Accreditation

9.3 It is strongly recommended that IVs also hold assessor qualifications (see section above).

9.4 Holders of V1/D34 must quality assure to the current National Occupational Standards (NOS) for Learning and Development.

9.5 IVs must be registered with QFI. The **Centre Handbook** provides details.

10. External verification

10.1 External verification of this qualification ensures that the requirements are met for the '*Construction Skills Consolidated Assessment Strategy for Construction and the Built Environment: Craft, Supervisory, Technical, Managerial and Professional National Vocational Qualifications (NVQs) and Scottish Vocational Qualifications (SVQs)'* (published December 2016, approved by ACG February 2017).

10.2 Centre visits will normally take place on an annual basis, though these could be more frequent if deemed necessary as a result of QFI's risk assessments. The **Centre Handbook** provides further details on external verification including to prepare for centre visits.

QFI's appointed External Verifiers meet the requirements of the assessment strategy.

11. Certification

11.1 Note that there is a lapsing period of two years for this qualification. This means that when the qualification expires, is withdrawn or replaced by a revised version, candidates registered have two years from the expiry date in which to complete the qualification. This will allow sufficient time for candidate's to compete and allow for currency of evidence.

12. Equality and diversity

12.1 This qualification must be assessed in English.

12.2 Assessment must be inclusive and where appropriate reasonable adjustments made to ensure equality of access in line with QFI's Equality and Diversity Policy. Full details are included in the QFI Centre Handbook**.**

12.3 Special consideration is not normally given for competence based qualifications as it is necessary for candidates to demonstrate that they have the necessary skills and knowledge to achieve the qualification and operate safely in the workplace.

12.4 Equality data will be collected at the point of registration. This is for monitoring purposes only and will include age, gender, ethnicity, and disability.

13. Fees

13.1 The current fees for this qualification, and for individual units, are included in the QFI Fees and Invoicing document. This document also details what is/ is not included in fees.

13.2 Fees may be broken down to a reasonable level upon request to QFI.

APPENDIX 1 - CANDIDATE TEMPLATE DOCUMENTS

Sample Form
Induction checklist

This document indicates what may be covered as part of a candidate's induction. This list is not exhaustive.

	Tick
Qualification information: • Units • Structure • Summary of assessment • Awarding body	
Roles and responsibilities: • Candidate • Assessor • Internal Verifier • External Verifier	
Training and assessment process: • Planning • Collection of evidence (including methods) • Review of evidence • Feedback on evidence • Verification of evidence • Certification	
Policies: • Complaints • Appeals • Malpractice • Data protection • Health and safety • Equality (including reasonable adjustments/ additional support)	
Forms: • Enrolment • Other	
I confirmation that I have received this induction and the associated documents: Candidate name: …….. Candidate signature: ……..… Date: ……	

APPENDIX 2

UNITS

MANDATORY UNITS

COSBEDMC01
Prepare development team programmes and working methods in built environment design management

Overview:

This unit is concerned with preparing to undertake a design for a project. Candidates must know about relevant current legislation e.g. building regulations and DDA. It is about analysing the project brief and agreeing a design programme. You must be able to demonstrate knowledge of the design brief; you must have knowledge and skills in project programming, and be able to produce a design programme that meets the needs of the stakeholders. You must have the personal competence to present this programme to the stakeholders, and agree it with them.
It is about your personal skills in engaging the project team in the work to be done, and in managing their performance to best effect. You must be able to demonstrate your communication skills; how you allocate work, and agree design methods and techniques with your team. You must be able to motivate and coach your team members; and how to give them feedback on their performance.

Performance criteria - you must be able to:

Prepare a development programme which meets the requirements of the project brief
P1 check and confirm with stakeholders that the information in the brief is adequate, accurate and clearly states the project development requirements
P2 analyse the requirements of the brief and check and clarify initial assumptions about the project development programme with stakeholders
P3 develop a realistic outline development programme for the project stages which takes account of identified constraints
P4 discuss the outline development programme with stakeholders and agree any necessary modifications to the brief, outline development programme, or constraints
P5 prepare, present and agree a development programme which meets the requirements of the brief and the expectations of stakeholders

Establish and monitor project team working methods
P6 prepare a strategy for the project which makes the best use of the capabilities of all project team members
P7 develop clear arrangements which will enable the project team to meet the requirements of the development brief and schedules throughout the project stages
P8 set up arrangements to achieve effective communication within the team
P9 set up and agree with the project team members appropriate and realistic methods for project implementation, evaluation, modification and updating
P10 identify areas needing investigation and agreeing a realistic timescale and costs with the project team
P11 motivate, coach and involve project team members to maximise and integrate their contributions to the project
P12 monitor the progress of the project team and provide project team members with feedback on progress and agreeing necessary actions

Knowledge and understanding - you need to know and understand:

Prepare a development programme which meets the requirements of the project brief
K1 how to check and confirm with stakeholders that the information in the brief is adequate and accurate and that the requirements are clearly stated (application)
K2 how and why to analyse the requirements of the brief (analysis)
K3 how to check and clarify the initial assumptions about the project design programme in the brief (application)
K4 how and why to develop a realistic outline design programme (synthesis)
K5 how and why to discuss the design programme with stakeholders (synthesis)
K6 how and why to agree any necessary modifications to the brief, outline design programme, or constraints (evaluation)
K7 how and why to prepare and present a design programme which meets the requirements of the brief and the expectations of stakeholders (synthesis)
K8 how and why to agree a design programme which meets the requirements of the brief and the expectations of stakeholders (evaluation)

Establish and monitor project team working methods
K9 how and why to prepare a strategy for the project (synthesis)
K10 how and why to develop arrangements which will enable the project team to meet the requirements of the development brief and schedules (synthesis)
K11 how and why to set up arrangements to achieve effective communication between stakeholders (synthesis)
K12 how and why to set up methods for project implementation, evaluation, modification and updating (synthesis)
K13 how and why to agree with the team members methods for project implementation, evaluation, modification and updating (evaluation)
K14 what to identify as the areas needing investigation (understanding)
K15 how and why to agree a realistic timescale and costs with the project team (evaluation)
K16 how to motivate project team members (application)
K17 how and why to coach, and involve project team members (synthesis)
K18 how and why to monitor the progress of the project team (analysis)
K19 how to provide project team members with feedback progress (application)

Additional information
Scope/range
Prepare a development programme which meets the requirements of the project brief
1. Stakeholders 1.1. the client 1.2. design consultants 1.3. potential contractors 1.4. potential subcontractors and suppliers 1.5. facilities/asset managers 1.6. user groups 1.7. partners in the development programme
2. Development programme: 2.1. timetable 2.2. phasing 2.3. interaction between design consultants 2.4. critical path 2.5. key project stages/gate management plan 2.6. interface between design, procurement, construction, operation and end use 2.7. deliverables
3. Project stages: 3.1. Stage 0 (Strategy) 3.2. Stage 1 (Brief) 3.3. Stage 2 (Concept) 3.4. Stage 3 (Definition) 3.5. Stage 4 (Design) 3.6. Stage 5 (Build and Commission) 3.7. Stage 6 (Handover and Closeout) 3.8. Stage 7 (Operations and End of Life)
4. Constraints: 4.1. work content 4.2. time duration/sequencing 4.3. resources available
5. Present: 5.1. orally 5.2. in writing 5.3. graphically 5.4. electronically
6. Expectations: 6.1. specification 6.2. design quality 6.3. timetable Establish and monitor project team working methods

7. Project team: 7.1. value for money 7.2. design and development consultants 7.3. potential contractors 7.4. potential subcontractors and suppliers 7.5. facilities/asset managers 7.6. client 7.7. partners in the development programme
8. Requirements of the development brief and schedule: 8.1. objectives and targets 8.2. key decision stages 8.3. scheduling and timetabling 8.4. delivery of documentation 8.5. statutory approvals 8.6. team meetings 8.7. procurement 8.8. level of design refinement at different stages 8.9. concurrent design and construction 8.10. level of risk/confidence
9. Project stages: 9.1. Stage 0 (Strategy) 9.2. Stage 1 (Brief) 9.3. Stage 2 (Concept) 9.4. Stage 3 (Definition) 9.5. Stage 4 (Design) 9.6. Stage 5 (Build and Commission) 9.7. Stage 6 (Handover and Closeout) 9.8. Stage 7 (Operations and End of Life)
10. Arrangements to achieve effective communication: 10.1. oral 10.2. written 10.3. reports 10.4. organisation and minuting of team meetings and actioning outcomes 10.5. key liaison personnel 10.6. electronic data transfer/information management 10.7. working across discipline boundaries 10.8. project execution plan 10.9. contingency arrangements
11. Methods for project implementation, evaluation, modification and updating: 11.1. responsibilities 11.2. format 11.3. content 11.4. indexing 11.5. distribution 11.6. reviewing 11.7. resolving conflicts 11.8. revising 11.9. quality control 11.10.storage 11.11.security 11.12.retrieval 11.13.statutory approvals 11.14.integration of data
12. Monitor: 12.1. exchanging and coordinating information 12.2. record management 12.3. time 12.4. cost control 12.5. earn value analysis 12.6. checks and approvals 12.7. gate management plan 12.8. meetings 12.9. reporting 12.10.risk management 12.11.value engineering 12.12.whole life principles

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Originating organisation: ConstructionSkills (CIC)
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Relevant occupations: Architects; Civil Engineers; Graphic Designers; Architectural Technologists; Town Planning Technicians; Building Surveyors
Suite: Built Environment Design Management
Key words: Brief; Design; Team

COSBEDMC02
Develop and advise on design recommendations in built environment design management

Overview:

This unit covers the first phase of the design process. It is about taking all the necessary project factors into account, and agreeing the effect that they will have on the design. It is about selecting and refining design options and choosing the best ones. You must be able to develop design options which are appropriate to the project stage. This process will impact on the design brief; it will involve an iterative approach to finalising both the brief and the design options. You must bring your team with you, and satisfy the decision makers. It is about presenting your design choices to interested parties, and getting their response and buy-in. You must be able to demonstrate your powers of presentation, influence and persuasion, backed up by sound technical and professional judgement. It is about reporting back to the stakeholders, and making the necessary modifications

to the design. You must be able to justify your decision following the presentation of your design choices, and demonstrate your technical and professional mettle in negotiating agreements with the stakeholders.

Performance criteria - you must be able to:

Identify and assess significant factors which affect project design solutions
P1 obtain agreed briefing information and identify design parameters which are relevant to the project stage
P2 analyse the design parameters and identify and analyse significant factors which may influence existing and anticipated development
P3 format and collate data and conclusions from the analysis and circulate the documents to project team members
P4 select design options for further development with the project team which appear to meet the requirements of the project stage and take into consideration the significant factors
P5 agree recommendations with the project team
P6 advise the client on the most appropriate courses of action

Create design options
P7 identify existing design approaches which are potentially consistent with the project stage and likely to lead to appropriate solutions, and select those which are most likely to contribute to design ideas
P8 obtain new sources of information and ideas, where existing design approaches do not meet the design parameters of the brief, which have the potential to suggest new and innovative design options
P9 discuss the selected design options with project team members, assess their observations and note them for future reference
P10 develop the design options which appear to have the greatest potential for success so that they are capable of being tested
P11 select and commission appropriate tests which will give valid and relevant information about the design option
P12 implement, monitor and record tests so that the validity of the design options is maintained, and match the results to significant parameters of the brief
P13 refine design options which meet the design parameters of the brief and testing them repetitively until their ability to meet them is clearly established
P14 reject design options which fail to meet the design parameters and identify more suitable design approaches
P15 recommend modifications to the brief in order to consider selected options and approaches which may meet the design parameters, but fail to meet all the design brief requirements
P16 assess the implications of modifying the design brief so that the overall integrity is retained
P17 record feasible design options accurately and present them in sufficient detail so that decision makers can select design options

Prepare and present project design recommendations
P18 choose presentation methods and techniques which make the best use of resources and have the potential to communicate design ideas clearly appropriate to the project stage
P19 agree with the client and the project team the purpose of the presentation and the audience
P20 choose and agree effective presentation media and techniques which will communicate design ideas clearly
P21 prepare clear and accurate presentational materials which support the design options and use them to facilitate discussions
P22 present and explain the project design recommendations clearly and objectively and show how they are justified by the requirements of the brief
P23 present the project design recommendations in a way which promotes the goodwill and trust of the audience

P24 encourage the audience to ask questions, ask for clarification and to make comments at appropriate stages in the presentation and provide additional information to ensure their understanding
P25 provide valid evidence to support design recommendations which do not meet all the requirements of the brief
P26 define, agree and record amendments and variations to the brief and/or design, which are required by the client and can be demonstrated

Advise on the selection and modification of design recommendations
P27 identify those elements of designs which meet the requirements of the original design brief and those that do not
P28 agree and record the variations to the design brief and to the design proposals which resulted from the presentations and which the client requires
P29 advise stakeholders on the implications of accepting, modifying or rejecting design proposals appropriate to the project stage and ensure that they understand their consequences
P30 advise stakeholders on how much more advice, research and consultancy is needed to produce a project design which is acceptable
P31 confirm with the stakeholders whether the design recommendation is accepted, modified or rejected

Knowledge and understanding - you need to know and understand:

Identify and assess significant factors which affect project design solutions
K1 how to obtain agreed briefing information which is relevant to the project stage (application)
K2 what to identify as design parameters which are relevant to the project stage (understanding)
K3 how and why to analyse the design parameters and significant factors which may influence existing and anticipated development (analysis)
K4 what to identify as significant factors which may influence existing and anticipated development (understanding)
K5 how to format and collate data and conclusions from the analysis and circulate the documents to project team members (application)
K6 how and why to select design options for further development with the project team which appear to meet the requirements of the project stage and take into consideration the significant factors (evaluation)
K7 how and why to agree recommendations with the project team (evaluation)
K8 how and why to advise the client on the most appropriate courses of action (synthesis)

Create design options
K9 what to identify as existing design approaches that are potentially consistent with the project stage and likely to lead to appropriate solutions, and select those which are most likely to contribute to design ideas (understanding)
K10 how to obtain new sources of information and ideas, where existing design approaches do not meet the design parameters of the brief, which have the potential to suggest new and innovative design options (application)
K11 how and why to discuss the selected design options with project team members (synthesis)
K12 how and why to assess their observations and note them for future reference (analysis
K13 how and why to develop the design options which appear to have the greatest potential for success so that they are capable of being tested (synthesis)
K14 how and why to select and commission appropriate tests which will give valid and relevant information about the design option (evaluation)
K15 how to implement tests so that the validity of the design options is maintained, and match the results to significant parameters of the brief (application)
K16 how and why to monitor tests so that the validity of the design options is maintained, and match the results to significant parameters of the brief (analysis)

K17 how to record tests so that the validity of the design options is maintained, and match the results to significant parameters of the brief (application)
K18 how to refine design options which meet the design parameters of the brief and testing them repetitively until their ability to meet them is clearly established (application)
K19 how and why to reject design options which fail to meet the design parameters and identify more suitable design approaches (evaluation)
K20 how and why to recommend modifications to the brief in order to consider selected options and approaches which may meet the design parameters, but fail to meet all the design brief requirements (synthesis)
K21 how and why to assess the implications of modifying the design brief so that the overall integrity is retained (analysis)
K22 how to record feasible design options accurately and present them in sufficient detail so that decision makers can select design options (application)

Prepare and present project design recommendations
K23 how and why to choose presentation methods and techniques which make the best use of resources and have the potential to communicate design ideas clearly appropriate to the project stage (evaluation)
K24 how and why to agree with the client and the project team the purpose of the presentation and the audience (evaluation)
K25 how and why to choose and agree effective presentation media and techniques which will communicate design ideas clearly (evaluation)
K26 how to prepare clear and accurate presentational materials which support the design options and use them to facilitate discussions (application)
K27 how to present and explain the project design recommendations clearly and objectively and show how they are justified by the requirements of the brief (application)
K28 how to present the project design recommendations in a way which promotes the goodwill and trust of the audience(application)
K29 how to encourage the audience to ask questions, ask for clarification and to make comments at appropriate stages in the presentation and how do you provide additional information to ensure their understanding (application)
K30 how to provide valid evidence to support design recommendations which do not meet all the requirements of the brief (application)
K31 how and why to define and agree amendments and variations to the brief and/or design, which are required by the client and can be demonstrated (evaluation)
K32 how to record amendments and variations to the brief and/or design, which are required by the client and can be demonstrated (application)

Advise on the selection and modification of design recommendations
what to identify as those elements of designs which meet the requirements of the original design brief and those that do not (understanding)
K34 how and why to agree the variations to the design brief and to the design proposals which resulted from the presentations and which the client requires (evaluation)
K35 how to record the variations to the design brief and to the design proposals which resulted from the presentations and which the client requires (application)
K36 how and why to advise stakeholders on the implications of accepting, modifying or rejecting design proposals appropriate to the project stage and ensure that they understand their consequences (synthesis)
K37 how and why to advise stakeholders on how much more advice, research and consultancy is needed to produce a project design which is acceptable (synthesis)
K38 how and why to confirm with the stakeholders whether the design recommendation is accepted, modified or rejected (application)

Additional information

Scope/range

Identify and assess significant factors which affect project design solutions

1. Design parameters: 1.1. client, user and community requirements, expectations, options and preferences 1.2. project type/purpose/use 1.3. site, location and surrounding environment 1.4. geology (seismology, ground movements and soil type) 1.5. transport and infrastructure 1.6. planning, urban & social integration 1.7. design form (architectural, structural, civil, services) 1.8. design quality (character/scale/aesthetics) 1.9. function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 1.10. programme budget 1.11. cost (including whole life) 1.12. development timetable 1.13. risk assessment and mitigation 1.14. cost planning (including life cycle cost) and value management 1.15. procurement 1.16. in-use performance 1.17. environmental quality and sustainability 1.18. environmental assessment/certification schemes 1.19. energy and carbon 1.20. protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 1.21. statutory, regulatory and legal constraints 1.22. standards and codes of practice 1.23. health and safety 1.24. form, function, materials, components and systems 1.25. loose fit design – for flexibility/adaptability/deconstruction/disassembly 1.26. buildability 1.27. operation and maintenance

2. Project stage: 2.1. Stage 0 (Strategy) 2.2. Stage 1 (Brief) 2.3. Stage 2 (Concept) 2.4. Stage 3 (Definition) Create design options

3. Design approaches, new sources of information and ideas: 3.1. those which are suggested by the brief 3.2. previous knowledge and experience of similar work 3.3. solutions by others to similar problems 3.4. innovative thinking 3.5. review alternatives through interactive simulation and analysis 3.6. experts including experienced craftspeople 3.7. passive design principles 3.8. environmental assessment/certification schemes

4. Project stage: 4.1. Stage 0 (Strategy) 4.2. Stage 1 (Brief) 4.3. Stage 2 (Concept) 4.4. Stage 3 (Definition)

5. Design parameters: 5.1. client, user and community requirements, expectations, options and preferences 5.2. project type/purpose/use 5.3. site, location and surrounding environment 5.4. geology (seismology, ground movements and soil type) 5.5. transport and infrastructure 5.6. planning, urban, social integration 5.7. design form (architectural, structural, civil, services) 5.8. design quality (character/scale/aesthetics) 5.9. function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 5.10. programme budget 5.11. cost (including whole life) 5.12. development timetable 5.13. risk assessment and mitigation 5.14. cost planning (including life cycle cost) and value management 5.15. procurement 5.16. in-use performance 5.17. environmental quality and sustainability 5.18. environmental assessment/certification schemes 5.19. protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 5.20. statutory, regulatory and legal constraints 5.21. standards and codes of practice 5.22. health and safety 5.23. form, function, materials, components and systems 5.24. loose fit design - for flexibility/adaptability/deconstruction/disassembly 5.25. buildability 5.26. operation and maintenance

6. Tests: 6.1. comparative 6.2. consultative 6.3. mathematical modelling 6.4. physical modelling 6.5. simulation 6.6. physical testing 6.7. value engineering 6.8. interaction of buildings & people 6.9. decision tools for passive/active systems 6.10. model costs of variant designs

7. Present: 7.1. orally 7.2. in writing 7.3. graphically 7.4. electronically

8. Decision makers: 8.1. the client 8.2. financial advisers 8.3. consultants; 8.4. potential contractors and suppliers 8.5. potential investors 8.6. partners in the development programme 8.7. facilities/asset managers 8.8. potential occupiers/users 8.9. regulatory authorities 8.10. public interest organisations

Prepare and present project design recommendations

9. Presentation methods: 9.1. documentary 9.2. design quality benchmarking analysis 9.3. comparative studies with similar projects 9.4. illustrated oral presentations 9.5. computer modelled simulations 9.6. public exhibition

10. Project stage: 10.1. Stage 0 (Strategy) 10.2. Stage 1 (Brief) 10.3. Stage 2 (Concept) 10.4. Stage 3 (Definition)

11. Audience: 11.1. the client 11.2. the client's financial advisers 11.3. design consultants 11.4. potential contractors 11.5. potential subcontractors and suppliers 11.6. facilities/asset managers 11.7. potential investors 11.8. funding agencies 11.9. independent client advisers 11.10. partners in development programme 11.11.

user groups 11.12. prospective occupiers and users 11.13. community groups 11.14. regulatory authorities 11.15. public interest organisations 11.16. media
12. Presentation media: 12.1. sketches 12.2. drawings and projections 12.3. physical models 12.4. computer generated data 12.5. diagrams 12.6. mathematical modelling 12.7. photo-montage 12.8. mock-ups 12.9. written reports 12.10.simulation computer models
Advise on changes to the design brief and design recommendations
13. Advise: 13.1. in writing 13.2. orally 13.3. using graphics 13.4. electronically
14. Stakeholders: 14.1. the client 14.2. the clients financial advisers 14.3. design consultants 14.4. potential contractors 14.5. potential subcontractors and suppliers 14.6. facilities/asset managers 14.7. potential investors 14.8. funding agencies 14.9. independent client advisers 14.10. partners in development programme 14.11. user groups 14.12. prospective occupiers and users 14.13. community groups 14.14. regulatory authorities 14.15. public interest organisations 14.16. media
15. Implications: 15.1. cost 15.2. the programme 15.3. performance 15.4. design quality 15.5. best value 15.6. buildability 15.7. health and safety 15.8. environment 15.9. sustainability 15.10.facilities/ asset management
16. Project stage: 16.1. Stage 0 (Strategy) 16.2. Stage 1 (Brief) 16.3. Stage 2 (Concept)

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COSBEDMC03
Develop and agree detailed design information in built environment design management

Overview:

This unit is concerned with carrying out detailed designs and is the technical heart of the award. Candidates must know about relevant current legislation e.g. building regulations and DDA. This award also recognises the paramount importance of health and safety requirements as well as welfare, and environmental sustainability issues. It is about ensuring that all aspects of the design process are integrated. You must be able to take an overview of the process and set up a system which will produce a holistic design that is coherent and consistent. It is about deciding what materials, components and systems will incorporate the finished product. You must have a deep knowledge of the available options, and be able to make informed choices. This standard will challenge your technical competence. It is about producing the details of the design solution. You must be able to demonstrate your accountability for any work you delegate to others. It is about agreeing with the stakeholders what you have done so far. You must report on progress to date, justify the decisions you have taken, and gain people's trust and support.

