International Construction Measurement Standards: Global Consistency in Presenting Construction Costs

International Construction Measurement Standards Coalition
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Welcome to ICMS: Global Consistency in Presenting Construction Costs

The International Construction Measurement Standards (ICMS) aim to provide global consistency in classifying, defining, measuring, analysing and presenting entire construction costs at a project, regional, state, national or international level. ICMS are a cost classification system.

This project is the first of its kind with global coverage, bringing together numerous organisations from around the world to create shared international standards for presenting entire construction costs. This first edition of ICMS focuses on capital costs; however, future editions of ICMS may incorporate other matters such as costs-in-use.

Consistent practice in presenting construction costs globally will bring significant benefits to construction cost management. Globalisation of the construction business has increased the need to make meaningful comparative analysis between countries, not least by international organisations such as the World Bank Group, the International Monetary Fund, various regional development banks, non-governmental organisations and the United Nations.

The Coalition did not identify any existing standard that was suitable for international adoption. For this reason, the Coalition has come together to create a shared standard. Following earlier discussions, at a meeting at the International Monetary Fund in June 2015, Coalition members confirmed they were committed to promoting the implementation of ICMS to encourage world markets to accept and adopt ICMS as the primary standards for presenting construction costs across different nations in a consistent way.

An independent Standards Setting Committee (the SSC) was formed. The SSC includes technical experts from 16 countries and a combined expertise covering 47 different markets. The SSC worked virtually and also met three times, once in Brussels and twice in London.

The Coalition is a non-governmental, not-for-profit professional coalition. A wide range of professional organisations are represented in the Coalition and the SSC. They were generous in providing their national standards, which provided the basis for the early deliberations of the SSC.

The SSC produced the complete consultation draft of ICMS within a year, in July 2016. Following the private consultation period in October 2016, two public consultations took place between November 2016 and April 2017. The completed first edition was published in July 2017.

The Coalition accepts that standards setting is a continuous and dynamic process. It will be listening closely to the global construction cost management community to ensure necessary updates are captured for continued improvement.

In addition to preparing further editions of ICMS for additional types of civil engineering projects, the SSC will also monitor all guidance notes on ICMS to ensure that they are consistent with the principles and intent of ICMS.

All local, regional or worldwide approaches will be documented to allow coordination, expansion and consistency of ICMS guidance whenever required.

The Coalition is beginning the important work of implementation by liaising with governments on a national, regional or state and local level to seek adoption of ICMS. Many key stakeholders are being engaged in the process of implementation. A list of ICMS-supporting partners is shown on the ICMS Coalition website (https://icms-coalition.org/) – these organisations are committed to the adoption of ICMS.

The Coalition, the SSC and the numerous participants in the consultation are proud to present ICMS.

For further information on ICMS please visit the website (https://icms-coalition.org/).

On behalf of the ICMS Coalition Trustees:
Ken Creighton – (Royal Institution of Chartered Surveyors) – Chair
Martin Darley – (Association for the Advancement of Cost Engineering) – Vice Chair
Julie dela Cruz – (Philippine Institute of Certified Quantity Surveyors) – General Secretary
Craig Bye – (Canadian Institute of Quantity Surveyors) – General Secretary
Introduction

The International Construction Measurement Standards Coalition (the Coalition) was formed on 17 June 2015 after earlier discussions and a formal meeting at the International Monetary Fund in Washington DC, USA. The Coalition, comprising the organisations listed below at the date of publication, aims to bring about consistency in construction cost reporting standards internationally. This is achieved by the creation and adoption of the ICMS, agreed international standards for the structuring and presentation of cost reports. ICMS sets out a structure for describing construction costs in terms of project scope, attributes and values descriptors.

This document setting out the provisions of ICMS is the first prepared by the Coalition's Standards Setting Committee (the SSC). The Coalition members at the date of publication are:

- Africa Association of Quantity Surveyors (AAQS)
- Association for the Advancement of Cost Engineering International (AACE)
- Association of Cost Engineers (ACostE)
- Association of South African Quantity Surveyors (ASAQS)
- Australian Institute of Quantity Surveyors (AIQS)
- Brazilian Institute of Cost Engineers (IBEC)
- Building Surveyors Institute of Japan (BSIJ)
- Canadian Institute of Quantity Surveyors (CIQS)
- Chartered Institute of Building (CIOB)
- Chartered Institution of Civil Engineering Surveyors (ICCES)
- Chinese Electric Council (CEC)
- China Engineering Cost Association (CECA)
- Commonwealth Association of Surveying and Land Economy (CASLE)
- Conseil Européen des Economistes de la Construction (CEEC)
- Consejo General de la Arquitectura Técnica de España (CGATE)
- Dutch Association of Quantity Surveyors (NVBK)
- European Federation of Engineering Consultancy Associations (EFCA)
- Federation Internationale des Geometres (FIG)
- Ghana Institution of Surveyors (GhIS)
- Ikatan Quantity Surveyor Indonesia (IQSI)
- Indian Institute of Quantity Surveyors (IISQ)
- Institute of Engineering and Technology (IET)
- Institute of Quantity Surveyors of Kenya (IQSK)
- Institute of Quantity Surveyors Sri Lanka (IQSSL)

Institution of Civil Engineers (ICE)
Institution of Surveyors Kenya (ISK)
Institution of Surveyors of Uganda (ISU)
International Cost Engineering Council (ICEC)
Italian Association for Total Cost Management (AICE)
Korean Institution of Quantity Surveyors (KIQS)
New Zealand Institute of Quantity Surveyors (NZIQS)
Nigerian Institute of Quantity Surveyors (NIQS)
Pacific Association of Quantity Surveyors (PAQS)
Philippine Institute of Certified Quantity Surveyors (PICQS)
Property Institute of New Zealand (PINZ)
Real Estate Institute of Botswana (REIB)
Royal Institute of British Architects (RIBA)
Royal Institution of Chartered Surveyors (RICS)
Royal Institution of Surveyors Malaysia (RISM)
Singapore Institute of Building Limited (SIBL)
Singapore Institute of Surveyors and Valuers (SISV)
Sociedad Mexicana de Ingeniería Económica, Financiera y de Costos
Society of Chartered Surveyors Ireland (SCSI)
Union Nationale des Economistes de la Construction (UNTEC)

Construction organisations have been working internationally for many years. Research has shown, however, that different approaches to presenting the costs of construction can vary by as much as 25–30% due to inconsistent methodology and standards. Hence international standards are required to ensure global consistency in presenting the entire cost of construction projects.

The aim of the Coalition is to provide a structure and format for classifying, defining, measuring, analysing and presenting construction costs that will provide consistency and transparency across international boundaries. The SSC has focused only on issues directly related to the costs of construction so that cross-boundary costs can be benchmarked and the causes of differences in costs can be identified.

The ICMS project followed work on the development of International Property Measurement Standards (IPMS). IPMS established standards for measuring the floor areas of buildings. For ICMS a key element agreed by the Coalition members was that ICMS would be compatible and would accord with IPMS.
ICMS offer a framework against which costs can be classified, measured, recorded, analysed and presented. The hierarchical framework has four levels:

- Level 1: **Project** or **Sub-Project**
- Level 2: **Cost Category**
- Level 3: **Cost Group**
- Level 4: **Cost Sub-Group**

The composition of Levels 2 and 3 is the same for all **Projects** and **Sub-Projects**, although discretion is allowed in the contents of Level 4. Examples of the contents of Level 4 are given in Appendices A, B, C and D.

These **Standards** provide definitions, scope, attributes and values, units of measurement and explanatory notes for each type of **Project**. It provides guidance on:

- how the **Standards** are to be used
- the level of detail to be included
- the method of dealing with **Projects** comprising different **Sub-Projects** and
- the approach to be taken to ensure that like is compared with like, especially considering different currencies and time frames.

For buildings, the various cost analysis standards worldwide require the measurement of either gross external floor area (**GEFA**) or gross internal floor area (**GIFA**). This permits the representation of overall costs in terms of currency per **GEFA** or **GIFA**. Research shows that floor area measurement standards vary considerably between countries. The linking of **ICMS** with **IPMS** provides a valuable tool for overcoming these inconsistencies. **ICMS** require a cost report to include both **GEFA** (**IPMS** 1) and **GIFA** (**IPMS** 2) measured in accordance with the rules set out in **IPMS**. These are summarised in Appendix G.

For civil engineering projects, **ICMS** also provide units of measurement describing their physical sizes and functional capacities for the purposes of comparison.