Performance criteria - you must be able to:

Identify the purpose, methods and techniques for preparing detailed design information

P1 agree with the stakeholders the uses for the production and installation design information appropriate to the project stage
P2 choose a format for presenting the production and installation production and installation information which meets the requirements of the stakeholders
P3 identify the aspects of the overall project design which require production and installation design information
P4 identify the aspects of the overall project design which interact with each other, and agree ways to maintain coherence and consistency between all aspects of the production and installation design information
P5 set up procedures which will maintain coherence and consistency between the production and installation solutions and the overall design concept
P6 select techniques which are suitable for investigating, calculating, testing, developing and specifying production and installation design information which are consistent with best industry practice and which conform to relevant codes of practice and standards
Identify and select materials, components and systems P7 identify and investigate the technical, environmental, production and installation factors which are relevant to the project stage
P8 prioritise the technical, environmental, production and installation factors of the agreed design
P9 assess whether existing design solutions which contain similar technical, environmental, production and installation factors might be relevant
P10 identify and assess the potential of new materials, components and systems to meet technical, environmental, production and installation factors
P11 select materials, components and systems which meet the identified technical, environmental, production and installation factors and standards
P12 choose the solutions which best meet the significant technical, environmental, production and installation factors, evaluate them against the requirements of the agreed design parameters and keep records of them for the project team

Investigate, produce and analyse detailed design solutions
P13 identify relevant technical, environmental, production and installation factors and data which are likely to influence the production and installation solution and assess their significance as appropriate to the project stage
P14 analyse and prioritise the factors which will influence the production and installation solution and resolve any conflicts between the different factors
P15 agree and apply criteria for selecting and producing production and installation solutions against design parameters
P16 record the data from calculations, investigations and analysis and arrange for appropriate checking
P17 assess the technical, environmental, production and installation solutions against all relevant factors, and recheck the results
P18 select the preferred production and installation solutions and present them to stakeholders
P19 maintain records of production and installation solutions which have not been selected but which might be useful in other projects

Integrate the design of fabric, services and systems
P20 collate and review relevant design information appropriate to the project stage which cover parts of the overall design solution, clarify any design information which is not clear and ensure that it is updated
P21 identify those parts of the fabric, services and systems that interact with each other and potentially require greater care in integration to achieve sound construction
P22 identify relevant technical, environmental, production and installation factors to be taken into account in design processes and review their implications to achieve sound construction
P23 identify potential issues posed by new technologies and their impact on the design solution and make arrangements for any necessary guidance, training and co-ordination of those responsible for implementing the work

P24 agree and communicate particular methods to be used in design processes to take account of technical, environmental, production and installation factors and issues posed by new technologies
P25 organise and control design processes and resources to meet technical, environmental, production and installation factors and issues posed by new technologies and ensure compliance with contract and regulatory requirements

Agree a detailed design
P26 provide stakeholders with relevant and accurate information appropriate to the project stage to review production and installation solutions
P27 assess and justify the features and benefits of the recommended production and installation solution
P28 compare the recommended production and installation solution with the requirements of the agreed brief and justify its selection
P29 confirm with the stakeholders the implications of implementing the recommended production and installation solutions
P30 reach an agreement on the production and installation solution which is acceptable to the stakeholders and which allows the project to progress to the next project stage

Knowledge and understanding - you need to know and understand:

Identify the purpose, methods and techniques for preparing detailed designs
K1 how and why to agree with the stakeholders the uses for the production and installation design information appropriate to the project stage (evaluation)
K2 how and why to choose a format for presenting the production and installation design information which meets the requirements of the stakeholders (evaluation)
K3 what to identify as the aspects of the overall project design which require production and installation design information (understanding)
K4 what to identify as the aspects of the overall project design which interact with each other, and agreeing ways to maintain coherence and consistency between all aspects of the production and installation design information (understanding)
K5 how and why to set up procedures which will maintain coherence and consistency between the production and installation solutions and the overall design concept (evaluation)
K6 how and why to select techniques which are suitable for investigating, calculating, testing, developing and specifying production and installation design information which are consistent with best industry practice and which conform to relevant codes of practice and standards (evaluation)

Identify and select materials, components and systems
K7 what to identify as the technical, environmental, production and installation factors which are relevant to the project stage (understanding)
K8 how and why to investigate the technical, environmental, production and installation factors which are relevant to the project stage (analysis)
K9 how and why to prioritise the technical, environmental, production and installation factors of the agreed design (analysis)
K10 how and why to assess whether existing design solutions which contain similar technical, environmental, production and installation factors might be relevant (analysis)
K11 what to identify as the potential of new materials, components and systems to meet technical, environmental, production and installation factors (understanding)
K12 how and why to assess the potential of new materials, components and systems to meet technical, environmental, production and installation factors (analysis)
K13 how and why to select materials, components and systems which meet the identified technical, environmental, production and installation factors and standards (evaluation)

K14 how and why to choose the solutions which best meet the significant technical, environmental, production and installation factors (evaluation)
K15 how and why to evaluate solutions against the requirements of the agreed design parameters (evaluation)
K16 how to keep records of them for the project team (application)

Investigate, produce and analyse detailed design solutions
K17 what to identify as relevant technical, environmental, production and installation factors and data which are likely to influence the production and installation solution (understanding)
K18 how and why to assess the technical, environmental, production and installation factors and data their significance as appropriate to the project stage (analysis)
K19 how and why to analyse and prioritise the factors which will influence the production and installation solution (analysis)
K20 how and why to resolve any conflicts between the different factors (synthesis)
K21 how and why to agree criteria for selecting and producing production and installation solutions against design parameters (evaluation)
K22 how to apply criteria for selecting and producing production and installation solutions against design parameters (application)
K23 how to record the data from calculations, investigations and analysis and arrange for appropriate checking (application)
K24 how and why to assess the technical, environmental, production and installation solutions against all relevant factors, and recheck the results (analysis)
K25 how and why to select the preferred production and installation solutions and present them to stakeholders (evaluation)
K26 how to maintain records of production and installation solutions which have not been selected but which might be useful in other projects (application)

Integrate the design of fabric, services and systems
K27 how to collate relevant design information appropriate to the project stage which cover parts of the overall design solution, clarify any design information which is not clear and ensure that it is updated (application)
K28 how and why to review relevant design information appropriate to the project stage which cover parts of the overall design solution (analysis)
K29 what to identify as parts of the fabric, services and systems that interact with each other and potentially require greater care in integration to achieve sound construction (understanding)
K30 what to identify as relevant technical, environmental, production and installation factors to be taken into account in design processes (understanding)
K31 how and why to review the implications of technical, environmental, production and installation factors to achieve sound construction (analysis)
K32 how and why to identify potential issues posed by new technologies and their impact on the design solution (synthesis)
K33 how to make arrangements for any necessary guidance, training and co-ordination of those responsible for implementing the work (application)
K34 how and why to agree particular methods to be used in design processes to take account of technical, environmental, production and installation factors and issues posed by new technologies (evaluation)
K35 how to communicate particular methods to be used in design processes to take account of technical, environmental, production and installation factors and issues posed by new technologies(application)
K36 how and why to organise design processes and resources to meet technical, environmental, production and installation factors and issues posed by new technologies and ensure compliance with contract and regulatory requirements (synthesis)
K37 how and why to control design processes and resources to meet technical, environmental, production and installation factors and issues posed by new technologies and ensure compliance with contract and regulatory requirements (evaluation)

Agree a detailed design
K38 how to provide stakeholders with relevant and accurate information appropriate to the project stage to review production and installation solutions (application)
K39 how and why to assess the features and benefits of the recommended production and installation solution (analysis)
K40 how and why to justify the features and benefits of the recommended production and installation solution (evaluation)
K41 how and why to compare the recommended production and installation solution with the requirements of the agreed brief and justify its selection (synthesis)
K42 how to confirm with the stakeholders the implications of implementing the recommended production and installation solutions (application)
K43 how and why to reach an agreement on the production and installation solution which is acceptable to the stakeholders and which allows the project to progress to the next project stage (evaluation)

Additional information
Scope/range
Identify the purpose, methods and techniques for preparing detailed designs
1. Stakeholders: 1.1. the client 1.2. consultants 1.3. potential contractors 1.4. potential subcontractors and suppliers 1.5. regulatory authorities 1.6. facilities/asset managers 1.7. users
2. Project stage: 2.1. Stage 4 (Design) 2.2. Stage 5 (Build and Commission)
3. Format for presenting: 3.1. in writing 3.2. graphically 3.3. electronically
4. Aspects of the overall project design: 4.1. location and size 4.2. assembly and construction 4.3. components and systems 4.4. environmental assessment objectives
5. Maintain coherence and consistency: 5.1. visual and spatial 5.2. functional performance 5.3. technical performance 5.4. operation and maintenance 5.5. requirements of relevant legislation and codes 5.6. cost 5.7. health and safety 5.8. environmental quality and sustainability 5.9. buildability/disassembly 5.10. value management 5.11. concurrent design and construction 5.12. comparison of costs of new and renewable energy systems in buildings 5.13. building services system controls 5.14. minimise thermal bridging and air leakage 5.15. minimize emissions and waste 5.16. water usage 5.17. energy use (U Value Calculations, Building Energy Assessment, Carbon Rating) 5.18. protect archaeological and historically valuable resources 5.19. carbon footprint 5.20. risk/confidence in information
6. Techniques: 6.1. data research 6.2. survey and investigation 6.3. conformity with regulations 6.4. specialist guidance and good practice 6.5. relevant previous solutions and feedback 6.6. computer modelling 6.7. calculation 6.8. Building Information Modelling
Identify and select materials, components and systems
7. Technical factors: 7.1. structural forms 7.2. materials and component performance standards and fitness for purpose (form, performance, appearance, availability, sustainability, efficiency of use, component life, durability) 7.3. available and projected technology (including renewable energy) 7.4. prefabricated components and system options 7.5. performance, quality, operation and maintenance requirements 7.6. building physics (energy performance of structures, insulation, fire protection) 7.7. materials form, performance, appearance, availability, sustainability, efficiency of use 7.8. building services integration and control
8. Environmental factors: 8.1. local ecology 8.2. hydrology (tides and currents and flood risk 8.3. water use 8.4. exposure/shelter/shading 8.5. heating, ventilation and cooling (solar gain, temperature range, natural ventilation, thermal and ventilation performance, thermal flows) 8.6. thermal properties (heat loss and SAP variables, U values, thermal bridging, air tightness) 8.7. daylight and illumination 8.8. acoustics 8.9. energy; natural resource use and management 8.10. interaction of users and buildings, 8.11. carbon (embodied and in-use) and carbon rating 8.12. resource/waste management 8.13. pollution risk and reduction of emissions and waste

9. Production and installation factors: 9.1. construction requirements and compatibility with site constraints 9.2. adaptation of existing structural elements 9.3. practicality, buildability and disassembly 9.4. standardisation and component co-ordination 9.5. production and installation processes, scheduling, lead-in times, construction programming/sequencing and quality control 9.6. expertise including experienced crafts people 9.7. fit and tolerances 9.8. production resources availability and performance (plant/equipment/people/skills) 9.9. materials, components and systems availability and capability 9.10. strategies to address interface issues on and off-site 9.11. access/transportation/traffic management 9.12. health and safety 9.13. system commissioning 9.14. operation and maintenance information
10. Project stage: 10.1. Stage 4 (Design) 10.2. Stage 5 (Build and Commission)
11. Identify and assess: 11.1. options for compliance 11.2. compatibility with design brief & related design choices 11.3. potential benefits (whole life costs, quality time, energy/low carbon)
12. Standards: 12.1. British Standards and Codes of Practice 12.2. BBA certificates 12.3. EU Standards 12.4. trade advisory guidance publications 12.5. BRE publications 12.6. CIRIA publications 12.7. client standards 12.8. environmental assessment/certification schemes
13. Design parameters: 13.1. client, user and community requirements, expectations, options and preferences 13.2. project type/purpose/use 13.3. site, location and surrounding environment 13.4. geology (seismology, ground movements and soil type) 13.5. transport and infrastructure 13.6. planning, urban social integration 13.7. design form (architectural, structural, civil, services) 13.8. design quality (character/scale/aesthetics) 13.9. function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 13.10.programme budget 13.11.cost (including whole life) 13.12.development timetable 13.13.risk assessment and mitigation 13.14.cost planning (including life cycle cost) and value management 13.15.procurement 13.16.in-use performance 13.17.environmental quality and sustainability 13.18.environmental assessment/certification schemes 13.19.protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 13.20.statutory, regulatory and legal constraints 13.21.standards and codes of practice 13.22.health and safety 13.23.form, function, materials, components and systems 13.24.loose fit design - for flexibility/adaptability/deconstruction/disassembly 13.25.buildability 13.26.operation and maintenance
Investigate, produce and analyse detailed design solutions
14. Identify: 14.1. standard lists and procedures 14.2. investigative research 15. Technical factors: 15.1. structural forms 15.2. materials and component performance standards and fitness for purpose (form, performance, appearance, availability, sustainability, efficiency of use, component life, durability) 15.3. available and projected technology (including renewable energy) 15.4. prefabricated components and system options 15.5. performance, quality, operation and maintenance requirements 15.6. building physics (energy performance of structures, insulation, fire protection) 15.7. materials form, performance, appearance, availability, sustainability, efficiency of use 15.8. building services integration and control
16. Environmental factors: 16.1. local ecology 16.2. hydrology (tides and currents and flood risk 16.3. water use 16.4. exposure/shelter/shading 16.5. heating, ventilation and cooling (solar gain, temperature range, natural ventilation, thermal and ventilation performance, thermal flows) 16.6. thermal properties (heat loss and SAP variables, U values, thermal bridging, air tightness) 16.7. daylight and illumination 16.8. acoustics 16.9. energy; natural resource use and management 16.10.interaction of users and buildings, 16.11.carbon (embodied and in-use) and carbon rating 16.12.resource/waste management 16.13.pollution risk and reduction of emissions and waste
17. Production and installation: 17.1. construction requirements and compatibility with site constraints 17.2. adaptation of existing structural elements 17.3. practicality, buildability and disassembly 17.4. standardisation and component co-ordination 17.5. production and installation processes, scheduling, lead-in times, construction programming/sequencing and quality control 17.6. expertise including experienced crafts people 17.7. fit and tolerances 17.8. production resources availability and performance (plant/equipment/people/skills) 17.9. materials, components and systems availability and capability 17.10.strategies to address interface issues on and off-site 17.11.access/transportation/traffic management 17.12.health and safety 17.13.system commissioning 17.14.operation and maintenance information
18. Data: 18.1. identified construction criteria 18.2. existing design solutions

19. Project stage: 19.1. Stage 4 (Design) 19.2. Stage 5 (Build and Commission)
20. Design parameters: 20.1. client, user and community requirements, expectations, options and preferences 20.2. project type/purpose/use 20.3. site, location and surrounding environment 20.4. geology (seismology, ground movements and soil type) 20.5. transport and infrastructure 20.6. planning, urban & social integration 20.7. design form (architectural, structural, civil, services) 20.8. design quality (character/scale/aesthetics) 20.9. function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 20.10.programme budget 20.11.cost (including whole life) 20.12.development timetable 20.13.risk assessment and mitigation 20.14.cost planning (including life cycle cost) and value management) 20.15.procurement 20.16.in-use performance 20.17.environmental quality and sustainability 20.18.environmental assessment/certification schemes 20.19.protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 20.20.statutory, regulatory and legal constraints 20.21.standards and codes of practice 20.22.health and safety 20.23.form, function, materials, components and systems 20.24.loose fit design - for flexibility/adaptability/deconstruction/disassembly 20.25.buildability 20.26.Investigations: 20.27.operation and maintenance 20.28.data research 20.29.conformity with regulations 20.30.specialist guidance and good practice 20.31.relevant previous solutions and feedback 20.32.computer aided analysis
21. Present: 21.1. orally 21.2. in writing 21.3. graphically 21.4. electronically
22. Stakeholders: 22.1. CDM Co-ordinator 22.2. financial advisers 22.3. consultants 22.4. potential subcontractors and suppliers 22.5. potential investors 22.6. facilities/asset managers 22.7. prospective occupiers Integrate the design of fabric, services and systems
23. Review: 23.1. with co-designers, suppliers, contractors 23.2. with experts, decision makers 23.3. research authoritative industry guidance 23.4. reference to regulatory requirements
24. Design information: 24.1. survey information 24.2. location details 24.3. construction assembly details 24.4. construction component details 24.5. structural layouts; details 24.6. building services layouts; details 24.7. specialist suppliers layouts; details 24.8. graphical and non-graphical electronic data files
25. Project Stage: 25.1. Stage 2 (Concept) 25.2. Stage 3 (Definition) 25.3. Stage 4 (Design) 25.4. Stage 5 (Build and Commission)
26. Fabric, services and systems: 26.1. structure 26.2. elements of the building 26.3. materials 26.4. finishes 26.5. furnishings 26.6. power and light 26.7. heating and ventilation 26.8. telecommunications 26.9. movement of goods and people 26.10.special services and equipment 26.11.external works 26.12.landscaping
27. Technical factors: 27.1. structural forms 27.2. materials and component performance standards and fitness for purpose (form, performance, appearance, availability, sustainability, efficiency of use, component life, durability) 27.3. available and projected technology (including renewable energy) 27.4. prefabricated components and system options 27.5. performance, quality, operation and maintenance requirements 27.6. building physics (energy performance of structures, insulation, fire protection) 27.7. materials form, performance, appearance, availability, sustainability, efficiency of use 27.8. building services integration and control
28. Environmental factors: 28.1. local ecology 28.2. hydrology (tides and currents and flood risk) 28.3. water use 28.4. exposure/shelter/shading 28.5. heating, ventilation and cooling (solar gain, temperature range, natural ventilation, thermal and ventilation performance, thermal flows) 28.6. thermal properties (heat loss and SAP variables, U values, thermal bridging, air tightness) 28.7. daylight and illumination 28.8. acoustics 28.9. energy, natural resource use and management 28.10.interaction of users and buildings, 28.11.carbon (embodied and in-use) and carbon rating 28.12.resource/waste management 28.13.pollution risk and reduction of emissions and waste
29. Production and installation factors: 29.1. construction requirements and compatibility with site constraints 29.2. adaptation of existing structural elements 29.3. practicality, buildability and disassembly 29.4. standardisation and component co-ordination 29.5. production and installation processes, scheduling, lead-in times, construction programming/sequencing and quality control 29.6. expertise including experienced crafts people 29.7. fit and tolerances 29.8. production resources availability and performance (plant/equipment/people/skills) 29.9. materials, components and systems availability and capability 29.10.strategies to address interface issues on and off-site 29.11.access/transportation/traffic management 29.12.health and safety 29.13.system commissioning 29.14.Issues posed by new technologies: 29.15.operation

and maintenance information 29.16.the logistics of assembling labour and materials for the execution of the works 29.17.ensuring compliance 29.18.achieve high levels of quality control and precision 29.19.accreditation requirements for workers and systems 29.20.integration and interaction between different materials, components, systems and finishes 29.21.what is required to achieve highly thermally efficient and airtight fabric 29.22.how to spot the most likely problems, e.g. identify thermal bridging 29.23.how to upgrade products to meet more stringent requirements
30. Work 30.1. new build 30.2. infrastructure 30.3. extension 30.4. alteration 30.5. refurbishment 30.6. conservation 30.7. retrofit 30.8. temporary works 30.9. installation 30.10.demolition
Agree a detailed design
31. Stakeholders: 31.1. the client 31.2. the client's financial advisers 31.3. consultants 31.4. potential contractors and suppliers 31.5. potential investors 31.6. partners in the development programme 31.7. potential occupiers 31.8. public interest organisations 31.9. local authorities 31.10.government agencies 31.11.internal 31.12.facilty/asset managers
32. Project stage: 32.1. Stage 4 (Design) 32.2. Stage 5 (Build and Commission)
33. Justify (by using): 33.1. sketches 33.2. drawings 33.3. physical models 33.4. diagrams 33.5. mathematical modelling 33.6. photo-montage 33.7. mock-ups 33.8. written reports 33.9. cost estimates 33.10.programming 33.11.cash analysis 33.12.outline approvals from regulatory authorities 33.13.design quality benchmarking analysis 33.14.3D computer models 33.15.lifetime impact modelling 33.16.decsion tools for passive/active systems 33.17.Implications: 33.18.building performance dynamic modelling 33.19.cost (including whole life) 33.20.resources 33.21.time 33.22.quality and technical 33.23.effectiveness

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COSBEDMO21
Manage health and safety risks in built environment design development

Overview:

This unit is about identifying the hazards arising from the design process, eliminating them where possible, and minimising the risks arising from any residual hazards. For the purposes of this Unit, a hazard is something with the potential to cause harm, and a risk is the likelihood of harm being caused, and the degree of its severity. The strategy for managing risk uses a hierarchy of eliminate/reduce/inform/control measures.

Performance criteria - you must be able to:

Review and assess health and safety hazards in design development
P1 check that clients are made aware of the relevant health and safety regulations, their obligations in relation to them and the advantages in complying with them
P2 collaborate with interested parties so that the designs comply with relevant health and safety regulations throughout the project stages P3 identify operations and individual activities that may give rise to hazards

P4 identify and prioritise the hazards arising from operations and individual activities
P5 obtain accurate information on any potential consequences resulting from the hazards
P6 assess the hazards to identify risks on an iterative basis throughout the development process

Make design choices to manage health and safety risks
P7 eliminate identified hazards whilst developing and modifying designs throughout the project stages
P8 reduce identified risks arising from hazards which are not eliminated when developing and modifying designs
P9 give collective measures priority over individual measures when reducing risks
P10 verify that the risk reduction measures comply with relevant health and safety regulations and guidelines
P11 record in design information any information needed by other people involved so that they can comply with their duties under relevant health and safety regulations

Knowledge and understanding - you need to know and understand:

Review and assess health and safety hazards
K1 how to check that clients are made aware of the relevant health and safety regulations, their obligations in relation to them and the advantages in complying with them (application)
K2 how and why to collaborate with interested parties so that the designs comply with relevant health and safety regulations throughout the project stages (synthesis)
K3 what to identify as operations and individual activities that may give rise to hazards (understanding)
K4 what to identify as the hazards arising from operations and individual activities (understanding)
K5 how and why to prioritise the hazards arising from operations and individual activities (analysis)
K6 how to obtain accurate information on any potential consequences resulting from the hazards (application)
K7 how and why to assess the hazards to identify risks on an iterative basis throughout the development process (analysis)

Make design choices to manage health and safety risks
K8 how to eliminate identified hazards whilst developing and modifying designs throughout the project stages (application)
K9 how and why to reduce identified risks arising from hazards which are not eliminated when developing and modifying designs (synthesis)
K10 how and why to give collective measures priority over individual measures when reducing risks (analysis)
K11 how to verify that the risk reduction measures comply with relevant health and safety regulations and guidelines (application)
K12 how to record in design information any information needed by other people involved so that they can comply with their duties under relevant health and safety regulations (application)

Additional information
Scope/range
Review and assess health and safety hazards
1. Clients: 1.1. customers 1.2. owners 1.3. users 1.4. occupiers
2. Relevant health and safety regulations: 2.1. CDM regulations and Approved Codes of Practice 2.2. current health, safety and welfare regulations 2.3. Construction and Building Regulations
3. Interested parties: 3.1. CDM co-ordinator 3.2. other designers 3.3. specialist advisors 3.4. clients 3.5. facility/asset managers 3.6. construction and construction managers 3.7. contractors and specialist contractors
4. Project Stages: 4.1. Stage 4 (Design) 4.2. Stage 5 (Build and Commission)
5. Operations and individual activities: 5.1. constructing (infrastructure, structure, building fabric, finishes, services and equipment, landscape) 5.2. using 5.3. cleaning 5.4. maintaining 5.5. altering 5.6. demolition 5.7. commissioning and decommissioning

6. Hazards: 6.1. falls from height 6.2. slips, trips and falls 6.3. hit by falling or moving objects 6.4. manual handling 6.5. health issues 6.6. power sources 6.7. hazardous substances 6.8. trapped by something collapsing or overturning 6.9. confined spaces 6.10. fire 6.11. obstructions 6.12. moving vehicles
7. Potential consequences: 7.1. injuring people 7.2. causing ill health 7.3. damaging property 7.4. adversely affecting the natural and built environment 7.5. contravening legislative requirements 7.6. litigation and prosecution 7.7. working conditions and circumstances, buildability
8. Assess: 8.1. likelihood of occurrence 8.2. severity of harm incurred
9. Risks: 9.1. high 9.2. medium 9.3. low
Make design choices to manage health and safety risks
10. Hazards: 10.1. falls from height 10.2. slips, trips and falls (same height) 10.3. hit by falling or moving objects 10.4. manual handling 10.5. health issues 10.6. power sources 10.7. hazardous substances 10.8. trapped by something collapsing or overturning 10.9. confined spaces 10.10.fire 10.11.obstructions 10.12.moving vehicles
11. Developing and modifying: 11.1. planning 11.2. investigation 11.3. verifying competence and resources 11.4. analysis 11.5. identifying interactions 11.6. calculation 11.7. testing 11.8. selecting materials, components and systems 11.9. detailing and specifying 11.10.consideration of costs and benefits (including lifestyle costing)
12. Designs: 12.1. infrastructure 12.2. structure 12.3. building fabric 12.4. prefabrication 12.5. finishes 12.6. services and equipment 12.7. landscape 12.8. temporary works
13. Project Stages: 13.1. Stage 4 (Design) 13.2. Stage 5 (Build and Commission)
14. Measures: 14.1. eliminate 14.2. reduce 14.3. inform 14.4. control
15. Risks: 15.1. high 15.2. medium 15.3. low
16. Design documentation: 16.1. drawings 16.2. specifications 16.3. models 16.4. calculations 16.5. Health and Safety Plans and Files
17. Relevant health and safety regulations and guidelines: 17.1. CDM regulations and Approved Code of Practice 17.2. current health, safety and welfare regulations 17.3. construction and Building Regulations
18. Other involved people: 18.1. contractors 18.2. operators 18.3. facility/asset managers 18.4. owners

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COSBEDMC04
Develop and maintain professional relationships and practice in built environment design management

Overview:

This unit is concerned with the integration of your personal and professional competence. It is about getting the best out of your relationships with other people. This is about emotional competence; being confident about your own control of yourself, the design itself and the project team, so that you can deal with the concerns of other people in a constructive way. It is about communicating technical information to other people, and ensuring that they understand it. You must be able to talk their language, and maintain their trust

in you and their support for your work. It is about identifying problems, producing alternative solutions, and recommending the best ones. The situation could be both a challenge and an opportunity. It is about working within appropriate codes of conduct. It is about managing meetings effectively. You must be able to agree the objectives of the meeting, manage the meeting to maximise everyone's contribution, summarise what has been achieved, and tell those who need to know

Performance criteria - you must be able to:

Develop and maintain relationships with other people
P1 develop, maintain and encourage working relationships with people which promote good will and trust
P2 inform people about work activities with an appropriate level of detail and degree of urgency
P3 offer advice and help to people about work activities with sensitivity and encourage questions, requests for clarification and comments
P4 present proposals for action clearly to people at an appropriate time and with the right level of detail for the degree of change, expenditure and risk involved
P5 clarify with people objections to proposals and suggest alternative proposals
P6 resolve conflicts and differences of opinion in ways which minimise offence, and maintain goodwill, trust and respect

Exchange information and present advice on technical issues
P7 obtain information which is sufficiently detailed for the purpose
P8 present technical information and advice which is complete, summarised accurately and relevant to technical issues
P9 present technical recommendations which are clear, accurate and valid, and which represent the best advice possible, given the information and resources available
P10 give technical instructions and guidance which are likely to be understood by the people who will follow them
P11 present technical information and advice using a style of communication which is appropriate to the the people receiving information and advice
P12 adapt and modify technical information where people have difficulties in understanding it

Identify, analyse and resolve complex situations
P13 identify where complex situations exist, estimate their effects and summarise the issues for the people who are affected and concerned
P14 assess the accuracy and completeness of the information available, identify any significant gaps and obtain additional information
P15 identify, describe and record the probable factors affecting the situations
P16 analyse the different perceptions of situations in order to produce resolutions
P17 apply aids and techniques which increase the reliability of the decisions and judgements
P18 identify ethical judgements using clear criteria and reasoned arguments which are likely to resolve the situation with the least disruption and risk
P19 justify, using clear criteria and reasoned arguments, ethical judgements which are likely to resolve the situation with the least disruption and risk
P20 recommend those judgements which offer the least disruption and risk
P21 record those judgements which offer the least disruption and risk

Practice within an ethical framework
P22 identify the limits of your professional expertise and work within them

P23 contribute to developing and maintaining a value base for one's organisation which considers the needs of the stake holders
P24 make judgements and offer advice which balance the needs of the client, the people in the community who are directly and indirectly affected and the resources available
P25 take clear and unequivocal personal responsibility for decisions
P26 disclose information obtained from clients only to people who have a right to receive it
P27 communicate with stakeholders in a style and manner which maintains professional independence and maximises goodwill and trust
P28 define and agree the terms of reference and the expectations of the people involved in contracts
P29 enter into formal and informal contracts and agreements for advisory and problem-solving services which conform to legal requirements, ethical standards and recognised good practice
P30 refuse offers and contracts which are illegal and which may generate conflicts of interest

Prepare for and chair meetings
P31 ensure that the appropriate people are invited to the meeting and given sufficient notice and information to allow them to contribute effectively
P32 ensure that everyone attending the meeting agrees the objective of the meeting at the start
P33 allocate discussion time to topics consistently with their importance, urgency and complexity
P34 maintain a style of leadership which helps those attending the meeting to make useful contributions
P35 discourage unhelpful arguments and digressions
P36 present information and provide summaries clearly, at appropriate points during the meeting to make useful contributions
P37 ensure that meetings achieve their objectives within the allocated time
P38 observe any formal procedures or standing orders that apply to the meeting
P39 check that decisions and action points are accurately recorded and promptly communicated to those who need to know
P40 evaluate whether the purpose and objectives of the meeting have been achieved and how future meetings could be made more effective

Knowledge and understanding - you need to know and understand:

Develop and maintain relationships with other people
K1 how and why to develop working relationships with people which promote goodwill and trust (synthesis)
K2 how to maintain and encourage working relationships with people which promote good will and trust (application)
K3 how to inform people about work activities with an appropriate level of detail and degree of urgency (application)
K4 how to offer advice and help to people about work activities with sensitivity and encourage questions, requests for clarification and comments (application)
K5 how to present proposals for action clearly to people at an appropriate time and with the right level of detail for the degree of change, expenditure and risk involved (application)
K6 how to clarify with people objections to proposals and suggest alternative proposals (application)
K7 how and why to resolve conflicts and differences of opinion in ways which minimise offence, and maintain goodwill, trust and respect (synthesis)

Exchange information and present advice on technical issues
K8 how to obtain information which is sufficiently detailed for purpose (application)
K9 how and why to present technical information and advice (application)
K10 how and why to present technical information and advice in a style appropriate to the people receiving information and advice (application)
K11 how and why to give technical instructions and guidance (application)

K12 how to present technical recommendations (application)
K13 how to adapt and modify technical information where people are having difficulties in understanding it (application)

Identify, analyse and resolve complex situations
K14 what to identify as complex situations (understanding)
K15 how and why to estimate their effects and summarise the issues for the people who are affected and concerned (analysis)
K16 how and why to assess the accuracy and completeness of the information available (analysis)
K17 what to identify as any significant gaps in the information available (understanding)
K18 how to obtain additional information (application)
K19 what to identify as the probable factors affecting the situations (understanding)
K20 what to describe as the probable factors affecting the situations (understanding)
K21 how to record the probable factors affecting the situations (application)
K22 how and why to analyse the different perceptions of situations in order to produce resolutions (analysis)
K23 how to apply aids and techniques which increase the reliability of the decisions and judgements
K24 what to identify ethical judgements which are likely to resolve the situation with the least disruption and risk using clear criteria and reasoned arguments, (understanding)
K25 how and why to justify, using clear criteria and reasoned arguments, ethical judgements which are likely to resolve the situation with the least disruption and risk (evaluation)
K26 how and why to recommend those judgements which offer the least disruption and risk (synthesis)
K27 how to record those judgements which offer the least disruption and risk (application)

Practice in an ethical manner
K28 what to identify as the limits of your professional expertise and work within them (understanding)
K29 how to contribute to developing and maintaining a value base for organisation which considers the needs of the stakeholders (application)
K30 how and why to make judgements and offer advice which balance the needs of the client, the people in the community who are directly and indirectly affected and the resources available (evaluation)
K31 how and why to take clear and unequivocal personal responsibility for decisions (evaluation)
K32 how to disclose information obtained from clients only to people who have a right to receive it (application)
K33 how to communicate with stakeholders in a style and manner which maintains professional independence and maximises goodwill and trust (application)
K34 how and why to define and agree the terms of reference and the expectations of the people involved in contracts (evaluation)
K35 how and why to enter into formal and informal contracts and agreements for advisory and problem-solving services which conform to legal requirements, ethical standards and recognised good practice (evaluation)
K36 how and why to refuse offers and contracts which are illegal and which may generate conflicts of interest (evaluation)

Prepare for and chair meetings
K37 how to ensure that the appropriate people are invited to the meeting and given sufficient notice and information to allow them to contribute effectively (application)
K38 how to ensure that everyone attending the meeting agrees the objective of the meeting at the start (application)
K39 how to allocate discussion time to topics consistently with their importance, urgency and complexity (application)
K40 how and why to maintain a style of leadership which helps those attending the meeting to make useful contributions (synthesis)
K41 how and why to discourage unhelpful arguments and digressions (synthesis)

K42 how to present information and provide summaries clearly, at appropriate points during the meeting to make useful contributions (application)
K43 how to ensure that meetings achieve their objectives within the allocated time (application)
K44 how to observe any formal procedures or standing orders that apply to the meeting (application)
K45 how to check that decisions and action points are accurately recorded and promptly communicated to those who need to know (application)
K46 how and why to evaluate whether the purpose and objectives of the meeting have been achieved and how future meetings could be made more effective (evaluation)

Additional information

Scope/range

Develop and maintain relationships with other people
1. People: 1.1. those to whom you report 1.2. those who report to you 1.3. other professional colleagues 1.4. those affected by your work
2. Promote goodwill and trust: 2.1. demonstrating a duty of care 2.2. ethical relationships 2.3. professional independence 2.4. honouring promises and undertakings 2.5. open and honest relationships 2.6. constructive relationships 2.7. meeting equality/diversity legislation
3. Informing, offering advice, presenting and clarifying: 3.1. orally 3.2. in writing 3.3. using graphics 3.4. electronically
4. Work activities: 4.1. progress 4.2. results 4.3. achievements 4.4. emerging threats 4.5. risks 4.6. opportunities
5. Present: 5.1. orally 5.2. in writing 5.3. graphically 5.4. electronically 5.5. using materials and samples
Exchange information and present advice on technical issues
6. Purpose: 6.1. sharing experience 6.2. issuing instructions 6.3. making decisions 6.4. increasing understanding 6.5. implementing a solution 6.6. dealing with confrontation 6.7. negotiation
7. Present: 7.1. orally 7.2. in writing 7.3. graphically 7.4. electronically 7.5. using materials and samples
8. People receiving information and advice: 8.1. same and other related occupations 8.2. clients and customers 8.3. technical and non-technical team members 8.4. craftspeople and operatives 8.5. senior and junior colleagues 8.6. members of the public 8.7. people with individual needs 8.8. central and local government agencies
Identify, analyse and resolve complex, indeterminate situations
9. Information - sources: 9.1. experience and practice 9.2. manual and electronic information systems (e.g. libraries, technical journals, databases) 9.3. valid objects of scientific enquiry 9.4. other colleagues and specialists
10. Analysing the different perceptions of situations: 10.1. information and conclusions from previous cases 10.2. similarities between previous cases and the current situation 10.3. the outcomes required 10.4. known and anticipated limitations 10.5. known and anticipated opportunities
11. Aids and techniques: 11.1. identify options 11.2. relationships between factors 11.3. weighted priorities 11.4. value utilities 11.5. expert systems 11.6. decision theory 11.7. decision trees 11.8. policy capturing equations 11.9. gold standard equations 11.10.graphical and electronic aids 11.11.computer aided analysis
12. Judgements: 12.1. justified opinion and conclusion 12.2. decisions on action to be taken 12.3. decisions on validity 12.4. decisions on viability 12.5. identification of opportunities 12.6. identification of solutions
13. Criteria: 13.1. the interests of the stakeholders 13.2. legal 13.3. conformity with recognised good practice 13.4. based on up to date information 13.5. cost-effectiveness 13.6. resources 13.7. safety 13.8. return to operational state 13.9. predicted risk 13.10.predicted disruption 13.11.predicted opportunity 13.12.added value
Practise within an ethical framework
14. Stakeholders: 14.1. staff 14.2. clients 14.3. suppliers/sub-contractors 14.4. users 14.5. community
15. Judgements: 15.1. justified opinion and conclusion 15.2. decisions on action to be taken 15.3. decisions on validity 15.4. decisions on viability 15.5. identification of opportunities 15.6. identification of solutions
16. Ethical standards and recognised good practice - sources: 16.1. ethical codes of practice within the occupation or discipline 16.2. statute law 16.3. voluntary codes of practice 16.4. duty of care

17. Conflicts of interest: 17.1. offers which may result in adverse conditions to other individuals or the community 17.2. offers which involve the financial interest of the practitioner 17.3. giving unfair advantage to the practitioners family or friends
Prepare for and chair meetings
18. Meetings: 18.1. involving people from within your organisation 18.2. involving people from outside your organisation
19. Objective: 19.1. information giving 19.2. consultation

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Suite: Built Environment Design Management
Key words: ethical; judgement; meetings

TECHNICAL OPTIONAL UNITS

COSBEDMO05
Investigate and assess development options in built environment design management

Overview:

This unit is concerned with investigating development options, taking into account relevant influencing factors, including environmental and social impact issues. It covers investigating and evaluating a project's development options so that they can be prioritised. You must be able to show that you identify project goals and priorities, investigate potential development options and evaluate these against environmental and social criteria, as well as duly considering stakeholder views. It is a more detailed analysis of the potential environmental impact of the project development options and their impact upon stakeholder's respective corporate social responsibilities and values. You must be able to investigate project requirements and identify and quantify relevant influencing factors in order to present solutions.

Performance criteria - you must be able to:

Investigate and evaluate development options
P1 Identify goals and priorities for potential development
P2 Investigate development options to meet the goals and priorities where there is a justifiable need to undertake development
P3 investigate and identify the design, function and performance requirements of the potential development
P4 investigate economic factors and resources, environmental and ecological factors, and stakeholder views that affect the future asset value and sustainability of potential development
P5 evaluate the best balance between the potential goals and priorities

P6 recommend whether and how to implement potential sustainable development so as to achieve key goals and priorities

Assess the environmental impact of development options
P7 investigate the requirements for assessing the environmental impact of development options
P8 identify the factors and relevant data to be used for assessing impact
P9 assess and quantify the significance of each factor and suggest measures which will reduce the environmental impact
P10 identify and review alternative solutions which will improve environmental quality and increase sustainability
P11 prepare a report of the assessed environmental impact of proposals in a form suitable for public consultation

Knowledge and understanding - you need to know and understand:

Investigate and evaluate development options
K1 what to identify as goals and priorities for potential development (understanding)
K2 how and why to investigate development options where there is a justifiable need to undertake development (analysis)
K3 how and why to investigate the design, function, and performance requirements of the potential development (analysis)
K4 what to identify as the design, function and performance requirements of the potential development (understanding)
K5 how and why to investigate economic factors and resources, environmental and ecological factors, and stakeholder views that affect the future asset value and sustainability of potential development (analysis)
K6 how to evaluate the best balance between potential goals and priorities (evaluation)
K7 how and why to recommend whether and how to implement potential sustainable developments so as to achieve key goals and priorities (evaluation)

Assess the environmental impact of development options
K8 how and why to investigate the requirements for assessing the environmental impact of development options (analysis)
K9 how and why to identify factors and relevant data which will be used for assessing impact (analysis)
K10 how and why to assess and quantify the significance of each factor (analysis)
K11 how and why to suggest measures which will reduce the environmental impact (synthesis)
K12 what to identify as alternative solutions which will improve environmental quality and increase sustainability (understanding)
K13 how and why to review alternative solutions which will improve environmental quality and increase sustainability (analysis)
K14 how to prepare a report of the assessed environmental impact of proposals in a form suitable for public consultation (application)

Additional information
Scope/range

Investigate and evaluate development options
1. Goals and priorities: 1.1. security 1.2. health and safety 1.3. quantity 1.4. quality (including design) 1.5. time 1.6. whole life costs 1.7. environmental 1.8. sustainability 1.9. return on investment 1.10. function 1.11. performance
2. Development options: 2.1. new build 2.2. adaptation 2.3. alteration 2.4. refurbishment 2.5. relocation 2.6. not carrying out the proposal

3. Economic factors and resources: 3.1. finance 3.2. taxation 3.3. workforce 3.4. raw materials 3.5. manufactured systems and components 3.6. energy
4. Environmental and ecological factors: 4.1. natural resources 4.2. emissions 4.3. effluent 4.4. waste 4.5. the effects of climate
5. Stakeholder views: 5.1. client 5.2. users

Assess the environmental impact of development options
6. Requirements: 6.1. community 6.2. meeting social and community obligations 6.3. meeting legal and regulatory obligations 6.4. considering significant environmental issues and effects
7. Development options: 7.1. new build 7.2. adaptation 7.3. alteration 7.4. refurbishment 7.5. relocation 7.6. not carrying out the proposal
8. Factors: 8.1. social 8.2. cultural 8.3. economic 8.4. political 8.5. legal 8.6. use 8.7. timescale 8.8. environmental 8.9. sustainability 8.10. accessibility 8.11. health and safety
9. Relevant data: 9.1. baseline information 9.2. survey information 9.3. standards 9.4. legal, regulatory and policy requirements 9.5. historical
10. Alternative solutions: 10.1. different locations 10.2. different layouts 10.3. extending the use of existing resources 10.4. use of alternative resources 10.5. changes to implementation and phasing

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COSBEDMO09
Conduct condition surveys in built environment design management

Overview:

This unit is concerned with undertaking and managing condition surveys. It is about deciding what surveys need to be done, and drafting survey briefs along with budgets and programmes. You must have a deep knowledge of building conditions, and the skills to produce cost and time schedules for the surveys. It is about actually doing the surveys. The structure could be a building, a highway, a bridge, a reservoir, or any loadbearing or defensive construction. You must be able to organise what you need to carry out the survey, deal with contingencies, take the necessary measurements and record the results. It is about collating the results of the survey and presenting them in a report. You must be able to demonstrate your analytical and report-writing skills and your technical judgement (both quantitative and qualitative) concerning the condition of the structure(s).

Performance criteria - you must be able to:

Recommend and agree a condition survey process
P1 identify the objectives and purpose of the condition survey

P2 brief the people who will be involved, about the survey arrangements and the safety arrangements
P3 collate available information and documents and select valid, accurate and relevant information for the condition survey process
P4 identify and obtain necessary further information
P5 draft a brief for the survey including significant factors
P6 identify the levels and types of specialist support which will be needed and brief advisers with clear and accurate summaries of the information available
P7 select methods and techniques for the condition survey process which meet the requirements of relevant professional codes of practice and protocols
P8 prepare a budget and programme for the condition survey process
P9 agree a budget and programme for the work

Inspect structures for condition
P10 consult the condition survey brief and purpose and obtain the equipment and resources and specialist advice that will be needed
P11 check and confirm, before starting the condition survey, that people who will be affected have given their permission
P12 take accurate observations and measurements which are necessary for the inspection and record them clearly, accurately and completely using agreed formats
P13 make further investigations when observations are inconsistent with existing data and expected findings, and accurately identify the cause of inconsistencies
P14 consider actual and potential causes of any failure and deterioration
P15 identify and obtain specialist advice where complex issues are found

Prepare and present condition survey reports and records
P16 assemble and collate information on the condition survey
P17 analyse all relevant evidence and information using appropriate methods and techniques and make a realistic assessment of condition
P18 identify causes of probable failure and deterioration
P19 prepare a condition survey report which meets the requirement of the brief
P20 explain clearly where and why inspection and measurement may not have been possible
P21 answer the client's questions about the condition survey and give appropriate clarification
P22 maintain internal records which are clear, accurate and complete and conform to accepted professional and statutory requirements

Knowledge and understanding - you need to know and understand:

Recommend and agree a condition survey process
K1 what to identify as the objectives and purpose of the condition survey (understanding)
K2 how to brief the people who will be involved, about the survey arrangements and the safety arrangements (application)
K3 how to collate available information and documents (application)
K4 how and why to select valid, accurate and relevant information for the condition survey process (evaluation)
K5 what to identify as necessary further information (understanding)
K6 how to obtain necessary further information (application)
K7 how to draft a brief for the survey including significant factors (application)
K8 what to identify as the levels and types of specialist support which will be needed and brief advisers with clear and accurate summaries of the information available (understanding)
K9 how and why to select methods and techniques for the condition survey process which meet the requirements of relevant professional codes of practice and protocols (evaluation)
K10 how to prepare a budget and programme for the condition survey process (application)

K11 how and why to agree a budget and programme for the work (evaluation)

Inspect structures for condition
K12 how to consult the condition survey brief and purpose and obtain the equipment and resources and specialist advice that will be needed (application)
K13 how to check and confirm, before starting the condition survey, that people who will be affected have given their permission (application)
K14 how to take observations and measurements which are necessary for the inspection (application)
K15 how to record observations clearly, accurately and completely using agreed formats
K16 how and why to make further investigations when observations are inconsistent with existing data and expected findings (analysis)
K17 what to identify as the cause of inconsistencies (understanding)
K18 how to consider actual and potential causes of any failure and deterioration (application)
K19 what to identify as specialist advice where complex issues are found (understanding)
K20 how to obtain specialist advice where complex issues are found (application)

Prepare and present condition survey reports and records
K21 how to assemble and collate information on the condition survey (application)
K22 how and why to analyse all relevant evidence and information using appropriate methods and techniques and make a realistic assessment of condition (analysis)
K23 what to identify as causes of probable failure and deterioration (understanding)
K24 how to prepare a condition survey report which meets the requirement of the brief (application)
K25 how to explain clearly where and why inspection and measurement may not have been possible (application)
K26 how to answer the client's questions about the condition survey and give appropriate clarification (application)
K27 how to maintain internal records which are clear, accurate and complete and conform to accepted professional and statutory requirements (application)

Additional information

Scope/range

Recommend and agree a condition survey process
1. Purpose: 1.1. stability 1.2. soundness 1.3. use/adaptation 1.4. value 1.5. health and safety 1.6. environmental 1.7. conservation/heritage requirements 1.8. third party use
2. Information: 2.1. photographs (including aerial photographs) 2.2. maps 2.3. charts 2.4. drawings 2.5. digital data 2.6. archive records 2.7. legal documents 2.8. client records 2.9. tenants 2.10. site owners 2.11. site managers 2.12. previous owners 2.13. local authorities 2.14. statutory authorities 2.15. public utilities 2.16. government department consultative bodies (including heritage bodies) 2.17. public and specialist libraries and archives
3. Process: 3.1. inspection/ field survey 3.2. documentary/archival research 3.3. risk assessment
4. Significant factors: 4.1. degree of urgency 4.2. gaps in information 4.3. susceptibility to damage 4.4. health and safety risk 4.5. need to inhibit deterioration 4.6. structural integrity 4.7. structural significance 4.8. impact on clients and users 4.9. third party 4.10. survey costs and methods 4.11. comprehensiveness/completeness of survey
Inspect structures for condition
5. Purpose: 5.1. stability/soundness 5.2. use/adaptation 5.3. value 5.4. health and safety 5.5. environmental 5.6. conservation/heritage requirements 5.7. third party use
6. Record: 6.1. written 6.2. graphical 6.3. electronic 6.4. photographic
Prepare and present condition survey reports and records
7. Information: 7.1. inspection observations and measurements 7.2. investigation and research findings 7.3. industry standards and legislation 7.4. published technical data

8. Analyse: 8.1. degree of urgency 8.2. gaps in information 8.3. susceptibility to damage 8.4. health and safety risk 8.5. need to inhibit deterioration 8.6. structural integrity 8.7. cultural significance 8.8. impact on clients and users

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Suite: Built Environment Design Management
Key words: condition survey

COSBEDMO10
Investigate development factors and solutions in built environment design management

Overview:

This unit is about the use and value of surveys in investigating development opportunities. It is about deciding what your survey/investigation is for, what information you need and how it will be collected, analysed and presented. You must be able to identify a clear rationale for the survey/investigation, the required data and show how this data will be collected, either from historical existing information or from a commissioned survey. It is about identifying data sources and evaluating that data as part of an investigation of development factors. You must be able to collect the data that you need and show how the data is analysed and evaluated. You will also be required to show how you consult appropriate professionals and investigating existing solutions and circumstances

Performance criteria - you must be able to:

Identify survey and investigation requirements
P1 identify the factors for survey and investigation which may be significant for the planned development
P2 analyse and assess how accurate, up to date and complete the existing information is, and decide what additional information is needed
P3 identify what data is needed its source, how accurate the data needs to be and what data outputs are required from surveys and investigations
P4 make a preliminary investigation to identify any access problems and equipment which will be needed, and assess the implications for the measured survey
P5 develop a clear and accurate method statement, a programme and a budget for the survey and agree them with the stakeholders
P6 commission measured surveys by selecting people and organisations who are competent to do the work

Investigate and evaluate development factors, likely problems and potential solutions
P7 choose methods and techniques for the survey and investigation which are valid, reliable, consistent with legal requirements and which recognise concerns raised by the public
P8 identify sources of information and collect and collate relevant data

P9 accurately analyse and evaluate the investigation data which has been collected about all of the significant trends and factors affecting the project development
consult with experts on specific problems which are relevant to the investigation by providing them with an accurate summary of the problems
P11 identify and accurately record the opportunities and constraints for project development options
P12 identify and assess previous solutions which are similar to the current circumstances to see whether they are relevant and useful
P13 present accurate findings which are unambiguous, which clearly describe all the important factors, and which detail the implications for each development option, and in a format which is suitable for circulation and discussion with stakeholders
P14 state clearly the authority for assumptions and projections used in the report
P15 assemble any supporting data which is relevant to the study, but which is not included in the report, storing it safely and index it clearly for future reference

Knowledge and understanding - you need to know and understand:

Identify survey and investigation requirements
K1 what to identify as the factors for survey and investigation which may be significant for the planned development (understanding)
K2 how and why to analyse and assess how accurate, up to date and complete the existing information is (analysis)
K3 how and why to decide what additional information is needed (evaluation)
K4 what to identify as data that is needed, its source, how accurate the data needs to be and what data outputs are required from the survey (understanding)
K5 how and why to make a preliminary investigation to identify any access problems and equipment which will be needed and assess the implications for the survey (analysis)
K6 how and why to develop a clear and accurate method statement, a programme and a budget for the survey (synthesis)
K7 how and why to agree a clear and accurate method statement, a programme and a budget for the survey with the stakeholders (evaluation)
K8 how and why to commission surveys (evaluation)

Investigate and evaluate development factors, likely problems and potential solutions
K9 how to choose methods and techniques for the survey and investigation (evaluation)
K10 what to identify as sources of information (understanding)
K11 how to collect and collate relevant data (application)
K12 how and why to analyse the investigation data which has been collected about all of the significant trends and factors affecting the project development (analysis)
K13 how and why to evaluate the investigation data which has been collected about all of the significant trends and factors affecting the project development (evaluation)
K14 how to consult with experts (application)
K15 what to identify as opportunities and constraints for project development options (understanding)
K16 how to record the opportunities and constraints for project development options (application)
K17 what to identify as previous solutions (understanding)
K18 how and why to assess previous solutions which may be relevant to the current circumstances to see whether they are relevant and useful (analysis)
K19 how to present findings (application)
K20 how to state the authority for assumptions and projections used in the report (application)
K21 how to assemble any supporting data which is relevant to the study, but which is not included in the report, storing it safely and index it clearly for future reference (application)

Additional information

Scope/range

Identify survey and investigation requirements

1. Factors: 1.1. historical 1.2. conservation 1.3. social 1.4. visual and spatial 1.5. ecological and environmental 1.6. construction
2. Survey and investigation: 2.1. visual 2.2. measured 2.3. documentary and record search 2.4. investigative research 2.5. field research
3. Existing information: 3.1. photographs (including aerial photographs) 3.2. maps 3.3. charts 3.4. drawings 3.5. surveys 3.6. archive records 3.7. legal documents
4. Sources: 4.1. client records 4.2. tenants 4.3. site owners 4.4. site managers 4.5. previous owners 4.6. local authorities 4.7. statutory authorities 4.8. public utilities 4.9. government departments 4.10. public and specialist libraries and archives

Investigate and evaluate development factors, likely problems and potential solutions

5. Survey and investigation: 5.1. visual 5.2. measured 5.3. documentary and record search 5.4. investigative research 5.5. field research
6. Sources: 6.1. client records 6.2. tenants 6.3. site owners 6.4. site managers 6.5. previous owners 6.6. local authorities 6.7. statutory authorities 6.8. public utilities 6.9. government departments 6.10. public and specialist libraries and archives
7. Data: 7.1. photographs 7.2. maps 7.3. charts 7.4. drawings 7.5. archive records 7.6. legal documents 7.7. surveys
8. Factors: 8.1. historical 8.2. conservation 8.3. social 8.4. visual and spatial 8.5. ecological and environmental 8.6. construction
9. Opportunities and constraints: 9.1. project type, purpose, location 9.2. durability 9.3. occupancy 9.4. significance/status 9.5. legal and regulatory constraints 9.6. physical and technical constraints 9.7. health and safety 9.8. anticipated development timetable 9.9. environmental quality and sustainability 9.10. standardisation
10. Present: 10.1. orally 10.2. in writing 10.3. graphically 10.4. electronically
11. Stakeholders: 11.1. client 11.2. owners 11.3. occupiers 11.4. community and special interest groups 11.5. planning authorities 11.6. regulatory authorities

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COSBEDMO11
Specify, manage and analyse tests in built environment design management

Overview:

This unit is concerned with managing tests which will be carried out by other people. It is about deciding what tests need commissioning, and drafting test specifications. You must have a deep knowledge of the categories

of tests which may be needed, and be competent at drafting specifications and commissioning the tests. It is about getting the tests carried out, and being responsible for them. You must be able to prepare a plan for the testing, and ensure that the tests are carried out to programme and within budget. It is about presenting the test results and sharing the information. You must be able to evaluate the test results, integrate them into a competent report and present the report to the stakeholders.