The **SSC** prioritised setting a cost classification standard for buildings and selected types of civil engineering projects. The types of civil engineering projects chosen for this first edition of **ICMS** are those that are most commonly required and cover:

- road and rail transport
- energy
- oil and gas and
- the utility sectors.

Further types will be added in future editions. **ICMS** have been created through a transparent, detailed and inclusive standard-setting process by the **SSC**. Members of the **SSC** freely shared their expertise and knowledge of practices in their own countries and brought a broader understanding informed by their international experience. In addition, they drew upon the guidance of international correspondents. This resulted in a full analysis and appreciation of the standards and practices in many more countries than those directly represented by **SSC** members. **ICMS** are not a hybrid of those standards but do introduce some concepts that may be new to some markets.

**ICMS** are high-level standards. Markets that do not have established standards are encouraged to adopt **ICMS**. Markets that do have established local standards should adopt **ICMS** to compare cost data prepared using different standards from different markets on a consistent, like-for-like basis. The aim of the **SSC** is not to replace existing local standards, but to provide an internationally accepted consistent framework into which data generated locally can be allocated for the purposes of comparison. In time, it is expected that **ICMS** will become the primary basis for both global and local construction cost reporting.

In drafting **ICMS**, the **SSC** has been conscious of the need for compatibility with other established or emerging standards. It has striven to strike a balance between the need for prescription to be compatible with other standards and the need for flexibility to accommodate the different cost classification systems that exist across the world.

Thus, the types of **Project** are generally compatible with the United Nations **International Standard Industrial Classification of all Economic Activities**. The **Cost Sub-Groups** are generally compatible with the elements in **ISO 12006 Building construction – Organization of information about construction works – Part 2: Framework for Classification**, and can be adapted to be compatible with most other breakdown systems such as Uniclass or Omniclass.

In addition, it has been recognised that a work breakdown structure (**WBS**) approach to cost reporting is widely used around the world, particularly in civil engineering. Therefore, examples of mapping to and from various national standards and **WBS** are included on the **Coalition** website ([https://icms-coalition.org/](https://icms-coalition.org/)).
ICMS Standards Setting Committee

In June 2015, the Coalition selected construction cost management experts from around the world to form its Standards Setting Committee (the SSC) to develop global standards for presenting construction costs.

The SSC comprises experts representing a wide range of construction professional organisations.

The SSC acts independently from the Coalition and its members.

The SSC members and co-authors of these Standards are:

Ong See-Lian (Malaysia)  Chairman
Alan Muse (UK)  Vice-Chairman
Gerard O’Sullivan (Republic of Ireland)  Executive Secretary
Alexander Aronsohn (UK)
Dainna Baharuddin (Malaysia)
Tolis Chatzisymeon (Greece)
William Damot (Philippines)
Ruya Fadason (Nigeria)
Roger Flanagan (UK)
Mark Gardin (Canada)
Malcolm Horner (UK)
Roy Howes (Canada)
Guo Jing Juan (China)
Philip Larson (USA)
Patrick Manu (Ghana)
Charles Mitchell (Republic of Ireland)
Sinimol Noushad (UAE)
Antonio Paparella (Belgium)
David Picken (Australia)
Anil Sawhney (India)
Peter Schwanethal (UK)
Koji Tanaka (Japan)
Tang Ki-Cheung (Hong Kong)
Part 1  Context

1.1 Introduction

The aim of ICMS is to provide global consistency in classifying, defining, measuring, analysing and presenting entire construction costs at a project, regional, state, national or international level. ICMS allow:

• construction costs to be consistently and transparently benchmarked
• the causes of differences in costs between projects to be identified
• properly informed decisions on the design and location of construction projects to be made and
• data to be used with confidence for construction project financing and investment, decision-making, and related purposes.

This part provides definitions of terms commonly used throughout the Standards. Definitions specific to particular types of Projects are provided in Appendices A, B, C and D. This part also sets out the aim and use of the Standards.

1.2 Definitions

Associated Capital Costs
The payments, fees and charges payable for work and utilities off-site, post completion furniture, furnishing and equipment, and construction-related consultancies and supervision, but excluding costs associated with land acquisition and client’s other costs associated with the realisation of the Project.

Base Date
The date at which costs are considered to apply without the need for any indexing.