Performance criteria - you must be able to:

Identify, specify and commission tests
P1 identify factors which may be significant to the object, purpose and nature of the test by desk study
P2 analyse and assess how accurate, up to date and complete the existing information is
P3 identify what data is needed, how accurate the data needs to be and what data outputs are required
P4 make a preliminary investigation to identify any access requirements and equipment which will be needed, and assess and summarise the implications
P5 develop a clear and accurate specification, and criteria, a programme and assessment of resources for the testing programme, and agree them with the stakeholders
P6 commission tests and select competent people and organisations to do the work

Plan and manage tests
P7 select relevant processes and methods which are reliable, valid consistent with the tests object, purpose and nature and the location, contract and legal requirements and which recognise concerns raised by the public
P8 estimate and justify the resources which will be involved in conducting and reporting on the tests
P9 ask for and obtain permission to carry out the test from people who might be affected and from any legal authorities who have to be notified
P10 choose suitable quality assurance standards and specify health and safety requirements
P11 prepare a plan for the test and schedule it to meet the requirements of the test
P12 manage and monitor tests and recommend modifications to maintain compliance with test requirements

Analyse and present test results
P13 collect and verify the results from tests
P14 process the results using the most appropriate methods of analysis and chart them in a format which will help people to interpret them
P15 produce a clear and accurate commentary and interpretation of the results
P16 use the test results, analysis and commentary findings to produce an accurate report which identifies the development constraints, opportunities and feasibility, and circulate the report to stakeholders
P17 present the report clearly and in a format which is suitable for the stakeholders who need to use the findings

Knowledge and understanding - you need to know and understand:

Identify, specify and commission tests
what to identify as factors which may be significant to the object, purpose and nature of the test by desk study (understanding)
K2 how and why to analyse and assess how accurate, up to date and complete the existing information is (analysis)
K3 what to identify as data that is needed and how accurate it needs to be and what data outputs are required (understanding)
K4 how and why to make a preliminary investigation to identify access requirements and equipment (analysis)
K5 how and why to assess the implications of access and equipment requirements (analysis)
K6 how to summarise the implications of access and equipment requirements (application)

K7 how and why to develop a clear and accurate specification and criteria, a programme and assessment of resources for the testing programme (synthesis)
K8 how and why to agree a clear and accurate specification and criteria, a programme and an assessment of resources for the testing programme with the stakeholders (evaluation)
K9 how and why to commission tests (evaluation) K10 how and why to select competent people and organisations to do the work (evaluation)

Plan and manage tests
K11 how and why to select relevant processes and methods which are reliable, valid, consistent with the test's object, purpose and nature and the location, contract and legal requirements and which recognise concerns raised by the public (evaluation)
K12 how and why to estimate the resources which will be involved in conducting and reporting on the tests (analysis)
K13 how and why to justify the resources which will be involved in conducting and reporting on the tests (evaluation)
K14 how to ask for and obtain permission to carry out the test from people who might be affected and from any legal authorities who have to be notified (application)
K15 how and why to choose suitable standards of quality assurance (evaluation)
K16 how to specify health and safety requirements (evaluation)
K17 how and why to prepare a plan for the test (synthesis)
K18 how and why to schedule a plan for the test (analysis)
K19 how and why to manage tests (evaluate)
K20 how and why to monitor tests (analysis)
K21 how and why to recommend modifications to tests to maintain compliance with test requirements (synthesis)

Analyse and present test results
K22 how to collect and verify the results from tests (application)
K23 how to process the results using the most appropriate methods of analysis and chart them in a format that will help people to interpret them (application)
K24 how to produce a clear and accurate commentary and interpretation of the results (analysis)
K25 how to use the test results to produce an accurate report which identifies the development constraints, opportunities and feasibility and circulate the report to stakeholders (application)
K26 how to present the report clearly and in a format which is suitable for the stakeholders who need to use the findings (application)

Additional information
Scope/range
Identify, specify and commission tests
1. Object: 1.1. geological 1.2. structural 1.3. environmental 1.4. material
2. Purpose: 2.1. performance 2.2. routine 2.3. contingency
3. Nature: 3.1. physical 3.2. condition 3.3. performance 3.4. destructive 3.5. non-destructive 3.6. qualitative 3.7. quantitative
4. Desk study: 4.1. client 4.2. owners 4.3. occupiers 4.4. statutory authorities 4.5. research institutions 4.6. advisory bodies 4.7. libraries 4.8. archives 4.9. validated research data 4.10. legal documents
5. Data outputs: 5.1. visual 5.2. approximate estimated 5.3. detailed assessment of specified features
6. Resources: 6.1. materials 6.2. people 6.3. equipment 6.4. time

Plan and manage tests
7. Processes: 7.1. as defined by relevant legislation 7.2. code of practice as accepted by recognised authorities in the field

8. Methods: 8.1. visual 8.2. approximate estimated 8.3. detailed assessment of specified features
9. Object: 9.1. geographical 9.2. structural 9.3. environmental 9.4. material
10. Purpose: 10.1. performance 10.2. routine 10.3. contingency
11. Nature 11.1. physical 11.2. condition 11.3. performance 11.4. destructive 11.5. non-destructive 11.6. qualitative 11.7. quantitative
12. Contract and legal requirements: 12.1. health and safety legislation 12.2. contract conditions 12.3. environmental legislation
13. Resources: 13.1. materials 13.2. people 13.3. equipment 13.4. time
14. Permission from: 14.1. client 14.2. site owner and occupiers 14.3. occupiers 14.4. adjoining owners and occupiers 14.5. notifiable authorities
15. Health and safety requirements: 15.1. personal safety equipment and clothing 15.2. safe use of access equipment (including ladders, tower scaffolds, hydraulic hoists - as required under health and safety legislation) 15.3. industry codes of practice and regulations applying to the test location and the tests being conducted 15.4. as identified by risk assessments
16. Plans - will include: 16.1. risk assessment 16.2. arrangements for waste disposal 16.3. dealing with contingencies
17. Test requirements: 17.1. physical 17.2. condition 17.3. performance

Analyse and present test results
18. Methods of analysis: 18.1. comparison with standard test results 18.2. referenced to accepted scientific/engineering principles and analytical practice
19. Present: 19.1. orally 19.2. in writing 19.3. graphically 19.4. electronically
20. Stakeholders: 20.1. client 20.2. owners 20.3. occupiers 20.4. facility/asset managers 20.5. regulatory authorities 20.6. designers

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Suite: Built Environment Design Management
Key words: testing; analysis

COSBEDMO12
Establish regulatory requirements and secure consents in built environment design management

Overview:

This unit is concerned with dealing with regulatory requirements and statutory consents and minimising their impact upon a development. It is about identifying the regulations and also the constraints which might apply to a project. You must be able to show how to identify potential constraints and evaluate the impact they would have upon the project. It is about meeting development requirements and also dealing with constraints. You must be able show how to match potential solutions and options to requirements or constraints and to present these to stakeholders in a clear, objective and readable format. It is about preparing and processing

applications for statutory consent. You must be able show how to identify what consent is needed, where and when it is needed and how to submit clear, valid timely applications. You should also be able to show how applications can be negotiated in order to ensure consent. It is about submitting appeals following refused applications. You must be able show how you have prepared and submitted an appeal by providing the necessary evidence.

Performance criteria - you must be able to:

Identify, evaluate and confirm project regulatory requirements and constraints
P1 Choose investigation methods and techniques which are valid, reliable, consistent with legal requirements and which identify the feasibility of the project
P2 identify the requirements and preferred options of planning and other regulatory bodies which have an interest in key factors of the project
P3 identify and assess the relative importance of existing and anticipated regulations
P4 identify and review opportunities and constraints on project options which could result from both existing and anticipated regulations
P5 summarise any regulatory constraints which might affect the viability of the project and explain the procedures for appealing against negative decisions

Report and advise on options for potential developments
P6 identify and assess existing solutions which appear to satisfy the regulatory constraints which may apply to the development
P7 investigate and test the requirements and preferences of planning and other regulatory bodies which have an interest in key development factors and report valid options and objections to the stakeholders
P8 match findings which have legal implications to relevant legislation and related guidance
P9 produce an accurate and unambiguous report based on the investigation findings which clearly identifies the options available
P10 assemble any supporting data which is relevant to the investigation, but which is not included in the report, store it safely and index it clearly for future reference
P11 provide clear and accurate advice on the findings and implications of the investigation to stakeholders

Prepare and process applications to secure statutory consents
P12 identify which aspects of the project are subject to statutory controls and will need consents
P13 check and confirm with the relevant authorities the requirements, current procedures and likely timescale for statutory approvals and other consents
P14 forecast how long the submission and approval of applications for consent will take and how this will fit in with the project schedule
P15 identify the implications of delays, failure to apply for and achieve consent and circulate the information to the stakeholders
P16 prepare and assemble the information that will be needed for the application
P17 prepare and submit a clear and valid application for the consent
P18 provide the consent authorities with additional clear, relevant and accurate information when it is requested
P19 manage negotiations with statutory authorities to secure consents
P20 plan and agree alternatives with the client in anticipation of approval being refused

Prepare and process appeals and negotiate to secure statutory consent
P21 identify, within the appeal period, whether there are grounds for a formal appeal against a refusal to grant consent
P22 evaluate the strengths and weaknesses of the application

P23 prepare an appropriate appeal based on clearly specified grounds, and submit it in the proper form and within the time allowed
P24 present a justifiable case supporting the appeal in negotiations with statutory authorities
P25 agree changes to proposals following the results of appeals

Knowledge and understanding - you need to know and understand:

Identify, evaluate and confirm project regulatory requirements and constraints
K1 how and why to choose investigation methods and techniques which are valid, reliable, consistent with legal requirements and which identify the feasibility of the project (evaluation)
K2 what to identify as the requirements and preferred options of planning and other regulatory bodies which have an interest in key factors of the project (understanding)
K3 what to identify as the relative importance of existing and anticipated regulations (understanding)
K4 how and why to assess the relative importance of existing and anticipated regulations (analysis)
K5 what to identify as opportunities and constraints on project options which could result from both existing and anticipated regulations (understanding)
K6 how and why to review opportunities and constraints on project options which could result from both existing and anticipated regulations (analysis)
K7 how to summarise any regulatory constraints which might affect the viability of the project, and explain the procedures for appealing against negative decisions (application)

Report and advise on options for potential developments
K8 what to identify as existing solutions which appear to satisfy the regulatory constraints which may apply to the development (understanding)
K9 how and why to assess existing solutions (analysis)
K10 how and why to investigate and test the requirements and preferences of planning and other regulatory bodies which have an interest in key development factors (analysis)
K11 how to report valid options and objections to the stakeholders (application)
K12 how and why to match findings which have legal implications to relevant legislation and related guidance (synthesis)
K13 how to produce a report based on the investigation findings which clearly identifies the options available (application)
K14 how to assemble, store and index any supporting data which is relevant to the study, but which is not included in the report (application)
K15 how and why to provide clear and accurate advice on the findings and implications of the investigation to stakeholders (synthesis)

Prepare and process applications to secure statutory consents
K16 what to identify as aspects of the project which are subject to statutory controls and will need consents (understanding)
K17 how to check and confirm with the relevant authorities the requirements, current procedures and likely timescale for statutory approvals and other consents (application)
K18 how and why to forecast how long the submission and approval of applications for consent will take and how this will fit in with the project schedule (analysis)
K19 what to identify as the implications of delays (understanding)
K20 how to circulate information about the implications of delays, failure to apply for and achieve consent to the stakeholders (application)
K21 how to prepare and assemble the information that will be needed for the application (application)
K22 how to prepare and submit a clear and valid application for the consent (application) how to provide the consent authorities with additional clear, relevant and accurate information when it is requested (application)
K23 how and why to manage negotiations with statutory authorities to secure consents (evaluation)

K24 how and why to plan alternatives with the client in anticipation of approval being refused (synthesis)
K25 how and why to agree alternatives with the client in anticipation of approval being refused (evaluation)

Prepare and process appeals and negotiate to secure statutory consent
K26 what to identify as grounds for a formal appeal against a refusal to grant consent (understanding)
K27 how to evaluate the strengths and weaknesses of the application (evaluation)
K28 how to prepare an appropriate appeal based on clearly specified grounds (analysis)
K29 how to submit an appropriate appeal based on clearly specified grounds (application)
K30 how do you present a justifiable case supporting the appeal (application)
K31 how and why to agree changes to proposals following the results of appeals (evaluation)

Additional information

Scope/range

Identify, evaluate and confirm project regulatory requirements and constraints
1. Investigation methods and techniques: 1.1. standard document search 1.2. comparative field research 1.3. client and user consultation 1.4. discussion with regulatory and statutory bodies and local authorities 1.5. commissioning investigations by specialists
2. Key factors: 2.1. infrastructure issues 2.2. land use 2.3. physical development 2.4. environmental considerations 2.5. timetable 2.6. financing
3. Regulations about: 3.1. development and use of land 3.2. structures 3.3. buildings and highways 3.4. renewal and clearance 3.5. health, safety and welfare 3.6. transport infrastructure 3.7. environment 3.8. conservation 3.9. access (e.g DDA)

Report and advise on options for potential developments
4. Regulatory Constraints: 4.1. development and use of land 4.2. structures 4.3. buildings and highways 4.4. renewal and clearance 4.5. health, safety and welfare 4.6. transport infrastructure 4.7. environment 4.8. conservation 4.9. access (e.g DDA)
5. Requirements and preferences for: 5.1. infrastructure issues 5.2. land use 5.3. physical development 5.4. environmental impact 5.5. timetable 5.6. financing 5.7. sustainability 5.8. maintenance
6. Stakeholders: 6.1. the client 6.2. owners 6.3. occupiers 6.4. community and special interest groups 6.5. planning authorities 6.6. civic and historical societies 6.7. regulatory authorities (e.g. heritage/environmental bodies) 6.8. public enquiries
7. Advice provided: 7.1. orally 7.2. in writing 7.3. using graphics 7.4. electronically

Prepare and process applications to secure statutory consents
8. Aspects of the project: 8.1. development and use of land 8.2. structures 8.3. buildings and highways 8.4. renewal and clearance 8.5. health, safety and welfare 8.6. transport infrastructure 8.7. environment 8.8. conservation 8.9. access (e.g DDA)
9. Consents: 9.1. planning 9.2. building control 9.3. environmental 9.4. utilities
10. Alternatives: 10.1. amending the brief 10.2. amending the proposal 10.3. appealing 10.4. withdrawing the application

Prepare and process appeals and negotiate to secure statutory consent
11. Appeal against a refusal to grant consent for: : 11.1. development and use of land 11.2. structures 11.3. buildings and highways 11.4. renewal and clearance 11.5. health, safety and welfare 11.6. transport infrastructure 11.7. environment 11.8. conservation

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Suite: Built Environment Design Management
Key words: consents; regulatory

COSBEDMO14
Prepare specifications in built environment design management

Overview:

This unit is concerned with the drafting of specification for designs. It covers methods of specifications, derived from standard sources and modified as necessary. These describe how the finished products should be constructed. You must be able to decide what sources are suitable, modify them where necessary, check the coherence and consistency of the finished drafts, and have them verified. It covers performance specifications, which describe how the finished product should perform in use. You must know what you want, be able to draft a suitable document, and ensure that it is checked and verified.

Performance criteria - you must be able to:

Prepare prescriptive design specifications
P1 select a specification format document which is suitable for the project requirements and the project stage
P2 structure the specification to suit the circumstances and requirements of the project
P3 produce a specification which is based on identified, valid source information which has been verified
P4 select, and where necessary amend, technical clauses from relevant sources, which define the quality, type and standard of the materials, components and finished work
P5 format the specification so that it is concise, referenced and cross-referenced accurately
P6 check that the specification is consistent with the current design and other design documentation, and update it promptly and accurately when the design changes
P7 obtain necessary verification for the content and presentation of specifications

Prepare performance specifications
P8 select a performance specification document which is suitable for the purpose and the project stage
P9 check that the specification is consistent with design and related documents, where separate, and that it does not include duplicate and contradictory information
P10 produce a specification which conforms with identified, applicable, current source information
P11 identify where the current source information is valid and obtain accurate and supplementary information
P12 identify, analyse and detail the design objectives and appropriate functional performance requirements
P13 define appropriate performance criteria, methods of assessment and verification
P14 include with the specification the data used to calculate the performance requirements
P15 structure the specification so that it is concise referenced and cross-referenced accurately
P16 check that the specification is consistent with the current design and other design documentation, and update it promptly and accurately when the design changes
P17 obtain necessary checks and approvals for the content and presentation of specifications

Knowledge and understanding - you need to know and understand:

Prepare prescriptive design specifications
K1 how and why to select a specification format document which is suitable for the project requirements and the project stage (evaluation)
K2 how to structure the specification to suit the circumstances and requirements of the project (application)
K3 how to produce a specification based on identified, valid verified source information (application)
K4 how and why to select technical clauses from standard sources, which define the quality, type and standard of the materials, components and finished work (evaluation)
K5 how to amend technical clauses from standard sources, which define the quality, type and standard of the materials, components and finished work (application)
K6 how to format the specification (application)
K7 how to check that the specification is consistent with the current design and other design documentation (application)
K8 how to update the specification promptly and accurately when the design changes (application)
K9 how to obtain necessary verification for the content and presentation of specifications (application)

Prepare performance specifications
K10 how to select a performance specification format document which is suitable for the purpose and the project stage
K11 how to check that the specification is consistent with design and related documents, where separate, and that it does not include duplicate and contradictory information (application)
K12 how to produce a specification which conforms with identified, applicable, current source information (application)
K13 what to identify as valid current source information (understanding)
K14 how to obtain accurate and supplementary source information (application)
K15 what to identify as the design objectives and appropriate functional performance requirements (understanding)
K16 how and why to analyse and detail the design objectives and appropriate functional performance requirements (analysis)
K17 how and why to detail the design objectives and appropriate functional performance requirements (evaluation)
K18 how and why to define appropriate performance criteria, methods of assessment and verification (evaluation)
K19 how to include with the specification the data used to calculate the performance requirements (application)
K20 how to structure the specification so that it is concise, referenced and cross-referenced accurately (application)
K21 how to check that the specification is consistent with the current design and other design documentation (application)
K22 how to update the specification promptly and accurately when the design changes (application)
K23 how to obtain necessary checks and approvals for the content and presentation of specifications (application)

Additional information
Scope/range

Prepare prescriptive design specifications
1. Specification format: 1.1. original document 1.2. outline specification 1.3. National Specification systems 1.4. industry/practice standards 1.5. elemental and trade 1.6. phase 1.7. to obtain consents and permissions
2. Project requirements: 2.1. procurement 2.2. contract 2.3. production and installation
3. Project stage: 3.1. Stage 3 (Definition) 3.2. Stage 4 (Design) 3.3. Stage 5 (Build and Commission)

4. Source information: 4.1. design information (digital models, documents, drawings, graphical and non-graphical electronic data files) 4.2. statutory regulations 4.3. EU and British Standards 4.4. codes of practice 4.5. technical literature 4.6. industry product certification
5. Referenced against: 5.1. standard method of measurement/new rule of measurement 5.2. Common Arrangement 5.3. Verification: 5.4. CI/SfB 5.5. format 5.6. presentation 5.7. accuracy 5.8. technical content 5.9. completeness 5.10. referencing 5.11. cross-referencing and correlation with associated documents 5.12. spelling, grammar and punctuation 5.13. status 5.14. current
Prepare performance specifications 6. Type of performance specification:
6.1. original document 6.2. outline document 6.3. National Building Specification 6.4. elemental and trade 6.5. Purpose of documents: 6.6. phase 6.7. to obtain consents and permissions 6.8. procurement 6.9. contract 6.10. production and installation
7. Project stage: 7.1. Stage 3 (Definition) 7.2. Stage 4 (Design) 7.3. Stage 5 (Build and Commission)
8. Source information: 8.1. design information design information (digital models, documents, drawings, graphical and non-graphical electronic data files) 8.2. statutory regulations 8.3. EU and British Standards 8.4. codes of practice 8.5. technical literature 8.6. industry product certification
9. Referenced against: 9.1. standard method of measurement/new rule of measurement 9.2. Common Arrangement
10. Checks and approvals: 10.1. format 10.2. presentation 10.3. accuracy 10.4. technical content 10.5. completeness 10.6. referencing 10.7. cross-referencing and correlation with associated documents 10.8. spelling, grammar and punctuation

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Suite: Built Environment Design Management
Key words: design; specification; prescriptive

COSBEDMO22
Assess and confirm project energy sources and mechanisms in built environment design management

Overview:

This unit is about assessing and confirming energy sources for projects. Your will need to review and interpret legislation and regulations relevant to energy planning and use. You will need to recommend and confirm to project stakeholders the most appropriate energy source for the development.

Performance criteria - you must be able to:

P1 Confirm energy goals and priorities for potential developments, both currently and in the future
P2 identify the purposes and requirements for which energy is required in the developments
P3 review and interpret legislation, regulations and standards relevant to energy planning and use in developments

P4 identify the factors that need to be considered in choosing the optimum sources of energy for developments
P5 identify the potential available alternative sources of energy for developments
P6 assess and quantify the viability of each source of energy against the factors taking into account the views of experts and project stakeholders
P7 select, recommend and confirm the appropriate optimum sources of energy which will satisfy the development energy goals and priorities and factors

Knowledge and understanding - you need to know and understand:

K1 how to confirm energy goals and priorities for potential developments, both currently and in the future (application)
K2 what to identify as the purposes and requirements for which energy is required in the developments (understanding)
K3 how and why to review and interpret legislation, regulations and standards relevant to energy planning and use in developments (analysis)
K4 what to identify as the factors that need to be considered in choosing the optimum sources of energy for developments (understanding)
K5 what to identify as the potential available alternative sources of energy for developments (understanding)
K6 how and why to assess and quantify the viability of each source of energy against the factors taking into account the views of experts and project stakeholders (analysis)
K7 how and why to select the appropriate optimum sources of energy which will satisfy the development energy goals and priorities and factors (evaluation)
K8 how and why to recommend the appropriate optimum sources of energy which will satisfy the development energy goals and priorities and factors (synthesis)
K9 how to confirm the appropriate optimum sources of energy which will satisfy the development energy goals and priorities and factors (application

Additional information
Scope/range
1. Energy goals and priorities: 1.1. energy sources and infrastructure 1.2. energy consumption 1.3. carbon targets 1.4. use of renewable resources 1.5. use of non-renewable resources 1.6. energy reduction programmes 1.7. heat recovery and re-use 1.8. energy efficient technologies 1.9. energy efficient practices
2. Development: 2.1. new build 2.2. adaptation 2.3. alteration 2.4. refurbishment/upgrading 2.5. conservation 2.6. demolition/decommission 2.7. relocation
3. Purposes and requirements: 3.1. space heating 3.2. space cooling/ventilation 3.3. hot water 3.4. lighting 3.5. power for equipment
4. Factors: 4.1. energy availability 4.2. energy distribution mechanisms efficiency and costs 4.3. energy delivery mechanisms efficiency and costs 4.4. energy controls efficiency and costs 4.5. environmental impact and sustainability level of energy demand 4.6. installation 4.7. maintenance 4.8. cost (including whole life costs/return on investment) 4.9. project timescales 4.10. energy and carbon standards and strategies 4.11. primary and secondary effects 4.12. positive and negative 4.13. risk and opportunity 4.14. development phases (design, procurement, construction & installation, operation, maintenance, demolition/decommissioning) 4.15. short, medium and long-term implications 4.16. energy policies 4.17. economic policies 4.18. feed-in tariffs 4.19. payback schemes 4.20. grants and subsidies 4.21. planning sustainable community policies 4.22. patterns of use 4.23. user preference 4.24. Sources of energy: 4.25. consequential improvements 4.26. grid sourced fossil fuels (gas, oil, coal fired) 4.27. locally sourced fossil fuels (gas, oil, coal fired) 4.28. combined heat and power 4.29. ground, water or air source heat pumps 4.30. photovoltaics 4.31. macro and micro wind 4.32. solar thermal 4.33. biomass/biogas 4.34. hydrogen fuel cell 4.35. wave and tidal power

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Suite: Built Environment Design Management
Key words: energy; design

COSBEDMO23
Produce and recommend integrated conservation, repair and maintenance solutions in built environment design management

Overview:

This unit is about agreeing with stakeholders and experts design solutions that are compatible with the conservation, repair and maintenance of assets. It is about agreeing with stakeholders an overall strategy for conservation, repair and maintenance of assets that meet the legislative and policy frameworks for protection and preservation and allow the project to progress to the next stage.

Performance criteria - you must be able to:

P1 obtain information relevant to the conservation, repair and maintenance briefs and identify the relevant solutions
P2 identify factors which are likely to influence solutions, assess their relevance and prioritise them
P3 assess whether the overall conservation, repair and maintenance strategy can meet both the technical and functional constraints of the brief within the legislative and policy frameworks for protection and preservation
P4 obtain alternative sources of information and solutions, where existing approaches do not meet the parameters of the brief, which have the potential to offer alternative approaches
P5 discuss the proposed options with stakeholders, and assess and incorporate their observations
P6 assess the potential impact of modern technology and repair methods on factors relating to assets
P7 advise on situations where incompatibility of the use of materials can be detrimental to the future of the asset
P8 provide clients/owners with enough relevant and accurate information at the right time to agree a detailed solution seeking guidance from experts where necessary
P9 recommend, justify and agree conservation, repair and maintenance solutions which are acceptable to the stakeholders, meet the legislative and policy frameworks for protection and preservation and allow the project to progress to the next stage

Knowledge and understanding - you need to know and understand:

K1 how to obtain information relevant to the conservation, repair and maintenance briefs and identify the relevant solutions
K2 what to identify as factors which are likely to influence solutions, assess their relevance and prioritise them
K3 how and why to assess whether the overall conservation, repair and maintenance strategy can meet both

the technical and functional constraints of the brief within the legislative and policy frameworks for protection and preservation
K4 how to obtain alternative sources of information and solutions, where existing approaches do not meet the parameters of the brief, which have the potential to offer alternative approaches (application)
K5 how and why to discuss the proposed options with stakeholders, and assess and incorporate their observations (synthesis)
K6 how and why to assess the potential impact of modern technology and repair methods on factors relating to assets (analysis)
K7 how and why to advise on situations where incompatibility of the use of materials can be detrimental to the future of the asset (synthesis)
K8 how to provide clients/owners with enough relevant and accurate information at the right time to agree a detailed solution seeking guidance from experts where necessary (application)
K9 how and why to recommend conservation, repair and maintenance solutions which are acceptable to the stakeholders, meet the legislative and policy frameworks for protection and preservation and allow the project to progress to the next stage (synthesis)
K10 how and why to justify and agree conservation, repair and maintenance solutions which are acceptable to the stakeholders, meet the legislative and policy frameworks for protection and preservation and allow the project to progress to the next stage (evaluation)

Additional information

Scope/range

1. Identify: 1.1. relevant processes and procedures 1.2. investigative research funding 1.3. official bodies to be consulted
2. Factors: 2.1. physical 2.2. technical 2.3. environmentally induced decay 2.4. social pressures use 2.5. aesthetic and spatial 2.6. assessments of cultural significance and value 2.7. protection of archaeological, architectural, cultural and historically valuable resources 2.8. cost budgeting 2.9. time programming 2.10. health safety 2.11. resources (people, skills, finance, materials, plant, knowledge) 2.12. relevant quality standards and codes of practice 2.13. materials sourcing matching 2.14. fitness of purpose
3. Legislative and policy frameworks for protection and preservation: 3.1. local, regional, national regulations, international charters 3.2. local, regional, national, international codes 3.3. best practice and guidelines 3.4. CDM regulations 3.5. health and safety regulations 3.6. building regulations
4. Alternative sources of information and solutions: 4.1. previous knowledge and experience of similar work proposals 4.2. solutions proposals by others to similar problems 4.3. specialists including experienced craftspeople conservators 4.4. industry, academic, scientific research and innovation
5. Stakeholders: 5.1. the client/owners and their consultants 5.2. partners in the programme 5.3. prospective users/occupiers 5.4. regulatory authorities 5.5. grant-giving bodies 5.6. statutory consultees 5.7. informed but non-statutory consultees

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Suite: Built Environment Design Management
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MANAGEMENT OPTIONAL UNITS

COSBEDMO06
Manage the brief, development programme and project risks and opportunities in built environment design management

Overview:

This unit is concerned with managing the project brief and a suitable development programme taking into account project risks and opportunities. It covers preparing, presenting and agreeing a project brief with stakeholders. You must be able to identify and agree the stakeholder requirements, research, prepare and present the brief.

You should be able to negotiate modifications to the brief after presentation to stakeholders. It is about using the project brief to formulate a development programme which incorporates the information and constraints of the brief. You must be able to check the contents of the brief and prepare a detailed development programme which meets stakeholder's expectations. It is about using the project information to identify, assess and manage project risks and opportunities. Finally, you must be able to obtain and review risks and opportunities and their relative significance and to identify the resources necessary to implement these processes.

Performance criteria - you must be able to:

Prepare and agree a project brief
P1 identify and agree the stakeholders requirements and prepare a framework for the project brief
P2 define and agree with the stakeholders the information required to make effective decisions about the project
P3 check any relevant investigations which have already been made, identify information which is not valid, and obtain additional valid information which is needed
P4 select data which is relevant and valid, analyse it and qualify its status
P5 prepare a draft brief clearly, accurately, unambiguously and within the time agreed, and present the brief to stakeholders
P6 explain and discuss any significant framework constraints, opportunities and areas of uncertainty
P7 modify the draft to reflect the discussion and relevant points which have been agreed
P8 negotiate a clear and mutually acceptable agreement on the brief which has sufficient detail to allow the next stage of the project to start
Identify assess and manage project risks and opportunities

P9 identify and review project information relating to risks and opportunities arising from project stages
P10 obtain information on any risks and opportunities relating to the project
P11 identify and assess the significance of the risks and opportunities
P12 select the most effective methods and procedures to manage risks and opportunities that comply with all relevant regulations and guidelines
P13 identify the resources that are necessary to implement methods to manage risks exploit opportunities
P14 identify and specify clearly the procedures for implementing the management methods
P15 implement and maintain the management methods and procedures and modify them to meet changed circumstances

Knowledge and understanding - you need to know and understand:

Prepare and agree a project brief
K1 what to identify as stakeholders requirements (understanding)
K2 how to agree the stakeholders requirements (evaluation)
K3 how to prepare a framework for the project brief (application)
K4 how to define and agree with the stakeholders the information required to make effective decisions about the project (evaluation)
K5 how to check any relevant investigations which have already been made (application)
K6 what to identify as information which is not valid (understanding)
K7 how to obtain additional valid information which is needed (application)
K8 how and why to select data which is relevant and valid, analyse it and qualify its status (evaluation)
K9 how to prepare a draft brief clearly, accurately, unambiguously and within the time agreed, and present the brief to stakeholders (application)
K10 how to explain and discuss any significant framework constraints, opportunities and areas of uncertainty (application)
K11 how to modify the draft to reflect the discussion and relevant points which have been agreed (application)
K12 how and why to negotiate a clear and mutually acceptable agreement on the brief which has sufficient detail to allow the next stage of the project to start (synthesis)

Identify, assess and manage project risks and opportunities
K13 what to identify as project information relating to risks and opportunities arising from project stages (understanding)
K14 how and why to review project information relating to risks and opportunities arising from project stages (analysis)
K15 how to obtain information on any risks and opportunities relating to the project (application)
K16 what to identify as the significance of the risks and opportunities (synthesis)
K17 how and why to assess the significance of the risks and opportunities (analysis)
K18 how and why to select the most effective methods and procedures to manage risks and exploit opportunities that comply with all relevant regulations and guidelines (evaluation)
K19 what to identify as the resources that are necessary to implement methods to manage risks and exploit opportunities (understanding)
K20 what to identify as the procedures for implementing the management methods (understanding)
K21 how and why to specify clearly the procedures for implementing the management methods (evaluation)
K22 how to implement and maintain the management methods and procedures and modify them to meet changed circumstances (application)

Additional information
Scope/range
Prepare and agree a project brief
1. Stakeholders: 1.1 the client 1.2 financial advisers/ investors and funders 1.3 design consultants 1.4 potential contractors 1.5 potential subcontractors and suppliers 1.6 independent client advisers 1.7 facility/asset managers 1.8 user groups 1.9 community groups
2. Requirements: 2.1 the client 2.2 user and accessibility 2.3 ergonomic 2.4 community 2.5 procurement 2.6 physical 2.7 resource 2.8 construction 2.9 regulatory 2.10 cost 2.11 timescale 2.12 risk factors 2.13 health, safety and welfare 2.14 environmental 2.15 current and future needs 2.16 functional requirements 2.17 energy, water and natural resource management 2.18 reduce emissions 2.19 carbon use 2.20 compliance with local, regional national development strategies 2.21 Building Information Modelling 2.22 opportunities associated with new technologies 2.23 adaptation and 2.24 demolition strategies
3. Data: 3.1 relevant investigations 3.2 critical design parameters 3.3 the scale and sensitivity of the project

4. Analyse 4.1 comparison with similar projects 4.2 standard checklists 4.3 reference to relevant comparative research
5. Present: 5.1 orally 5.2 in writing 5.3 graphically 5.4 electronically

Identify, assess and manage project risks and opportunities
6. Project information: 6.1 environmental 6.2 statutory and legal requirements 6.3 client, user and community requirements 6.4 construction and technical requirements 6.5 site constraints 6.6 finance, procurement and contract 6.7 quality 6.8 cost 6.9 timescale
7. Risks and opportunities: 7.1 resources 7.2 communications 7.3 cost 7.4 quality 7.5 natural and built environment 7.6 users, public and third parties 7.7 health, safety and welfare 7.8 complexity and scope 7.9 consents 7.10 business 7.11 technical considerations 7.12 timescale 7.13 contract 7.14 funding 7.15 site conditions and circumstances 7.16 carbon use 7.17 workforce competence 7.18 team composition 7.19 management and communication of information 7.20 cost benefit analysis 7.21 opportunities associated with new technologies
8. Project stages: 8.1 Stage 0 (Strategy) 8.2 Stage 1 (Brief) 8.3 Stage 2 (Concept) 8.4 Stage 3 (Definition) 8.5 Stage 4 (Design) 8.6 Stage 5 (Build and Commission) 8.7 Stage 6 (Handover and Closeout) 8.8 Stage 7 (Operations and End of Life)
9. Manage risks: 9.1 risk identification 9.2 risk assessment 9.3 risk register 9.4 eliminate/minimise risks 9.5 control risks at source 9.6 cumulative protection 9.7 mitigate 9.8 allocation of responsibility
10. Exploit opportunities: 10.1 innovation 10.2 planning gain 10.3 standardisation 10.4 life cycle costing 10.5 cost benefit analysis 10.6 value management 10.7 adaptation 10.8 alteration 10.9 integration 10.10 impact on the natural and built environment 10.11 impact on users, public and third parties10.12 improved quality 10.13 procurement 10.14 timescale reduction 10.15 specification change 10.16 business benefit

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Suite: Built Environment Design Management
Key words: Design; Project Risk; Development Brief

COSBEDMO07
Confirm project requirements and needs in built environment design management

Overview:
This unit is concerned with the confirmation of the project requirement, stakeholder preferences and defining and confirming the needs and expectations of users and the wider community. It is about clarifying and agreeing project goals, priorities, functional and performance requirements and aligning these to stakeholder expectations and preferences. You must be able to clarify the project stakeholders' understanding of the project process and their respective (and potentially conflicting) goals and priorities.

You will need to show how you identify the functional and performance requirements for the project and agree realistic and valid options. It is about identifying user functional and performance requirements for a project and the options and constraints related to these. You must be able to identify user needs and consequential

requirements, which may have an effect upon other stakeholders. You should be able to demonstrate the identification, assessment, presentation and agreement of suitable options. It is about identifying community needs and expectations for a project. You must be able to identify community interests and groups, their expectations and potential reactions. You should also show how you identify and present suitable options in a manner and format which is clear and readily understandable

Performance criteria - you must be able to:
Clarify and agree project requirements and stakeholder preferences
P1 clarify stakeholders understanding of project processes and the roles of those who need to be involved, including current and future goals and priorities
P2 identify and agree protocols for exchange of information to enable project collaboration, integration and delivery
P3 identify the function and performance requirements for the project
P4 clarify the project stakeholders circumstances and requirements, the options available and the constraints and risks which might apply to the project
P5 challenge project requirements and stakeholders preferences which do not appear to be realistic, decide valid options and agree them in writing
P6 summarise and present the project requirements and stakeholders preferences

Define user needs
P7 identify the types of user, their needs and the functions and performance requirements for the project
P8 identify the options available and the constraints which might apply to the project
P9 decide which options are valid, present them and agree them with stakeholders in writing

Define community needs

P10 identify what the members of the community expect. and might need from the project
P11 investigate and identify how members of the community are likely to react to the project, and what their preferences are
P12 decide which options are valid and realistic, present them to stakeholders in the project, and agree them in writing

Knowledge and understanding - you need to know and understand:

Clarify and agree project requirements and stakeholder preferences
K1 how to clarify stakeholders understanding of project processes and the roles of those who need to be involved, including current and future goals and priorities (application)
K2 what to identify as protocols for exchange of information to enable project collaboration, integration and delivery (understanding)
K3 how and why to agree protocols for exchange of information to enable project collaboration, integration and delivery (evaluation)
K4 what to identify as the function and performance requirements for the project (understanding)
K5 how to clarify the project stakeholders circumstances and requirements, the options available and the constraints and risks which might apply to the project (application)
K6 how and why to challenge project requirements and stakeholders preferences which do not appear to be realistic, decide valid options and agree them in writing (analysis)
K7 how and why to decide valid options and agree them in writing (evaluation)
K8 how to summarise and present the project requirements and stakeholders preferences (application)

Define user needs
K9 what to identify as the types of user (understanding)

K10 what to identify to be the options available and the constraints which might apply to the project (understanding)
K11 how and why to identify users' needs and also the functions and performance requirements for the project (understanding)
K12 how and why to decide which options are valid (evaluation)
K13 how to present valid options to stakeholders (application)
K14 how and why to agree options in writing with stakeholders (evaluation)

Define community needs
K15 what to identify as what the members of the community expect, and might need from the project
K16 how and why to investigate how members of the community are likely to react to the project, and what their preferences are (analysis)
K17 what to identify as to how members of the community are likely to react to the project, and what their preferences are (understanding)
K18 how and why to decide which options are valid and realistic (evaluation)
K19 how to present valid options to stakeholders in the project (application)
K20 how and why to agree valid options in writing (evaluation

Additional information
Scope/range

Clarify and agree project requirements and stakeholder preferences
1. Stakeholders 1.1 the client 1.2 financial advisers/investors and funders 1.3 design consultants 1.4 potential contractors 1.5 potential subcontractors and suppliers 1.6 independent client advisers 1.7 facility/asset managers 1.8 user groups 1.9 community
2. Processes: 2.1 project stages 2.2 contractual 2.3 statutory
3. Goals and priorities
3.1 quantity 3.2 quality (including design) 3.3 cost 3.4 time 3.5 development 3.6 improvement 3.7 use/adaptability 3.8 whole life costs 3.9 environmental benefits 3.10 sustainability 3.11 energy sources 3.12 carbon 3.13 security 3.14 health, safety and welfare 3.15 economic and social benefits
4. Agree: 4.1 direct with a client 4.2 by negotiation and agreement with partnering team 4.3 facilitation
5. Protocols: 5.1 information requirements 5.2 implementation plans 5.3 capability assessments 5.4 delivery plans 5.5 execution plans
6. Clarify the project stakeholders' circumstances and requirements by: 6.1 reference to standard documentation 6.2 checklist 6.3 comparative field research 6.4 consultation/survey 6.5 identifying options and alternatives 6.6 use of benchmarking tool(s) 6.6 digital exchange
7. Constraints and risks: 7.1 cost 7.2 quality 7.3 time 7.4 health and safety 7.5 the environment 7.6 client 7.7 physical 7.8 statutory and regulatory 7.9 technical
8. Present: 8.1 orally 8.2 in writing 8.3 graphically 8.4 electronically

Define user needs
9. Identify by: 9.1 consultation with interested parties (clients, users, statutory bodies) 9.2 inspecting standard documentation and advisory material 9.3 results of comparative field research 9.4 use of benchmarking tool
10. Needs: 10.1 purpose of use 10.2 location 10.3 occupancy 10.4 site access 10.5 access to services 10.6 access to transport 10.7 design quality (functionality, build quality, maintenance, impact) 10.8 space standards and requirements for spatial organisation and relationship of functions 10.9 health and safety 10.10 environmental benefits 10.11 accessibility 10.12 sustainability 10.13 disabled access and facilities
11. Identify by: 11.1 consultation with interested parties (clients, users, statutory bodies) 11.2 inspecting standard documentation and advisory material 11.3 results of comparative field research 11.4 use of benchmarking tool 11.5
12. Present: 12.1 orally 12.2 in writing 12.3 graphically 12.4 electronically

13. Stakeholders: 13.1 clients13.2 representatives of users 13.3 statutory bodies 13.4 consultants 13.5 facility/asset managers 13.6 partners

Define community needs
14. What members of the community expect and might need: 14.1 location 14.2 scale 14.3 occupancy 14.4 significance/status 14.5 use/adaptability 14.6 site access 14.7 access to services 14.8 access to transport infrastructure 14.9 legal and regulatory constraints on development and development process 14.10 project programme and budget 14.11 environmental impact 14.12 design quality (functionality, build quality, impact, maintenance) 14.13 sustainable development 14.14 performance of transportation systems 14.15 health and safety 14.16 public/private space 14.17 security 14.18 employment and skills development
15. Investigate - by: 15.1 documentation 15.2 consultation 15.3 comparative field research 15.4 use of benchmarking tool
16. Present:.1 16 orally16.2 in writing 16.3 graphically16.4 electronically
17. Stakeholders: 17.1 clients 17.2 representatives of community 17.3 statutory bodies 17.4 consultants 17.5 facility/asset managers 17.6 partners

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Key words: Design; Users; Stakeholders

COSBEDMO08
Form and induct a project team in built environment design management

Overview:

This unit is about deciding what your team needs to be able to do, producing a specification for the team's selection, and ensuring that the recruitment process concludes in satisfactory contracts. You must be able to negotiate proposals for team membership, and follow the process through to the appointment of the people. It is about briefing the project team. You must be able to agree the team's work allocation, motivate them to achieve it, and agree with them how you will monitor their performance.

Performance criteria - you must be able to:
Select and form a project team
P1 identify the services and resources that are needed, and select those people that meet the agreed timescales and budget limits
P2 negotiate and recommend proposals for team membership which are likely to produce an effective team
P3 evaluate services and resources and circulate the results to decision makers
P4 follow the procedures for obtaining services and resources
P5 produce appropriate contractual arrangements and terms of appointment for the organisations and people selected and confirming the arrangements in writing with stakeholders
P6 negotiate contracts and agreements in a way which preserves goodwill and trust

Induct and inform a project team
P7 inform the project team on the purpose, process and intended results of team activities
P8 confirm the roles and capabilities of all the people involved in the project
P9 agree within the project team the allocation and control of responsibilities and pass this information on to the people who need it
P10 discuss and confirm the project programme with the project team
P11 agree with the stakeholders and the project team, changes to the brief and project programme which improve the effectiveness of the results and the efficiency of the process
P12 select and specify methods of project monitoring which are suitable for the projects timescale, cost and quality, and explain the method to the project team

Knowledge and understanding - you need to know and understand:

Select and form a project team
K1 what to identify as the services and resources that are needed (understanding)
K2 how and why to select those people that meet the agreed timescales and budget limits (evaluation)
K3 how and why to negotiate and recommend proposals for team membership which are likely to produce an effective team (synthesis)
K4 how and why to evaluate services and resources (evaluation)
K5 how to circulate the results of evaluations to decision makers (application)
K6 how to follow the procedures for obtaining services and resources (application)
K7 how to produce appropriate contractual arrangements and terms of appointment for the organisations and people selected and confirm the arrangements in writing with stakeholders (application)
K8 how and why to negotiate contracts and agreements in a way which preserves goodwill and trust (synthesis)

Induct and inform a project team
and understand:
K9 how to inform the project team on the purpose, process and intended results of team activities (application)
K10 how to confirm the roles and capabilities of all the people involved in the project (application)
K11 how and why to agree within the project team the allocation and control of responsibilities
K12 how to pass on information on the allocation and control of responsibilities on to the people who need it (application)
K13 how and why to discuss and confirm the project programme with the project team (synthesis)
K14 how to confirm the project programme with the project team (application)
K15 how and why to agree with the stakeholders and the project team, changes to the brief and project programme which improve the effectiveness of the results and the efficiency of the process (evaluation)
K16 how and why to select and specify methods of project monitoring which are suitable for the projects timescale, cost and quality, and explain the method to the project team (evaluation)

Additional information
Scope/range

Select and form a project team
1. Services: 1.1 project management 1.2 design 1.3 consultants/contractors
2. Resources: 2.1 people; 2.2 materials 2.3 plant and equipment 2.4 facilities 2.5 collaborative IT
3. Evaluate: 3.1 quality 3.2 price 3.3 value 3.4 time 3.5 reliability 3.6 competence
4. Contractual arrangements: 4.1 definition and coverage of required project services 4.2 roles and responsibilities for procurement 4.3 alignment of interests and benefits 4.4 early participation of key suppliers 4.5 integrated project insurance 4.6 agreed payment procedures 4.7 open book accounting 4.8 supply chain

accounting 4.9 working across discipline boundaries 4.10 BIM protocols 4.11 risk allocation 4.12 novation arrangements
5. Terms of appointment: 5.1 scope 5.2 cost 5.3 deliverables 5.4 timescale

Induct and inform a project team
6. Project team: 6.1 design and development consultants 6.2 potential contractors 6.3 potential subcontractors and suppliers 6.4 client 6.5 facility/asset managers
7. Roles in: 7.1 aspects of design 7.2 health and safety 7.3 statutory and other approvals 7.4 procurement 7.5 coordination 7.6 quality assurance 7.7 team working 7.8 working across disciplines 7.9 information management 7.10 facilities/asset management
8. Project programme: 8.1 project execution plan 8.2 objectives and targets 8.3 key decision stages 8.4 scheduling and timetabling 8.5 delivery of development documentation 8.6 statutory approvals 8.7 development team meetings 8.8 procurement
9. Stakeholders: 9.1 the client 9.2 financial advisers/investors and funders 9.3 design consultants 9.4 potential contractors 9.5 potential subcontractors and suppliers 9.6 independent client advisers 9.7 facility/asset managers 9.8 user groups 9.9 community groups
10. Methods of project monitoring:10.1 exchange, coordinate and control information 10.2 BIM protocols 10.3 checks and approvals 10.4 meetings 10.5 reporting

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COSBEDMO13
Manage project information and document requirements in built environment design management

Overview:

This unit is about selecting the controlling requirements for the information and document programme for the project stage. It is also about setting up systems for monitoring and controlling the production of information and documents. You will also need to develop arrangements for reporting progress and managing information and document production problems.

Performance criteria - you must be able to:

Specify project information and document requirements
P1 select controlling requirements for the project information and document programme which are suitable for the project stages and the resources available
P2 specify the purpose and scope of information and document and the controlling requirements they need to meet and who will produce the documents

P3 develop a production programme, which meets agreed controlling requirements to produce all the required information and documents in a feasible sequence of production
P4 specify enough resources and realistic individual targets to complete the information and document production programme
P5 set up registers, records and systems for monitoring and controlling the production of information and documents which are capable of maintaining programme compliance
P6 specify individual production instructions which are accurate, clear and complete
P7 select criteria for the evaluation of the project information and documents, agree the criteria with decision makers and circulate the criteria to the production team
P8 develop and agree systems for checking, approving and integrating information and documents
P9 develop and agree procedures, which are appropriate to the requirements of the project and the contract conditions, for dealing with discrepancies and inconsistencies in information and documents, and delays and revisions to project information and documents
P10 develop arrangements and contingency plans for reporting progress in meeting the programme requirements and to manage information and document production problems

Evaluate, integrate and control project information and documents

P11 confirm with the client the information required for decision making throughout the project stages
P12 identify and confirm protocols, data formats and standards for information exchange between all relevant project stakeholders
P13 obtain information about design parameters which may contribute to the development of design and preparation of project information and documents
P14 evaluate the information on design parameters to see whether it is adequate to meet the requirements of the stakeholders and the requirements for controlling information and document production
P15 assess the status of the information on design parameters and issue it in accordance with protocols to people who need it for project information and document production, indicate any special considerations and limitations on its use
P16 maintain accurate and complete registers and records which can be used for quality auditing
P17 collate information and documents when they have been produced and evaluate them against the agreed criteria
P18 advise people who are producing information and documents when they do not understand the instructions and refer outstanding queries to the people who produced the original information
P19 identify any discrepancies and inconsistencies in the information and documents and refer any problems back to the originators for clarification and resolution
P20 recommend changes to the brief, design, specification and contract when discrepancies have been identified and suggest any the modifications that are needed
P21 collate revisions, requirements and additions to the information and documents, distribute them promptly and brief the stakeholders and the people responsible for producing information and documents
P22 choose alternative methods for producing information and documents if it is not possible to produce them in house
P23 obtain necessary checks and approvals when they are needed
P24 produce up-to-date and accurate information on progress and circulate it to the people who need the information and agree any necessary changes to the programme production

Knowledge and understanding - you need to know and understand:

Specify project information and document requirements
K1 how and why to select controlling requirements for the production information and document (evaluation)
K2 how and why to specify the purpose and scope of information and documents and the controlling requirements they need to meet and who will produce them (evaluation)

K3 how and why to develop a production programme which meets agreed controlling requirements (synthesis)
K4 how and why to specify enough resources and realistic individual targets to complete the information and document production programme (evaluation)
K5 how and why to set up registers, records and systems for monitoring and controlling the production of information and documents (synthesis)
K6 how and why to specify individual production instructions which are accurate, clear and complete (evaluation)
K7 how and why to select, and agree criteria for the evaluation of the design and the information and documents (evaluation)
K8 how to circulate the criteria for the evaluation of the design to the production team (application)
K9 how and why to develop systems for checking, approving and integrating information and documents (synthesis)
K10 how and why to agree systems for checking, approving and integrating information and documents (evaluation)
K11 how and why to develop procedures for dealing with discrepancies and inconsistencies in information and documents, and delays and revisions to project information and documents (synthesis)
K12 how and why to agree procedures for dealing with discrepancies and inconsistencies in information and documents, and delays and revisions to project information and documents (evaluation)
K13 how and why to develop arrangements and contingency plans for reporting progress in meeting the programme requirements and to manage information and document production problems (synthesis)

Evaluate, integrate and control project information and documents
K14 how to confirm with the client the information required for decision making throughout the project stages (application)
K15 what to identify as protocols, data formats and standards for information exchange between all relevant project stakeholders (understanding)
K16 how to confirm protocols, data formats and standards for information exchange between all relevant project stakeholders (application)
K17 how to obtain information about design parameters which may contribute to the development of design and preparation of project information and documents (application)
K18 how and why to evaluate the information on design parameters to see whether it is adequate to meet the requirements of the stakeholders and requirements for controlling information and document production (evaluation)
K19 how and why to assess the status of the information on design parameters (analysis)
K20 how to issue the information in accordance with protocols to people who need it for project information and document production, indicate any special considerations and limitations on its use (application)
K21 how to maintain accurate and complete registers and records which can be used for quality auditing (application)
K22 how to collate information and documents when they have been produced and evaluate them against the agreed criteria (application)
K23 how and why to advise people who are producing information and documents when they do not understand the instructions (synthesise)
K24 how to refer outstanding queries to the people who produced the original information (application)
K25 what to identify as any discrepancies and inconsistencies in the information and documents (understanding)
K26 how to refer any problems back to the originators for clarification and resolution (application)
K27 how and why to recommend changes to the brief, design, specification and contract when discrepancies have been identified and suggest that any modifications that are needed (synthesis)
K28 how to collate revisions, requirements and additions to the information and documents, distribute them promptly and brief the stakeholders and the people responsible for producing information and documents (application)

K29 how and why to choose alternative methods for producing information and documents if it is not possible to produce them in house (evaluation)
K30 how to obtain necessary checks and approvals when they are needed (application)
K31 how to produce up-to-date and accurate information on progress and circulate it to the people who need the information (application)
K32 how and why to agree any necessary changes to the programme production (evaluation)

Additional information

Scope/range

Specify project information and document requirements

1. Controlling requirements 1.1 type of measurement 1.2 cost 1.3 time 1.4 quality 1.5 methods of production 1.6 methods of coordination 1.7 liaison requirements 1.8 model templates, documents and standards 1.9 integration of data 1.10 Building Information Modelling 1.11 status 1.12 electronic data transfer 1.13 revision management 1.14 scheduling of work 1.15 methods of interdisciplinary working 1.16 information protocols & standards & execution plan 1.17 impact statement
2. Information and document: 2.1 forms of contract 2.2 specifications 2.3 drawings 2.4 bills of quantities 2.5 schedules 2.6 health and safety plans 2.7 Building Information Model 2.8 spread sheets 2.9 calculations 2.10 images 2.11 graphical and non-graphical data files 2.12 proprietary file formats 2.13 account 2.14 claims 2.15 email
3. Project stages: 3.1 Stage 0 (Strategy) 3.2 Stage 1 (Brief) 3.3 Stage 2 (Concept) 3.4 Stage 3 (Definition) 3.5 Stage 4 (Design) 3.6 Stage 5 (Build and Commission) 3.7 Stage 6 (Handover and Closeout) 3.8 Stage 7 (Operations and End of Life)
4. Purpose: 4.1 to obtain consents 4.2 procurement 4.3 contract 4.4 production 4.5 operation and use
5. Scope: 5.1 number 5.2 type 5.3 format 5.4 size
6. Registers and records: 6.1 incoming and outgoing drawing and document registers 6.2 records of document approval and revision
7. Criteria and Discrepancies: 7.1 format 7.2 presentation 7.3 accuracy 7.4 technical content 7.5 completeness 7.6 referencing 7.7 cross referencing and correlation with associated information and documents 7.8 conflict and clash detection 7.9 status 7.10 spelling, grammar and punctuation
8. Decision makers: 8.1 the client 8.2 CDM coordinator 8.3 financial advisers 8.4 consultants 8.5 potential contractors 8.6 potential sub-contractors and suppliers 8.7 facilities/asset maintenance managers 8.8 users

Evaluate, integrate and control project information and documents

9. Information required for decision making 9.1 design brief 9.2 design information from earlier stages and current stage 9.3 surveys 9.4 reports 9.5 statutory approvals and requirements 9.6 cost estimates 9.7 standards and codes of practice 9.8 technical literature 9.9 environmental assessment objectives
10. Project stages: 10.1 Stage 0 (Strategy) 10.2 Stage 1 (Brief) 10.2 Stage 3 (Concept) 10.4 Stage 3 (Definition) 10.5 Stage 4 (Design) 10.6 Stage 5 (Build and Commission) 10.7 Stage 6 (Handover and Closeout
11. Protocols: 11.1 incoming and outgoing drawing and documents registers 11.2 records of document approval and revision 11.3 revision management 11.4 methods of coordination (eg common arrangement) 11.5 electronic data transfers 11.6 integration of inter disciplinary data 11.7 technical query resolution
12. Design parameters: 12.1 client, user and community requirements, expectations, options and preferences 12.2 project type/purpose/use 12.3 site, location and surrounding environment 12.4 geology (seismology, ground movements and soil type) 12.5 transport and infrastructure 12.6 planning, urban & social integration 12.7 design form (architectural, structural, civil, services) 12.8 design quality (character/scale/aesthetics) 12.9 function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 12.10 programme budget 12.11 cost (including whole life) 12.12 development timetable 12.13 risk assessment and mitigation 12.14 cost planning (including life cycle cost) and value management 12.15 procurement 12.16 in-use performance 12.17 environmental quality and sustainability 12.18 environmental assessment/certification schemes 12.19 energy and carbon 12.20 protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 12.21 statutory, regulatory and legal constraints 12.22 standards and

codes of practice 12..23 health and safety 12.24 form, function, materials, components and systems 12.25 loose fit design - for flexibility/adaptability/deconstruction/disassembly 12.26 buildability 12.27 operation and maintenance
13. Information and documents: 13.1 13 forms of contract 13.12specifications 13.3 drawings 13.4 bills of quantities 13.5 schedules including room data sheets 13.6 health and safety plans 13.7 Building Information Model 13.8 spread sheets 13.9 calculations 13.10 images 13.11 models 13.12 sample/mood presentation 13.13 graphical and non-graphical data files 13.14 proprietary file formats 13.15 accounts 13.16 claims 13.17 emails
14. Requirements of the stakeholders 14.1 to obtain consents 14.2 procurement 14.3 contract 14.4 production
15. Requirements for controlling information and document production: 15.1 type of measurement 15.2 cost 15.3 time 15.4 quality 15.5 methods of production 15.6 methods of coordination (eg Common Arrangement) 15.7 liaison arrangements 15.8 model templates, documents and standards 15.9 integration of data 15.10 Building Information Modelling 15.11 model validation 15.12 electronic data transfers 15.13 scheduling of work 15.14 revision management 15.15 methods of interdisciplinary working 15.16 information protocols, standards & execution plan 15.17 impact statement
16. Registers and records: 16.1 incoming and outgoing information and document registers 16.2 records of information and document approval and revision
17. Discrepancies: 17.1 format 17.2 presentation 17.3 accuracy 17.4 technical content 17.5 completeness 17.6 referencing 17.7 cross referencing and correlation with associated documents 17.8 conflict and clash detection 17.9 status

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Key words: Design; Project; Protocols; Data

COSBEDMO15
Obtain and select tenders in built environment design management

Overview:
This unit is concerned with obtaining tenders from contractors and subcontractors, selecting the ones that you wish to accept, and negotiating contracts. The words “estimate”, “bid” and “tender” are all used in the industry, and are taken here to be synonymous. It is about selecting those whom you seek tenders and confirming that they will be bidding.
You must know about the bidders and their capabilities; and you must be able to decide on the selection criteria, evaluate the bids when they come in, and make recommendations accordingly.
It is about preparing the tender documents and sending them out to the bidders. You must have a deep knowledge of what they will be bidding for, and you must be able to deal with any queries, problems and drop-outs during the tender period.

It is about evaluating the bids received, choosing the one that you wish to accept, and negotiating the details so that a contract can be signed. You must be able to spot the key aspects of the bids, evaluate them against your selection criteria, choose the bid which is the client’s or your best interest, and finalise all the details, subject to contract.

Performance criteria - you must be able to:

Evaluate and select potential tenderers
P1 identify the roles and responsibilities for project procurement in consultation with stakeholders
P2 select an appropriate type of tender and deciding which potential tenderers could meet the contract specification
P3 decide how many tenderers to invite, taking into account the value, size, type and requirements of the contract
P4 send tender enquiries to potential tenderers, in accordance with contract requirements, and invite them to provide evidence about their experience, capability and resources
P5 choose selection criteria which are suitable to weight and rate performance for the type of work described in the tender
P6 evaluate potential tenderers, who respond to the invitation, against the selection criteria, place them in rank order and choose the number needed
P7 offer advice and information to decision makers about potential tenderers and the selection criteria and modify the tender list to reflect any changes which are agreed
P8 confirm that the selected tenderers are willing to tender and add more potential tenderers from the evaluation list where necessary

Obtain estimates, bids and tenders
P9 prepare tender documents which meet statutory regulations, codes of practice and the organisations policies
P10 issue tender documents to all the tenderers on the agreed list, following the agreed procedures
P11 respond to queries from tenderers promptly and pass on any additional information which they need
P12 investigate any errors, omissions and ambiguities which are reported by tenderers and amend the tender documents to correct them
P13 pass on to all the tenderers the information given to an individual tenderer, and amendments to tender documents
P14 keep accurate records of tender documents issued, feedback, queries and information from tenderers
P15 agree and implement action when tenderers withdraw from the process

Assess and select successful tenders and negotiate changes
P16 store the tenders received in a secure place and opening them at the agreed date and time in line with the organisation's procedures and legal requirements
P17 review the tenders against the criteria for acceptance, including checking for discrepancies, omissions and errors, and taking appropriate action
P18 evaluate the tenders which are accepted against the agreed criteria and choose the tender which best meets the criteria
P19 check that the project team can meet the obligations of the contract and recommend a preferred tender to the client
P20 negotiate and agree any variations, adjustments and corrections with the successful tenderer and confirm them in writing, subject to contract
P21 accept the successful tender formally and notify tenderers who have been unsuccessful about the result
P22 modify and repeat the tendering process if it has been unsuccessful

Knowledge and understanding - you need to know and understand:

Evaluate and select potential tenderers
K1 what to identify as the roles and responsibilities for project procurement in consultation with stakeholders (understanding)

K2 how and why to select an appropriate type of tenderer and decide which potential tenderers could meet the contract specification (evaluation)
K3 how and why to decide how many tenderers to invite (evaluation)
K4 how to send tender enquiries to potential tenderers and invite them to provide evidence about their experience and capability (application)
K5 how and why to choose selection criteria which are suitable to weight and rate performance for the type of work described in the tender (evaluation)
K6 how and why to rank potential tenderers, place them in rank order (analysis)
K7 how and why to choose the number of tenderers needed (evaluation)
K8 how and why to offer advice and information to decision makers about potential tenderers and the selection criteria (synthesis)
K9 how to modify the tender list to reflect any changes which are agreed (application)
K10 how to confirm that the selected tenderers are willing to tender (application)
K11 how to add more potential tenderers from the evaluation list where necessary (application)

Obtain estimates, bids and tenders
and understand:
K12 how and why to prepare tender documents which meet statutory regulations, codes of practice and the organisations policies (application)
K13 how to issue tender documents to all the tenderers on the agreed list, following the agreed procedures (application)
K14 how to respond to queries from tenderers promptly and pass on any additional information which they need (application)
K15 how and why to investigate any errors, omissions and ambiguities which are reported by tenderers (analysis)
K16 how to amend the tender documents to correct any errors, omissions and ambiguities (application)
K17 how to pass on to all the tenderers the information given to an individual tenderer, and amendments to tender documents (application)
K18 keep accurate records of tender documents issued, feedback, queries and information from tenderers (application)
K19 how and why to agree action when tenderers withdraw from the process (evaluation)
K20 how to implement action when tenderers withdraw from the process (application)

Assess and select successful tenders and negotiate changes
K21 how to store and open the tenders received (application)
K22 how and why to review the tenders against the criteria for acceptance (analysis)
K23 how to check for discrepancies, omissions and errors and take appropriate action (application)
K24 how and why to evaluate the tenders which are accepted and choose the tender which best meets the criteria (evaluation)
K25 how to check that the project team client can meet the obligations of the contract (application)
K26 how and why to recommend a preferred tender to the client (synthesis)
K27 how and why to negotiate any variations, adjustments and corrections with the successful tenderer (synthesis)
K28 how and why to agree any variations, adjustments and corrections with the successful tenderer (evaluation)
K29 how and why to accept the successful tender formally (evaluation)
K30 how to modify and repeat the tendering process if it has been unsuccessful (application)

Additional information
Scope/range

Evaluate and select potential tenderers
1. Type of tender 1.1 open competitive 1.2 two stage 1.3 selected list 1.4 negotiated 1.5 partnering
2. Tenderers: 2.1 contractors 2.2 sub/works/trade contractors 2.3 suppliers 2.4 consultants
3. Requirements: 3.1 competitive tendering 3.2 international (including European Union) 3.3 in house 3.4 national 3.5 local 3.8 statutory 3.7 client
4. Evidence: 4.1 documentary 4.2 references 4.3 interview 4.4
5. Selection criteria: 5.1 quality and delivery record 5.2 perceived added value (including reputation of potential contractors) 5.3 acceptability of known sub-contracting arrangements 5.4 acceptability to client 5.5 financial resources 5.6 references from previous clients and bankers 5.7 health and safety 5.8 competence of people 5.9 community benefits 5.10 BIM capability 5.11 resources (human, materials, facilities) 5.12 insurance 5.13 environmental policy and management 5.14 design quality and costing 5.15 inter-disciplinary working 5.16 information management 5.17 external assessment e.g. Considerate Constructors

Obtain estimates, bids and tenders
6. Tender 6.1 open competitive 6.2 two stage 6.3 selected list 6.4 negotiated 6.5 partnering
7. Tender documents: 7.1 invitation to tender 7.2 form of tender 7.3 returns procedure 7.4 evaluation criteria 7.5 surveys 7.6 specifications 7.7 drawings 7.8 schedules 7.9 electronic models, graphical and non-graphical electronic data files 7.10 bills of quantities 7.11 health and safety plans 7.12 scope of services 7.13 terms and conditions 7.14 schedules of rates
8. Tenderers 8.1 contractors 8.2 sub/works/trade contractors 8.3 suppliers 8.4 consultants
9. Queries and information about: 9.1 price 9.2 quantity 9.3 quality 9.4 standards 9.5 value engineering 9.6 carriage and delivery 9.7 completion 9.8 maintenance 9.9 after sales service 9.10 method of payment 9.11 terms of payment 9.12 contract conditions 9.13 survey information 9.14 time 9.15 contractual 9.16 administrative 9.17 technical 9.18 design 9.19 client amendment 9.20
10. Amendments: 10.1 change to tender period 10.2 changes resulting from queries

Assess and select successful tenderers and negotiate changes
11.Legal requirements: 11.1 statutes 11.2 regulations, including EU regulations 11.3 codes of practice and procedure
12. Criteria: 12.1 quality 12.2 technical viability 12.3 programme 12.4 cost (budgets, rates) 12.5 loading and cash flow 12.6 policies which offer added value 12.7 comparative criteria (eg price indices, databases, trade journals, pretender estimates) 12.8 organisational policies 12.9 legal requirements 12.10 competence of people 12.11 BIM capability 12.12 design quality and costing 12.13 community benefits 12.14 best whole life value 12.15 inter-disciplinary working 12.16 information management 12.17 external assessment e.g. Considerate Constructors
13. Appropriate action: 13.1 accept for evaluation 13.2 invite clarification or amendment 13.3 reject
14. Variations, adjustments and corrections: 14.1 price 14.2 quantity 14.3 quality 14.4 standards 14.5 carriage and delivery 14.6 completion 14.7 maintenance 14.8 after sales service 14.9 method of payment 14.10 terms of payment 14.11 contract conditions 14.12 scope of service 14.13 terms and conditions

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Suite: Built Environment Design Management

Key words: Contracts; Tenders; Tenderers

COSBEDMO16
Prepare and submit tenders in built environment design management

Overview:

This unit is concerned with designers working with contractors and consultants and securing contracts with clients to carry out the design for construction and installation work. The words estimate, bid and tender are all used in the industry, and are taken here to be synonymous. It is about scrutinising the tender enquiries received, and deciding whether or not to bid. The following elements cover what to do if you are going to bid. You must be able to get to the bottom of an enquiry quickly, and you must have a good knowledge of your organisation's capabilities, its business plan, workload and the state of the market. It is about deciding how the job will be done.

You must be able to get all the information that you need, decide the best way of working, produce a method statement, and agree this with the project team. It is about deciding how much the work will cost. You must be able to turn your method statement into a working programme, decide what resources you need, calculate the costs, and discuss them with the project team. It is about turning your cost estimate into a final bid which will be competitive in the marketplace. You must be able to assess the risks and opportunities that the work presents, and assemble the bid to give you the best chance of success. This will include ways of making your bid more attractive than those of your competitors.

Performance criteria - you must be able to:

Review enquiry documentation
P1 confirm and summarise the enquiry requirements for design services
P2 investigate the enquiry documents within budgets and enquiry time limits
P3 identify any points of concern in the enquiry documents and seek clarification and resolution
P4 evaluate the enquiry documents against agreed organisational criteria and assess and confirm whether the organisation should decide to proceed
P5 keep information about enquiries in confidence and only pass it on to people who have the authority to receive it

Evaluate and select work methods
P6 assess the available project information and summarise it to enable decisions on production, installation and work methods to be made
P7 obtain more information from relevant sources in cases where the available project information is insufficient
P8 identify work methods which will make the best use of resources and which meet project, statutory and contractual requirements
P9 evaluate the methods against production and installation factors and select the one which best meets the design parameters
P10 recommend the selected method to decision makers and encourage them to adopt it
P11 prepare an outline method statement which is accurate, clear, concise and acceptable to all the people involved

Estimate the resource requirements and costs within a tender
P12 develop a proposed plan of work and draft programme which meet the tender project requirements and phasing
P13 assess the available project information and summarise it to enable decisions on project requirements to be made

P14 obtain more information from relevant sources in cases where the available project information is insufficient
P15 estimate what resources will be needed, their sources, availability and costs
P16 modify the costs to take into account any external factors which may affect the cost projections
P17 produce the overall estimate of costs and checking that it is complete, accurate and in a form which is suitable for a judgement to be made
P18 explain and clarify the calculations to support the projected costs
P19 recommend payment schedules which will meet proposed resource usage

Finalise and submit a tender offer
P20 identify and evaluate, the risks and opportunities involved in a successful tender offer
P21 identify and specify alternatives and qualifications to the original tender requirements which may improve the organisations ability to carry out the work
P22 apply a profit margin and payment schedule which meets the objectives and strategy of the organisation
P23 adjust the tender offer to take account of market conditions
P24 check that the tender offer is complete and accurate and conforms to house style, and make any necessary modifications
P25 present and support the tender offer in a manner which maximises its acceptability
P26 collate, arrange and submit tender offer information in accordance with tender instructions together with any identified alternatives and qualifications
P27 collect together all the tender offer information, record it, store it securely and only pass it on to people who have the authority to receive it recommend the selected method to decision makers and encourage them to adopt it

Knowledge and understanding - you need to know and understand:

Review tender enquiry documentation
K1 how to confirm and summarise the enquiry requirements for design services (application)
K2 how and why to investigate the enquiry documents within budgets and enquiry time limits (analysis)
K3 what to identify as any points of concern in the enquiry documents (understanding)
K4 how and why to seek clarification and resolution (synthesis)
K5 how and why to evaluate the enquiry documents against agreed organisational criteria (evaluation)
K6 how and why to assess whether the organisation should decide to proceed (analysis)
K7 how to confirm whether the organisation should decide to proceed (application)
K8 how to keep information about enquiries in confidence and only pass it on to people who have the authority to receive it (application)

Evaluate and select work methods
K9 how and why to assess the available project information on production, installation and work methods (analysis)
K10 how to summarise the project information to enable decisions on production, installation and work methods to be made (application)
K11 how to obtain more information from relevant sources in cases where the available project information is insufficient (application)
K12 what to identify as work methods which will make the best use of resources and which meet project, statutory and contractual requirements (understanding)
K13 how and why to evaluate the methods against production and installation factors and select the one which best meets the design parameters (evaluation)
K14 how and why to recommend the selected method to decision makers and encourage them to adopt it (synthesis)

K15 how to prepare an outline method statement which is accurate, clear, concise and acceptable to all the people involved (application)

Estimate the resource requirements and costs within a tender
K16 how and why to develop a proposed plan of work and draft programme which meet the tender project requirements and phasing (synthesis)
K17 how and why to assess the available project information and summarise it to enable decisions on project requirements to be made (analysis)
K18 how to summarise the available project information to enable decisions on project requirements to be made (application)
K19 how to obtain more information from relevant sources in cases where the available project information is insufficient (application)
K20 how and why to estimate what resources will be needed, their sources, availability and costs (analysis)
K21 how to modify the costs to take into account any external factors which may affect the cost projections (application)
K22 how to produce the overall estimate of costs and check that it is complete, accurate and in a form which is suitable for a judgement to be made (application)
K23 how to explain and clarify the calculations to support the projected costs (application)
K24 how and why to recommend payment schedules which will meet proposed resource usage (synthesis)

Finalise and submit a tender offer
K25 what to identify as the risks and opportunities involved in a successful tender offer (understanding)
K26 how and why to evaluate, the risks and opportunities involved in a successful tender offer (evaluation)
K27 what to identify as alternatives and qualifications to the original tender requirements which may improve the organisations ability to carry out the work (understanding)
K28 how and why to specify alternatives and qualifications to the original tender requirements which may improve the organisations ability to carry out the work (evaluation)
K29 how to apply a profit margin and payment schedule which meets the objectives and strategy of the organisation (application)
K30 how to adjust the tender offer to take account of market conditions (application)
K31 how to check that the tender offer is complete and accurate and conforms to house style, and make any necessary modifications (application)
K32 how to present and support the tender offer in a manner which maximises its acceptability (application)
K33 how to collate, arrange and submit tender offer information in accordance with tender instructions together with any identified alternatives and qualifications (application)
K34 how to collect together all the tender offer information, record it, store it securely and only pass it on to people who have the authority to receive it (application)
K35 how and why to recommend the selected method to decision makers and encourage them to adopt it (synthesis)

Additional information
Scope/range

Review tender enquiry documentation
1. Enquiry: 1.1. pre-qualification 1.2. invitation to tender
2. Enquiry documents: 2.1. pre-qualification questionnaire 2.2. invitation to tender 2.3. form of tender 2.4. returns procedure 2.5. availability of staff are they in the right place 2.6. cost of tendering 2.7. evaluation criteria 2.8. surveys 2.9. specifications 2.10. drawings 2.11. schedules 2.12. electronic models, graphical and non-graphical electronic data files 2.13. bills of quantities 2.14. health and safety plans 2.15. scope of services 2.16. terms and conditions 2.17. schedule of rates

3. Points of concern: 3.1. incomplete enquiry information 3.2. inconsistent with the policy of the organisation 3.3. discrepancies within enquiry information 3.4. unclear enquiry information 3.5. tender procedure requirements 3.6. quantitative requirements 3.7. qualitative requirements 3.8. contractual requirements
4. Agreed organisational criteria: 4.1. financial 4.2. availability of staff 4.3. cost of tendering 4.4. viability of tendering information 4.5. current workload 4.6. type of work 4.7. competence of people 4.8. timescale 4.9. social policies 4.10. environmental impact 4.11. location 4.12. potential completion 4.13. resources 4.14. risk 4.15. contractual 4.16. legal 4.17. inter-disciplinary working 4.18. information management

Evaluate and select work methods
5. Project information: 5.1. contractual obligations and scope and scale of works 5.2. specifications 5.3. drawings 5.4. schedules 5.5. electronic models, graphic and non-graphic electronic data files 5.6. bills of quantities 5.7. health and safety plans
6. Production, installation and work methods: 6.1. sequencing and integration of work operations 6.2. construction and installation techniques 6.3. prefabrication and standardisation 6.4. working conditions (health, safety and welfare) 6.5. new materials and technologies
7. Relevant sources: 7.1. project team and supply chain 7.2. regulatory authorities 7.3. technical/trade literature 7.4. standard lists and procedures 7.5. investigative research
8. Production and installation factors: 8.1. construction requirements and compatibility with site constraints 8.2. adaptation of existing structural elements 8.3. practicality, buildability and disassembly 8.4. standardisation and component co-ordination 8.5. production and installation processes, scheduling, lead-in times, construction programming/sequencing and quality control 8.6. expertise including experienced crafts people 8.7. fit and tolerances 8.8. production resources availability and performance (plant/equipment/people/skills) 8.9. materials, components and systems availability and capability 8.10. strategies to address interface issues on and off-site 8.11. access/transportation/traffic management 8.12. health and safety 8.13. system commissioning 8.14. operation and maintenance information
9. Design parameters: 9.1. client, user and community requirements, expectations, options and preferences 9.2. project type/purpose/use 9.3. site, location and surrounding environment 9.4. geology (seismology, ground movements and soil type) 9.5. transport and infrastructure 9.6. planning, urban & social integration 9.7. design form (architectural, structural, civil, services) 9.8. design quality (character/scale/aesthetics) 9.9. function/spatial planning (occupancy/room information/access and egress incl. DDA, security) 9.10. programme budget 9.11. cost (including whole life) 9.12. development timetable 9.13. risk assessment and mitigation 9.14. cost planning (including life cycle cost) and value management 9.15. procurement 9.16. in-use performance 9.17. environmental quality and sustainability 9.18. environmental assessment/certification schemes 9.19. protection of archaeological, architectural, cultural and historically valuable resources (significance/status) 9.20. statutory, regulatory and legal constraints 9.21. standards and codes of practice 9.22. health and safety 9.23. form, function, materials, components and systems 9.24. loose fit design - for flexibility/adaptability/deconstruction/disassembly 9.25. buildability 9.26. operation and maintenance

Estimate the resource requirements and costs within a tender
10. Project requirements: 10.1. construction 10.2. installation and maintenance work 10.3. supply of goods and materials 10.4. consultancy services 10.5. invitation to tender 10.6. form of tender 10.7. technology required 10.8. procedures for submitting tenders
11. Consultancy services: 11.1. invitation to tender 11.2. form of tender 11.3. technology required 11.4. procedures for submitting tenders
12. Phasing: 12.1. planning 12.2. design 12.3. procurement 12.4. construction
13. Estimate: 13.1. cost based on a quotation 13.2. unit cost built up from basic data 13.3. internal and historical cost data 13.4. published cost data
14. Resources - type: 14.1. people (in-house, external) 14.2. materials 14.3. finance 14.4. time 14.5. information management

15. External factors: 15.1. variations over time 15.2. location 15.3. statutory and contractual requirements 15.4. special working conditions and methods 15.5. resourcing conditions 15.6. competition 15.7. inter-disciplinary working

Finalise and submit a tender offer
16. Risks and opportunities: 16.1. environmental 16.2. financial and market 16.3. political 16.4. technical 16.5. health and safety 16.6. reputation 16.7. competence of people
17. Alternatives and qualifications: 17.1. specifications and materials 17.2. methods of construction 17.3. services 17.4. time-scales 17.5. supply options 17.6. price offer options 17.7. inter-disciplinary working

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COSBEDMO17
Prepare and agree forms of contract in built environment design management

Overview:

This unit is concerned with procuring the services of contractors and subcontractors. This could be a contract between your contractor and your organisation, or between the contractor and your client, or between your organisation and your client. It is about drafting a contract suitable for the project in hand. You must have an understanding of the standard forms of contract and how to amend them; and you must be able to prepare draft contracts and have them approved. It is about striking the deal which is best for all parties involved. You must have a good knowledge of contract procedure and of the current and relevant issues; and you must be able to negotiate fairly and confidently with the contractor.

Performance criteria - you must be able to:

Prepare and modify standard forms of contract
P1 confirm the standard form of contract, contract clauses and documents appropriate for the form of procurement proposed
P2 amend standard forms of contract so that the clauses and documents are suitable for the form of procurement proposed
P3 draft particulars and preliminaries which accurately describe the needs of all the people involved in the form of contract
P4 check that contract clauses, appendices and amendments meet statutory requirements
P5 obtain expert advice on the implications of drafting non-standard clauses and explain why this is necessary to the people involved in the contract
P6 obtain necessary checks and approvals for the draft forms of contract

Negotiate and agree a contract

P7 negotiate contracts using a style and manner which maintains good long term relationships with all the people involved in the contract
P8 negotiate and agree the most equitable position, contract terms, conditions and amendments
P9 record the results of negotiations accurately and pass the information on, promptly and in accordance with legal requirements, to all the people involved in the contract
P10 prepare accurate copies of the final contract documents, check that they meet legal requirements and arrange for them to be signed
P11 identify the obligations of the parties to the contract and obtain valid, written proof that they are able to meet the obligations
P12 check that all the contract documents are complete, accurate and stored securely

Knowledge and understanding - you need to know and understand:

Prepare and modify standard forms of contract
K1 how to confirm the standard form of contract, contract clauses and documents appropriate for the form of procurement proposed (application)
K2 how to amend standard forms of contract so that the clauses and documents are suitable for the form of procurement proposed (application)
K3 how to draft particulars and preliminaries which accurately describe the needs of all the people involved in the form of contract (application)
K4 how to check that contract clauses, appendices and amendments meet statutory requirements (application)
K5 how to obtain expert advice on the implications of drafting nonstandard clauses and explain why this is necessary to the people involved in the contract (application)
K6 how to obtain necessary checks and approvals for the draft forms of contract (application)

Negotiate and agree a contract
K7 how and why to negotiate contracts using a style and manner which maintains good long term relationships with all the people involved in the contract (synthesis)
K8 how and why to negotiate and agree the most equitable position, contract terms, conditions and amendments (synthesis)
K9 how to record the results of negotiations accurately and pass the information on, promptly and in accordance with legal requirements, to all the people involved in the contract (application)
K10 how to prepare accurate copies of the final contract documents, check that they meet legal requirements and arrange for them to be signed (application)
K11 what to identify as the obligations of the parties to the contract (understanding)
K12 how to obtain valid, written proof that they are able to meet the obligations (application)
K13 how to check that all the contract documents are complete, accurate and stored securely (application)

Additional information
Scope/range
Prepare and modify standard forms of contract
1. Contracts - type: 1.1. main contract 1.2. sub-contract 1.3. lump sum 1.4. design and construct 1.5. schedule based 1.6. prime cost based 1.7. firm priced 1.8. labour and materials 1.9. labour only 1.10. fluctuating price 1.11. goods and material supply only 1.12. service contracts
2. Form of procurement: 2.1. open competitive 2.2. two stage 2.3. selected list 2.4. negotiated 2.5. partnering
3. Amending and drafting: 3.1. allocation of risks and responsibilities 3.2. structure of contract 3.3. key instructions

Negotiate and agree a contract

4. Contracts requirements - relating to: 4.1. legal factors 4.2. main contract 4.3. sub-contract 4.4. lump sum 4.5. design and construct 4.6. schedule based 4.7. prime cost based 4.8. firm price 4.9. fluctuating price 4.10. labour and materials 4.11. labour only 4.12. goods and material supply only 4.13. service contracts
5. People involved in the contract: 5.1. clients 5.2. main contractors 5.3. sub-contractors 5.4. consultants 5.5. third parties
6. Amendments: 6.1. allocation of risks and responsibilities 6.2. structure of contract 6.3. key instructions 6.4. information management 6.5. Legal requirements: 6.6. legal factors 6.7. statutes 6.8. regulations, including European Union regulations 6.9. codes of practice and procedure 6.10. common law
7. Contract documents: 7.1. invitation to tender 7.2. forms of tender 7.3. specifications 7.4. survey reports 7.5. drawings and schedules 7.6. bills of quantities/schedules of rates 7.7. health and safety plans 7.8. scope of services 7.9. terms and conditions
8. Obligations: 8.1. insurances 8.2. bonds 8.3. warranties 8.4. statutory 8.5. financial guarantees 8.6. competence of people 8.7. information management

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COSBEDMO18
Control projects in built environment design management

Overview:

This unit applies to designers who go onto site and become involved in the construction process. It is about ensuring the quality of the work activities. You must be able to specify what standards of quality you require to set up systems for carrying out the work activities to the agreed standards, deal with contingencies and non-compliance, and to gather feedback to identify which activities can be improved. It is about working to programme. You must be able to set up systems for monitoring progress, to deal with resource problems, delays and disruptions, and continually seek ways of improving progress. It is about controlling costs and making payments. You must be able to set up cost control systems; deal with variations; identify cost savings; and issue instructions and certificates

Performance criteria - you must be able to:
Control contract(s) against agreed quality standards
P1 identify and interpret quality standards from available information and pass them to people responsible for their implementation, before they start work
P2 specify, clearly and unambiguously, the responsibilities which individuals have for maintaining quality standards
P3 set up processes for inspecting and controlling the quality of work and record the outcomes
P4 check, regularly, that work conforms to the design requirements and the specified quality standards

P5 identify work which fails to meet the requirements and specified quality standards and implement corrective action
P6 inform people responsible about significant variations in quality standards, programme and safety implications, and suggest the decisions which they need to make and the actions they need to take
P7 identify specifications which conflict with statutory and legal requirements and refer them to people responsible for modification
P8 identify improvements from feedback received and recommend them to people responsible
P9 agree amendments to the contract quality requirements and specifications and record them accurately

Control contract progress against agreed programmes
P10 develop and implement systems to monitor and record the progress of the contract against the agreed programmes P11 identify inadequately and inappropriately specified resources, inform people responsible and specify and obtain alternative resources P12 identify and quantify any deviations from planned progress which have occurred, or which may occur, and which could disrupt the programme P13 investigate the circumstances of any deviations thoroughly and agree and implement appropriate corrective action P14 recommend options which are most likely to minimise increases in cost and time and help the contract progress, and pass these on to people responsible P15 regularly inform people responsible about progress, changes to the operational programme, resource needs, and suggest the decisions and actions that need to be taken P16 identify improvements from feedback received and recommend them to people responsible

Control contract costs and issue certification
P17 develop and implement appropriate contract quantities and cost control systems which are able to provide early warning of problems
P18 ensure that accurate quantities and cost data is calculated and presented in an agreed format to the people responsible
P19 identify and investigate any variations thoroughly and agree and implement appropriate action with people responsible
P20 develop and implement systems and processes for identify opportunities for cost savings and recommend them to people responsible
P21 inspect and check work against the contract requirements, record any variations and review for a certification decision to be made
P22 issue appropriate certificates and notices, in accordance with the terms of the contract requirements, and within the time agreed, and justify and support certification decisions with valid evidence
P23 check that the people involved in the contract are complying with instructions and certificates and the contract requirements and enforcing the terms of the contract requirements in cases of noncompliance

Knowledge and understanding - you need to know and understand:

Control contract(s) against agreed quality standards
K1 what to identify as quality standards from available information and pass them to people responsible for their implementation, before they start work (understanding)
K2 how and why to interpret quality standards from available information and pass them to people responsible for their implementation, before they start work (analysis)
K3 how to pass them to people responsible for their implementation, before they start work (application)
K4 how and why to specify, clearly and unambiguously, the responsibilities which individuals have for maintaining quality standards (evaluation)
K5 how and why to set up processes for inspecting and controlling the quality of work and record the outcomes (synthesis)
K6 how to record the outcomes of inspecting and controlling the quality of work (application)
K7 how to check, regularly, that work conforms to the design requirements and the specified quality standards (application)

K8 what to identify as work which fails to meet the requirements and specified quality standards and implement corrective action (understanding)
K9 how to inform people responsible about significant variations in quality standards, programme and safety implications, and suggest the decisions which they need to make and the actions they need to take (application)
K10 what to identify as specifications which conflict with statutory and legal requirements and refer them to people responsible for modification (understanding)
K11 what to identify as improvements from feedback received and recommend them to people responsible (understanding)
K12 how and why to agree amendments to the contract quality requirements and specifications and record them accurately (evaluation)

Control contract progress against agreed programmes
K13 how and why to develop systems to monitor and record the progress of the contract against the agreed programmes (synthesis)
K14 how to implement systems to monitor and record the progress of the contract against the agreed programmes (application)
K15 what to identify as inadequately and inappropriately specified resources (understanding)
K16 how to inform people responsible about inadequately and inappropriately specified resources, and obtain alternative resources (application)
K17 how and why to specify alternative resources (evaluation)
K18 what to identify as any deviations from planned progress which have occurred, or which may occur, and which could disrupt the programme (understanding)
K19 how and why to quantify any deviations from planned progress (analysis)
K20 how and why to investigate the circumstances of any deviations (analysis)
K21 how and why to agree corrective action in circumstances of any deviations (evaluation)
K22 how to implement corrective action (application)
K23 how and why to recommend options which are most likely to minimise increases in cost and time and help the contract progress (synthesis)
K24 how to pass options which are most likely to minimise increases in cost and time and help the contract progress to people responsible and regularly inform relevant people about progress, changes to the operational programme, and resource needs (application)
K25 how and why to suggest the decisions and actions that need to be taken (synthesis)
K26 what to identify as improvements from feedback received (understanding)
K27 how and why to recommend improvements to people responsible (synthesis)

Control contract costs and issue certification
K28 how and why to develop appropriate contract quantities and cost control systems which are able to provide early warning of problems (synthesis)
K29 how to implement appropriate contract quantities and cost control systems which are able to provide early warning of problems (application)
K30 how to ensure that accurate quantities and cost data is calculated and presented in an agreed format to the people responsible (application)
K31 what to identify as any variations thoroughly and agree and implement appropriate action with people responsible
K32 how and why to investigate any variations thoroughly and agree and implement appropriate action with people responsible (analysis)
K33 how and why to develop systems and processes for identifying opportunities for cost savings (synthesis)
K34 how to implement systems and processes for identifying opportunities for cost savings (application)
K35 how and why to recommend systems and processes for identifying opportunities for cost savings to people responsible (synthesis)

K36 how to inspect work against the contract requirements, record any variations and review for a certification decision to be made (synthesis)
K37 how to check work against the contract requirements, record any variations and review for a certification decision to be made (application)
K38 how to issue appropriate certificates and notices, in accordance with the terms of the contract requirements, and within the time agreed, and justifying and support certification decisions with valid evidence (application)
K39 how to check that the people involved in the contract are complying with instructions and certificates and the contract requirements and enforcing the terms of the contract requirements in cases of noncompliance (application)

Additional information
Scope/range

Control contract(s) against agreed quality standards
1. Quality standards: 1.1. statutory requirements 1.2. project specifications 1.3. British Standards 1.4. International Standards 1.5. Codes of Practice 1.6. organisation standards 1.7. trade advisory guidance and best practice 1.8. benchmarks 1.9. dimensional control 1.10. certification and accreditation of products and systems
2. People responsible: 2.1. the client 2.2. contractors 2.3. consultants 2.4. sub-contractors 2.5. suppliers
3. Processes: 3.1. visual inspection 3.2. comparison with design requirements 3.3. comparison with standard documentation 3.4. checking manufacturers' documentation 3.5. checking materials supply 3.6. sampling and mock-ups 3.7. testing 3.8. site inspection reports 3.9. contractors' reports 3.10. meetings
4. Work: 4.1. materials and components and their use 4.2. methods of construction 4.3. completed elements
Control contract progress against agreed programmes
. Systems to monitor and record: 5.1. visual inspection 5.2. resource records 5.3. site inspection reports 5.4. contractors' reports 5.5. certified payments 5.6. written, graphical and electronic records of actual work against programmed work 5.7. site meetings 5.8. organisational procedures 5.9. management reports 5.10. benchmarks 5.11. comparison with project requirements 5.12. Building Information Modelling
6. Programmes: 6.1. bar charts 6.2. network analysis 6.3. critical path 6.4. project expenditure forecasts 6.5. action lists 6.6. method statements
7. Resources: 7.1. people 7.2. plant and equipment 7.3. materials and components 7.4. finance 7.5. time 7.6. specialist services 7.7. public utility services 7.8. information
8. People responsible: 8.1. the client 8.2. contractors 8.3. consultants 8.4. sub-contractors 8.5. suppliers
9. Quantify: 9.1. method study 9.2. work study 9.3. production analysis 9.4. Building Information Modelling
10. Deviations: 10.1. resource shortages 10.2. design problems and constraints 10.3. industrial disputes 10.4. lack of essential construction information 10.5. construction errors 10.6. contract variations 10.7. inclement weather 10.8. physical constraints 10.9. legal 10.10.social 10.11.environmental 10.12.force majeure
11. Corrective action: 11.1. restore progress in accordance with agreed programme 11.2. agree new completion dates 11.3. initiate contract claim 11.4. securing additional resources 11.5. altering planned work

Control contract costs and issue certification
12. Quantities and cost data: 12.1. materials 12.2. completed work 12.3. dayworks 12.4. periodic valuations 12.5. retention sums 12.6. forecasts of expenditure 12.7. contract programme and progress
13. People responsible: 13.1. the client 13.2. contractors 13.3. consultants 13.4. sub-contractors 13.5. suppliers 13.6. line management
14. Appropriate action: 14.1. agree cost changes 14.2. agree quality changes 14.3. agree programme changes
15. Opportunities for cost savings: 15.1. waste reduction 15.2. resource management and logistics 15.3. applications of new technologies and materials 15.4. energy management 15.5. recycling/re-using materials 15.6. alternative sources and types of materials 15.7. revisions in quality 15.8. standardisation 15.9. alternative construction methods

16. Contracts requirements: 16.1. main contract 16.2. sub-contract 16.3. lump sum 16.4. design and construct 16.5. schedule based 16.6. prime cost based 16.7. firm price 16.8. fluctuating price 16.9. labour and materials 16.10.labour only 16.11.goods and material supply only 16.12.service contracts
17. Instructions and certificates: 17.1. instruction 17.2. non-conformance 17.3. dayworks 17.4. Interim Certificate 17.5. Statement of Retention 17.6. notification to nominated subcontractor 17.7. revision to completion date 17.8. partial possession 17.9. Schedule of Defects 17.10.making good defects 17.11.practical completion/final notice

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COSBEDMO19
Manage project completion and handover in built environment design management

Overview:

This unit applies to designers who are engaged in projects at site level at the handover stage and who are responsible for completing projects and formally handing them over to their clients. It is about specifying what information and guidance the users will need; getting this material produced; and training the users accordingly. You will need to have a deep knowledge of the project, and also have access to the necessary detailed information. You will need drafting, editing and training skills. You may choose to delegate the detailed work to others, but then you will be responsible for their performance. It is about completing the snagging activities, overseeing the commissioning, and managing the contractual documentation. You will need to have good organisational and interpersonal skills, as well as giving attention to technical detail. It is about the final step in the learning cycle - systematically gathering the intelligence that the project has yielded, reviewing the information and deciding how future projects can benefit from this evaluation. You will need to have good analytical and planning skills, and the necessary leadership skills to carry your team with you.

Performance criteria - you must be able to:

Provide information and guidance on the operation and maintenance of works and installations
P1 specify what information and guidance will be needed by users of the works and installations
P2 capture progressively and record the most recent information produced during design, production and installation, which could be used for guidance material about operation and maintenance
P3 produce guidance material on operation and maintenance which is logically structured, in a durable format and capable of interpretation by an informed lay user
P4 provide information in the guidance material which helps users to identify limitations and to operate and maintain equipment, systems and services efficiently and without risk to health and safety
P5 explain information in the guidance material, demonstrating to and training users to operate the installations efficiently and safely

Manage project handover
P6 confirm project requirements, consult with stakeholders and develop and agree a commissioning programme
P7 check that project requirements have been met and record outstanding work and defects
P8 ensure that commissioning inspections and tests that require certification are carried out and ensure that they are witnessed by stakeholders as required
P9 identify and arrange for the satisfactory completion of any outstanding work
P10 arrange a handover inspection involving all relevant stakeholders, confirm their concerns that need to be addressed, and record and agree any required actions
P11 check that stakeholders' respective responsibilities are adopted
P12 assemble and hand over works, installations and operational information and documentation in accordance with the contract

Obtain and evaluate project feedback information and make improvements
P13 promote the value of making improvements from feedback and encourage all those involved in the project to cooperate and obtain feedback information
P14 identify and agree the areas to focus on for making improvements from feedback
P15 identify and agree valid and reliable methods and sources for obtaining feedback information throughout project stages and for assessing and recommending improvements from feedback
P16 obtain, investigate and assess feedback information from all relevant methods and sources
P17 review the feedback information, matching it against the original requirements and objectives and summarise both positive and negative factors
P18 recommend improvements from feedback received and justify the recommendations to decision makers
P19 classify improvements from feedback which have been agreed and incorporate the improvements accurately into updated procedures and databases
P20 summarise changes and improvements from feedback which have been agreed and promote them for adoption and use

Knowledge and understanding - you need to know and understand:

Provide information and guidance on the operation and maintenance of works and installations
K1 how and why to specify what information and guidance will be needed by users of the works and installations (evaluation)
K2 how to capture progressively and record the most recent information produced during design, production and installation, which could be used for guidance material about operation and maintenance (application)
K3 how to produce guidance material on operation and maintenance which is logically structured, in a durable format and capable of interpretation by an informed lay user (application)
K4 how to provide information in the guidance material which helps users to identify limitations and to operate and maintain equipment, systems and services efficiently and without risk to health and safety (application)
K5 explain information in the guidance material, demonstrating to and training users to operate the installations efficiently and safely (application)

Manage project handover
K6 how to confirm project requirements, consult with stakeholders and develop and agree a commissioning programme (application)
K7 how to check that project requirements have been met and record outstanding work and defects (application)
K8 how to ensure that commissioning inspections and tests that require certification are carried out and ensure that they are witnessed by stakeholders as required (application)
K9 what to identify as the satisfactory completion of any outstanding work (understanding)
K10 how to arrange a handover inspection involving all relevant stakeholders (application)

K11 how to confirm their concerns that need to be addressed, and record and agree any required actions
K12 how to check that stakeholders respective responsibilities are adopted (application)
K13 how to assemble and hand over works, installations and operational information and documentation in accordance with the contract (application)

Obtain and evaluate project feedback information and make improvements
K14 how and why to promote the value of making improvements from feedback and encourage all those involved in the project to cooperate and obtain feedback information (synthesis)
K15 what to identify as the areas to focus on for making improvements from feedback (understanding)
K16 how and why to agree the areas to focus on for making improvements from feedback (evaluation)
K17 what to identify as valid and reliable methods and sources for obtaining feedback information throughout project stages and for assessing and recommending improvements from feedback (understanding)
K18 how and why to agree valid and reliable methods and sources for obtaining feedback information throughout project stages and for assessing and recommending improvements from feedback (evaluation)
K19 how to obtain feedback information from all relevant methods and sources (application)
K20 how and why to investigate and assess feedback information from all relevant methods and sources (analysis)
K21 how and why to review the feedback information, matching it against the original requirements and objectives and summarise both positive and negative factors (analysis)
K22 how and why to recommend improvements from feedback received and justify the recommendations to decision makers (synthesis)
K23 how to classify improvements from feedback which have been agreed and incorporate the improvements accurately into updated procedures and databases (application)
K24 how to summarise changes and improvements from feedback which have been agreed and promote them for adoption and use (application)

Additional information
Scope/range

Provide information and guidance on the operation and maintenance of works and installations
1. Information and guidance: 1.1. as constructed information 1.2. schedules 1.3. specifications 1.4. contract records 1.5. photographs 1.6. trade literature 1.7. statutory consents 1.8. commissioning and test certificates 1.9. operating instructions and performance ratings 1.10. guarantees 1.11. warranties 1.12. Health and Safety File 1.13. energy 1.14. certificates
2. Guidance - about: 2.1. the design approach 2.2. construction and installation details 2.3. key references 2.4. statutory and other limitations on use 2.5. health and safety aspects 2.6. operating installations 2.7. maintenance guidance 2.8. sources of replacement materials, components and equipment 2.9. spare parts 2.10. performance ratings 2.11. energy usage 2.12. environmental and sustainability aspects 2.13. future demolition and decommissioning
3. Users: 3.1. client 3.2. facilities/asset managers 3.3. maintenance managers 3.4. operators 3.5. occupiers
4. Works and installations - features: 4.1. structure 4.2. materials 4.3. finishes 4.4. furnishings 4.5. fittings 4.6. power and light 4.7. heating and ventilating 4.8. telecommunications 4.9. movement of goods and people 4.10. special services and equipment 4.11. external works 4.12. landscaping
5. Information - produced by: 5.1. consultants 5.2. contractors 5.3. sub-contractors 5.4. suppliers and manufacturers
6. Guidance material: 6.1. users manuals 6.2. log books 6.3. maintenance schedules 6.4. as constructed information

Manage project handover
7. Project requirements: 7.1. time 7.2. quality 7.3. cost 7.4. health and safety 7.5. regulations 7.6. sustainability 7.7. defects liability period

8. Stakeholders: 8.1. clients 8.2. users 8.3. consultants 8.4. contractors 8.5. regulatory authorities 8.6. facility/asset managers
9. Responsibilities: 9.1. insurances 9.2. security 9.3. operations 9.4. health and safety 9.5. utility supply 9.6. environmental sustainability
10. Works, installations and operational information and documentation: 10.1. manuals and guidance materials 10.2. plans 10.3. as constructed information 10.4. Health and safety file 10.5. operating equipment 10.6. security information and equipment 10.7. certificates and warranties 10.8. services

Obtain and evaluate project feedback information and make improvements
11. Improvements from feedback: 11.1. management procedures 11.2. client, design and construction team performance 11.3. working arrangements 11.4. formal and informal communications 11.5. quality assurance and control 11.6. design and technical appraisal 11.7. operational appraisal 11.8. performance in use 11.9. benchmarking 11.10.post project review 11.11.Building Information Modelling
12. Those involved with the project: 12.1. the design team 12.2. CDM Co-ordinator 12.3. specialist consultants 12.4. the client 12.5. contractors 12.6. site inspectorate 12.7. users 12.8. managing agents 12.9. facilities/asset managers
13. Feedback information: 13.1. approved providers 13.2. contract documentation 13.3. design documentation 13.4. as constructed information 13.5. organisational documentation 13.6. standard details 13.7. specifications 13.8. product information 13.9. government and statutory publications 13.10. research and advisory data 13.11. periodicals and abstracts
14. Project stages: 14.1. Stage 0 (Strategy) 14.2. Stage 1 (Brief) 14.3. Stage 2 (Concept) 14.4. Stage 3 (Definition) 14.5. Stage 4 (Design) 14.6. Stage 5 (Build and Commission) 14.7. Stage 6 (Handover and Closeout) 14.8. Stage 7 (Operations and End of Life)
15. Methods and sources: 15.1. project records and documentation 15.2. site inspections 15.3. scientific research and data 15.4. studies of performance in use 15.5. meetings 15.6. questionnaires 15.7. reports 15.8. Building Information Modelling

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Relevant occupations: Architects; Civil Engineers; Graphic Designers; Architectural Technologists; Town Planning Technicians; Building Surveyors
Suite: Built Environment Design Management
Key words: Project; Handover; Project stages; Feedback

COSBEDMO20
Develop self and other people in built environment design management

Overview:

This unit is about managing your own Continuing Professional Development; how you can help other people develop; and how you can contribute to the improvement of your business. It is about reviewing your development needs, planning and deciding how to meet them, carrying out your plan and evaluating its success. This will lead on to an update of your needs review, and the process becomes ongoing. You must be able to produce and defend your CPD plans and records. It is about helping other people to review their

development needs; giving them information, advice and support about how they can meet them; and monitoring their progress.

Performance criteria - you must be able to:

Undertake personal development in your occupational practice area
P1 identify your aims and objectives for undertaking personal development
P2 identify and contact sources of support and guidance for undertaking personal development
P3 identify and select relevant standards of competence against which personal development can be measured
P4 analyse the current personal level of performance against the identified standards of competence and record a profile of present competence and personal development needs
P5 prepare a development plan for achieving identified development needs
P6 undertake development activities aimed at achieving identified development needs, review and record progress and the effectiveness of the activities
P7 measure the achievement of identified development needs and record evidence of competence gained against the identified standards of competence
P8 review, revise and update aims and objectives to suit changing circumstances

Help people to learn and benefit from your experience
P9 identify appropriate opportunities for people to learn
P10 advise and mentor people so that they can identify their current level of competence, their learning needs and targets
P11 present information to other people using a pace, style and form which is appropriate to their needs
P12 encourage people to ask questions to seek clarification and advice when they need help and during learning activities
P13 review people's progress towards meeting agreed objectives and give realistic and positive feedback on achievements
P14 identify, through discussion with people, areas where they need help to achieve their agreed competence levels and use the information to produce an agreed personal development plan

Knowledge and understanding - you need to know and understand:

Undertake personal development in your occupational practice area
K1 what to identify as your aims and objectives for undertaking personal development (understanding)
K2 what to identify as of sources of support and guidance for undertaking personal development (understanding)
K3 how to contact sources of support and guidance for undertaking personal development (application)
K4 what to identify as relevant standards of competence against which personal development can be measured (understanding)
K5 how and why to select relevant standards of competence against which personal development can be measured (evaluation)
K6 how and why to analyse the current personal level of performance against the identified standards of competence (analysis)
K7 how to record a profile of present competence and personal development needs (application)
K8 how to prepare a development plan for achieving identified development needs (synthesis)
K9 how to undertake development activities aimed at achieving identified development needs,
K10 how and why to review progress and the effectiveness of the development activities (analysis)
K11 how to record progress and the effectiveness development activities (application)
K12 how to measure the achievement of identified development needs and record evidence of competence gained against the identified standards of competence (application)
K13 how and why to review aims and objectives to suit changing circumstances (analysis)

K14 how to revise and update aims and objectives to suit changing circumstances (application)

Help people to learn and benefit from your experience
K15 what to identify as appropriate opportunities for people to learn (understanding)
K16 how and why to advise and mentor people so that they can identify their current level of competence, their learning needs and targets (synthesis)
K17 how to present information to other people using a pace, style and form which is appropriate to their needs (application)
K18 how to encourage people to ask questions to seek clarification and advice when they need help and during learning activities (application)
K19 how and why to review people's progress towards meeting agreed objectives (analysis)
K20 how and why to give realistic and positive feedback on achievements (synthesis)
K21 what to identify as areas where people need help to achieve their agreed competence levels and use the information to produce an agreed personal development plan (understanding)

Additional information
Scope/range

Undertake personal development in your occupational practice area
1. Aims and objectives: 1.1. preparation for new jobs 1.2. intellectual challenge 1.3. need for updating 1.4. need to provide evidence of professional competence 1.5. compliance with employer and professional requirements 1.6. promotion or job change 1.7. awareness of shortcomings
2. Personal development: 2.1. maintenance of existing competence 2.2. improvements to existing competence 2.3. development of new competence 2.4. commitment to professional excellence
3. Sources of support and guidance: 3.1. national/industry bodies 3.2. professional Institutions 3.3. education and training providers 3.4. in house
4. Standards of competence: 4.1. client requirements 4.2. employer requirements 4.3. professional institution requirements 4.4. industry national occupational standards
5. Development plan includes: 5.1. priorities 5.2. target dates 5.3. development activities
6. Development activities: 6.1. formal courses 6.2. research 6.3. work experience 6.4. personal study 6.5. CPD presentations

Help people to learn and benefit from your experience
7. Opportunities: 7.1. paid time 7.2. personal time 7.3. office 7.4. project, group and mutual collaboration 7.5. on the job 7.6. off the job 7.7. professional activities 7.8. mentoring 7.9. tutoring 7.10. guest lecturing
8. People: 8.1. colleagues 8.2. junior colleagues 8.3. trainees entering the industry 8.4. potential entrants to the industry
9. Form which is appropriate to their needs: 9.1. attending training and educational programmes 9.2. coaching 9.3. mentoring 9.4. instructing

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Relevant occupations: Architects; Civil Engineers; Graphic Designers; Architectural Technologists; Town Planning Technicians; Building Surveyors
Suite: Built Environment Design Management

Key words: Personal Development; Competence

COSBEDMO24
Monitor budgets and contribute to improving services in built environment design management

Overview:

This unit is concerned with the financial control of projects and improving the design services of your business. It is about managing budgets and cost flow. You must know about budgeting methods and processes, and show how their application has resulted in the control of your cash flow. It is about improving the design services of your business. You must understand what business improvement means; you must be able to engage your customers and your colleagues in your business in finding ways of continually providing better design services. It will also link with many of the examples of current best business practice, e.g. IIP, ISO 9001, EFQM, Constructing Excellence, etc.

Performance criteria - you must be able to:

Monitor budget and cash flow projections
P1 monitor allocated budgets and accurately calculate fluctuations in financial performance
P2 estimate cash flow projections against actual income and expenditure
P3 assess actions which are recommended by staff and compare them with relevant sources of information about allocated budgets and cash flow projections
P4 recommend ways of dealing with variances and contingencies in a way which enables decisions to be made
P5 take appropriate corrective action promptly and inform staff about the changes that are required to allocated budgets
P6 investigate the reasons for variances and contingencies and take action which will prevent them happening again
P7 inform interested parties about actions which will require major restructure of allocated budgets and cash flow projections
P8 update allocated budgets accurately and reissue them to people who have financial responsibilities

Identify and implement improvements to design services
P9 evaluate the strengths and weaknesses of existing design services and check whether they are suitable for achieving the required design service to clients and customers
P10 analyse available data and information and identify needs and requirements for operational change and development
P11 identify valid and realistic improvement measures which will maximise added value
P12 recommend the introduction of improvement measures into the organisation's operations and develop programmes for their implementation
P13 implement agreed improvement measures in design services and projects
P14 monitor the compliance of projects with the improvement objectives, investigate variances and restore compliance with the development plan
P15 check with clients and customers that the improvement measures have satisfied their needs
P16 contribute to a culture of continuous improvement to design services

Knowledge and understanding - you need to know and understand:

Monitor budget and cash flow projections
K1 how and why to monitor allocated budgets (analysis)

K2 how to calculate fluctuations in financial performance (application)
K3 how and why to estimate cash flow projections against actual income and expenditure (analysis)
K4 how and why to assess actions which are recommended by staff (analysis)
K5 how and why to compare actions which are recommended by staff with relevant sources of information about allocated budgets and cash flow projections (synthesis)
K6 how and why to recommend ways of dealing with variances and contingencies (synthesis)
K7 how to take appropriate corrective action promptly and inform staff about the changes that are required to allocate budgets (application)
K8 how to investigate the reasons for variances and contingencies (analysis)
K9 how to inform interested parties about actions which will require major restructuring of allocated budgets and cash flow projections (application)
K10 how to update allocated budgets and reissue them to people who have financial responsibilities (application)

Identify and implement improvements to design services
K11 how and why to evaluate the strengths and weaknesses of existing design services and check whether they are suitable for achieving the required design service to clients and customers (evaluation)
K12 how and why to analyse available data and information needs and requirements for operational change and development (analysis)
K13 what to identify as needs and requirements for operational change and development (understanding)
K14 what to identify as valid and realistic improvement measures which will maximise added value (understanding)
K15 how and why to recommend the introduction of improvement measures into the organisation's operations and develop programmes for their implementation (synthesis)
K16 how to implement agreed improvement measures in design services and projects (application)
K17 how and why to monitor the compliance of projects with the improvement objectives and investigate variances (analysis)
K18 how to restore compliance with the development plan (application)
K19 how to check with clients and customers that the improvement measures have satisfied their needs (application)
K20 how to contribute to a culture of continuous improvement to design services (application)

Additional information
Scope/range

Monitor budget and cash flow projections
1. Budgets: 1.1. earned income 1.2. employment costs 1.3. liabilities 1.4. subcontract costs 1.5. consumables
2. Cash flow projections: 2.1. income receivable 2.2. expenditure
3. Variances: 3.1. overspend 3.2. underspend 3.3. change in value of the work
4. Contingencies: 4.1. delays in receivables 4.2. project and contract delays 4.3. interruptions 4.4. Interested parties: 4.5. risk 4.6. colleagues 4.7. financial providers

Identify and implement improvements to design services
5. Strengths and weaknesses: 5.1. market share 5.2. scope of products and services 5.3. availability of resources 5.4. working practices 5.5. productivity 5.6. profitability and cost factors 5.7. corporate values environmental impact 5.8. socio-econometric factors 5.9. ability to innovate 5.10. efficiency of systems (including Information Technology) 5.11. waste reduction 5.12. availability of skills 5.13. standardisation
6. Design services: 6.1. design expertise and systems 6.2. advisory services 6.3. management services 6.4. control systems 6.5. information systems 6.6. inter-disciplinary working
7. Analyse: 7.1. feasibility studies 7.2. Strengths, Weaknesses, Opportunities and Threats analyses 7.3. against industry performance benchmarks 7.4. reflection on professional practice

8. Data and information - sources: 8.1. professional journals and publications data from within the built environment 8.2. information from other industries 8.3. project feedback
9. Measures: 9.1. adopting current best practice e.g IiP, ISO 9001, EFQM 9.2. new processes, methods and techniques

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Relevant occupations: Architects; Civil Engineers; Graphic Designers; Architectural Technologists; Town Planning Technicians; Building Surveyors
Suite: Built Environment Design Management
Key words: budgets; cash flow; design; business improvement

COSBEDMO25
Manage project building information modelling protocols in built environment design management

Overview:

This unit is about managing building information modelling protocols. You will need to ensure that processes and procedures for managing project information are agreed with project stakeholders. You will need to maintain records of project information development and delivery. You will also need to monitor and review the effectiveness of the information exchange processes. Finally, you will also need to recommend and implement any agreed improvements.

Performance criteria - you must be able to:

P1 ensure that the parties accountable for information management throughout the project and at each project stage are confirmed with the client and project stakeholders
P2 advise the client on information requirements and ensure that processes and procedures are agreed between the client and project stakeholders in order to manage project information
P3 discuss and agree with the client and project stakeholders the structure and the content of the project information and how the information is to be used
P4 initiate, agree and implement the Project Information Plan with project stakeholders and ensure that it meets the client's requirements and is achievable
P5 liaise with project stakeholders to verify that agreed information management systems are functioning properly
P6 monitor information systems operation to ensure that there is reliable project information exchange between project stakeholders
P7 ensure that project information is configured to deliver required outputs
P8 maintain records of project information development and delivery in order to provide an information audit
P9 monitor and review the effectiveness of the Project Information Plan and information exchange processes and recommend and implement any agreed improvements

Knowledge and understanding - you need to know and understand:

K1 how to ensure that the parties accountable for information management throughout the project and at each project stage are confirmed with the client and project stakeholders (application)
K2 how and why to advise the client on information requirements and ensure that processes and procedures are agreed between the client and project stakeholders in order to manage project information (synthesis)
K3 how and why to discuss with the client and project stakeholders the structure and the content of the project information and how the information is to be used (synthesis)
K4 how and why to agree with the client and project stakeholders the structure and the content of the project information and how the information is to be used (evaluation)
K5 how and why to initiate the Project Information Plan with project stakeholders and ensure that it meets the client's requirements and is achievable (synthesis)
K6 how and why to agree the Project Information Plan with project stakeholders and ensure that it meets the client's requirements and is achievable (evaluation)
K7 how to implement the Project Information Plan with project stakeholders and ensure that it meets the client's requirements and is achievable (application)
K8 how to liaise with project stakeholders to verify that agreed information management systems are functioning properly (application)
K9 how to monitor information systems operation to ensure that there is reliable project information exchange between project stakeholders (analysis)
K10 how to ensure that project information is configured to deliver required outputs (application)
K11 how to maintain records of project information development and delivery in order to provide an information audit (application)
K12 how and why to monitor and review the effectiveness of the Project Information Plan and information exchange processes and recommend and implement any agreed improvements (analysis)

Additional information
Scope/range

1. Project stakeholders: 1.1. the client 1.2. CDM coordinator 1.3. financial advisers 1.4. consultants 1.5. potential contractors 1.6. potential sub-contractors and suppliers 1.7. facilities/asset maintenance managers 1.8. users
2. Project stages: 2.1. Stage 0 (Strategy) 2.2. Stage 1 (Brief) 2.3. Stage 2 (Concept) 2.4. Stage 3 (Definition) 2.5. Stage 4 (Design) 2.6. Stage 5 (Build and Commission) 2.7. Stage 6 (Handover and Closeout)
3. Processes and procedures: 3.1. employer's obligations 3.2. project team member obligations (including production and delivery of information) 3.3. electronic date exchange 3.4. Model Delivery Table (including required models, model originators, definition of required levels of detail at project stages, model use/purpose at each project stage 3.5. Project Information Plan
4. Project Information Plan: 4.1. how models are to be developed at project stages 4.2. project procedures/protocols (eg. clash detection, model review) 4.3. software requirements 4.4. model/information structure across roles 4.5. information status structure 4.6. information transfer structure 4.7. information change management 4.8. capture process for as-constructed information 4.9. capture process for testing and validation information 4.10. capture process for commissioning information 4.11. reconfiguration of information for as-constructed information 4.12. reconfiguration of information for In-Use stage 4.13. access rights
5. Required outputs: 5.1. Project development/design 5.2. Project construction 5.3. Project use/operation 5.4. Statutory requirements (e.g. approvals, Health & Safety file, Building Log book) 5.5. procurement 5.6. employer information exchanges

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Original URN: COSBEDMO25
Relevant occupations: Architects; Civil Engineers; Graphic Designers; Architectural Technologists; Town Planning Technicians; Building Surveyors
Suite: Built Environment Design Management
Key words: Building Information Modelling; Project Information Plan; Model Delivery Table

APPENDIX 3 - ASSESSMENT TEMPLATE DOCUMENTS

3A: Sample Form
Assessment plan and review

Candidate name:	
Employer/location:	Date:
Qualification: Unit(s): Elements:	
Assessor:	
Period of Review: (should not normally exceed 12 weeks)	Proposed Date for next review:

Part 1 – **<u>Activities / Tasks / Learning / Training</u>** undertaken since last review:
Part 2a – '**<u>Progress to date'</u>** specifying units/elements/modules achieved to date (the progress recorded **must** tie in with the associated '**Summary of Achievement Record'**):

Part 2b – Identified **barriers** to progress (please detail here any issues relating to the programme delivery, which have impacted negatively on progress e.g. attendance times, learning difficulties, suitability of training/learning materials, physical barriers to participation, health issues, attitude etc):

*

Part 2c – Solutions proposed to address the above barriers:

-

Part 3 – Agreed '**assessment planning'** & action required for the next review (proposed methods of evidence collection must be recorded & proposed assessment methods must be selected): ***N.B.*** *Methods of evidence collection may include: either hard copy records or electronic records such as audio recordings, scanned documents, photographs etc.*	Element: Proposed Assessment Methods/Sources of Evidence:							
	CrossRef	RPL	OBS	Questioning	PS	WR	D	WT

Key: Assessment Methods/Sources of Evidence

CrossRef = Cross Referencing **RPL**= Recognition of Prior Learning

OBS = Observation **PS** = Personal Statement

WR = Work Record **D** = Discussion

WT= Witness Testimony

Part 4 – Additional comments / issues (e.g. health & safety issues):
Part 5 – Candidate comments/feedback/evaluation:
Part 6 – Employer comments on progression and achievement noted in **Part 2a**:
Part 7 – Assessor Feedback/Assessment Judgements/Decisions/Outcome

Candidate Signature: ..... Date: .....

Assessor Signature: ..... Date: .....

Employer Signature (where present): ..... Date: .....

Employer Name and position: .....

3B: Sample Form
Assessor report

Qualification:	
Candidate:	
Assessor:	
Date:	
Unit/ element:	
Location/ circumstance:	
Details of observation/ question/ answers/ discussion	**Ref**
Details of observation/ question/ answers/ discussion	**Ref**
Details of observation/ question/ answers/ discussion	**Ref**
Assessors comments (state whether candidate is competent)	
Assessor signature	
Candidate signature	

3C: Sample Form
Witness testimony

Qualification: ……

Unit: ……

Element(s): ……

Candidate Name: ……

Witness Name: ……

Witness Contact Details: ……

……

Describe your construction and any assessment qualifications/ experience:

……

……

……

Describe your relationship with the candidate:

……

……

Date of evidence: ……

Testimony and comment on candidate's performance

……

……

……

……

……

……

……

Witness Signature & Date: ……

Candidate Signature & Date: ……

Assessor Signature & Date: ……

3D: Sample Form
Candidate personal statement

Qualification:		
Candidate name:		
Element(s)	**Date**	**Statement / evidence**
Candidate's signature:		
Assessor's signature: Date:		

APPENDIX 4 - ASSESSOR TEMPLATE DOCUMENTS

4A: Sample Form
Element achievement record

Candidate name:													
Qualification:													
Unit title: **Element(s):**													
Assessor:													
Evidence ref:	**Evidence description ***	**Location ****	**Performance criteria**					**Knowledge and understanding**					

***Key: Assessment Methods/Sources of Evidence**

CrossRef = Cross Referencing **RPL**= Recognition of Prior Learning **OBS**= Observation
Q&A= Questioning **PS**= Personal Statement **WR** = Work Record **D**= Discussion
WT= Witness Testimony

***Should refer to whether the evidence can be found in the portfolio ('PF') or elsewhere, if so state location of evidence*

4B: Sample Form
Unit progress record

Qualification:		
Unit title:		
I confirm that the candidate has been assessed as competent for this unit		
Assessor name	Assessor signature	Date
I confirm that I have been assessed as competent and that the evidence produced is from work that is all mine		
Candidate name	Candidate signature	Date
I confirm that I have internally verified this unit and confirm that the candidate is competent (this section must be completed where the assessor is unqualified)		
IV name	IV signature	Date

APPENDIX 5 - INTERNAL VERIFIER TEMPLATE DOCUMENTS

5A: Sample Internal verification Strategy

This document indicates what may be covered as part of an internal verifier's strategy. An effective internal verification strategy ensures:

- A forum for discussion of borderline cases
- Assessor networking and sharing of good practice
- Valid, reliable and consistent training and/or assessment
- Recorded assessment decisions which are appropriate, consistent, fair, transparent and equitable
- Clarity for candidates about assessment requirements
- Effective preparation and presentation for external verification
- Reduction in level of direct external verification scrutiny

To underpin the IV/ verification process a plan of internal activity should be developed indicating

- what will happen
- when it will happen
- who will be involved

New instructors/assessors must:

a) be supplied with assessment and materials
b) clearly understand assessment requirements and procedures

All assessors must:

a) know the name of the person who will manage the IV process and the name of the IV
b) know how IV/ verification will happen, when it will happen and who will be involved
c) be informed about issues raised through previous internal and external quality assurance

On Course Monitoring

The IV should:

a) Sample assessments to ensure that:
   - feedback to candidates is clear and constructive
   - teaching and assessment activities are standard and appropriate
   - assessment decisions are fair and consistent
   - teaching and assessment records are clear
b) Undertake standardisation activities
c) Ensure candidates understand assessment requirements

d) Provide advice and support for Assessors and share good practice
e) Identify good assessment practice
f) Record internal verification activities and findings, list action points and report to instructors/assessors and the EV
g) Liaise with the EV as necessary

End of Course Checking

The IV should:

a) monitor progress against previous action points
b) ensure assessment records are complete and accurate
c) ensure evidence of achievement is appropriate and standardised
d) record internal verification activities and findings, list action points, and report these to assessors and the EV

Guidance on Sampling and Record Keeping

What do IVs/IVs sample and why?

IVs are responsible for monitoring the quality of assessment, hence the need for them to sample assessment practices and decisions. It is not usually possible or necessary to verify every aspect of assessment at each internal verification. A properly selected representative sample should identify any issues with assessment practices and decisions.

Selecting a sample

To select a representative sample, IVs must take account of factors which may impact on the quality of assessment. These factors are used to define a sampling strategy that determines the size of the sample and enables judgements to be made.

Key factors to consider are:

- Sites of delivery
- Number and experience of Assessors
- Number of courses/assessments
- Previous IV actions/recommendations
- Assessment methods
- Special arrangements
- EV recommendations
- Borderline cases
- Anything else that you think might impact on assessment decisions

The sample should include an element of random selection by the IV. It is not necessary to sample across every aspect of the programme at each event but the plan should seek to cover everything over a period of time, e.g. 3 years.

Which records should be kept?

Records of internal quality assurance/ verification must be kept and made available to the EV during monitoring visits. These should demonstrate that the internal verification procedures have been carried out. IVs should record two sets of information:

1. The sample taken by the IV
2. The comments and feedback to the Assessor following the sampling exercise, showing any recommendations or action required and how this was resolved.

There is a sample form shown below that you may use or adapt to suit your own requirement.

5B: Sample Form
Internal verification - sampling assessment decisions

Unit/qualification:

Location:
Assessor name:

Candidate Name	Sampling element[1]	Was the assessment method appropriate?	Is there sufficient evidence that outcomes have been met?	Is the evidence appropriate for the level?	Comments
Comments					

Signed: **(IV)** **Date:**

Signed: **(Assessor)** **Date:**

[1] *Was this a learning outcome across candidates, or a whole unit or one method of assessment?*

5C: Sample Form
Internal verification – observation of assessors

Internal Verifier's Name: ……

Assessor's Name: ……

Candidate's Name: ……

Qualification Title: ……

Unit Assessed: ……

Element Assessed: ……

Date of Observation: ……

Location of Assessment: ……

Prior to the assessment had the Assessor:	**Yes**	**No**	**Comments:**
Developed a written Assessment Plan for the candidate			
Checked that the facilities, resources and information required for the assessment were available and ready for use			
Briefed the candidate on how the assessment would take place and what would be assessed			

During the assessment did the Assessor:	Yes	No	Comments:
Conduct the assessment unobtrusively without interfering with the candidate's performance			
Encourage the candidate to satisfy the specified Assessment Criteria			
Ask questions clearly in an encouraging tone and manner without leading the candidate			
Ensure that sufficient questions were asked and that they were justifiable and relevant to the Unit assessed			

During the assessment did the Assessor (continued):	Yes	No	Comments:
Ensure that the atmosphere created during the assessment was pleasant and conducive			
Clarify and resolve any concerns that the candidate had during the assessment			
Clearly inform the candidate of the assessment decision i.e. 'achieved' or 'requires further practice'			
After the assessment did the Assessor:	**Yes**	**No**	**Comments:**

Provide feedback that was clear, constructive, met the candidate's needs and was appropriate to his/her level of confidence			
Encourage the candidate to comment on the assessment decision and how he/she was assessed			
Complete the Unit assessment documentation and ensure it was fully signed and dated			

Overall feedback to Assessor:

Assessor's comments on the IV's feedback:

Assessor's Signature: ……

Date:……

Internal Verifier's Signature: ……

Date:……