Capital Construction Costs
Expenditure on labour, materials, plant, equipment, site and head office overheads and profit, including taxes and levies, incurred as a direct result of the construction intervention. It is the total price payable for work normally included in contracts to construct a building or civil engineering works, including any supplies by the Client for the Constructor to fix. It also includes all temporary works required to undertake the construction works.

Client
The entity that procures or provides site, commissions and pays Service Providers and Constructors to design and construct a Project on the site including, in some cases, funding, operating and maintaining the Project, and pays all other Associated Capital Costs.

Coalition
The International Construction Measurement Standards Coalition, comprising not-for-profit organisations, each with a public interest mandate.

Constructor
Organisation commissioned and paid by a Client to construct or implement the construction of a Project or part thereof including, in some cases, providing funding, design, management, maintenance and operation services.

Conversion date
The date or dates at which any currency conversion was made.

Cost Category
A division of Project or Sub-Project costs into Capital Construction Costs, Associated Capital Costs and Site Acquisition and Client’s Other Costs currently, with further divisions for costs-in-use in the future editions of the Standards.

Cost Group
A division of costs under a Cost Category into a small number of broad groups to enable easy estimation or extraction of cost data for quick high-level comparison by design discipline or common purpose.

Cost Management Professional
A Service Provider competent to calculate, interpret, analyse, apportion and report using ICMS.

Cost Sub-Group
A division of costs under a Cost Group according to their functions or common purposes irrespective of their design, specification, materials or construction to enable the costs of alternatives serving the same function or common purpose to be compared, evaluated and selected.

GEFA
Gross external floor area measured according to IPMS 1 as set out in IPMS and provided in Appendix G.

GIFA
Gross internal floor area measured according to IPMS 2 as set out in IPMS and provided in Appendix G.

ICMS
International Construction Measurement Standards.

IPMS
International Property Measurement Standards. IPMS are the global standards that aim to enhance the transparency and consistency in the way Property is measured across markets. It was developed by the IPMS Coalition, an independent group of professional bodies from around the world.
Major Refurbishment
Substantial modification of, or improvement to, the main parts of an existing building or civil engineering works to bring them up to an acceptable standard or to accommodate a change in use. Major extension is to be treated as new build.

Price Level Adjustment
An allowance for the increases or decreases in the price levels, due to inflation, escalation or deflation, over a defined period.

Project
A series of, or single, construction intervention(s) with a single purpose or common purposes commissioned by a Client, or group of Clients, with a defined start and end date. A Project may comprise a number of Sub-Projects.

Project Attributes
The principal characteristics of a Project or Sub-Project relating to time, cost, scope of works, design, quality, quantity, procurement, location and other contextual features that might impact its cost.

Project Complexity
The relative intricacy of a Project or Sub-Project by reference to its form, design, site constraints, method or timing of construction.

Project Quantities
The physical quantities (numbers, lengths, areas, volumes and weights), functional quantities (capacities, inputs, outputs) and degree of repetition required to be captured in the Project Attributes and Project Values such that the costs of different projects or design schemes can be converted to a unit cost per the desired Project Quantity for evaluation and comparison. Both are required for each Project or Sub-Project.

Project Values
A standard set of descriptions and/or measurements for each of the Project Attributes.

Property
Any real estate asset in the built environment.

Risk Allowance
A quantitative allowance set aside as a precaution against risks and future needs to allow for uncertainty of outcome. Risk is an uncertain event or circumstance that, if it occurs, may affect the outcome of a Project.

Site Acquisition and Client’s Other Costs
All payments required to acquire the site, excluding physical construction, and all other expenses associated with project realisation, from inception to putting the Project into use, and which are not part of the Capital Construction Costs or Associated Capital Costs.

Service Provider
Any organisation or individual providing construction advice, or a service, to a Client including, but not limited to, project managers, architects, engineers, technical architects or engineers, surveyors, Cost Management Professionals, constructors, facilities managers, planners, valuers, property managers, asset managers, agents and brokers.

Sub-Project
A sub-division of a Project that can be described by a single set of attributes and values.

Taxes and Levies
Mandatory costs taxed or levied in connection with the Project by national governments, states, municipalities or governmental organisations, using the whole or part of the construction contract payments as the chargeable base, whether paid by the Client or the Constructor.

Total Capital Cost
The total of Capital Construction Costs, Associated Capital Costs and Site Acquisition and Client’s Other Costs for a Project or Sub-Project.

1.3 Use of the Standards
ICMS can be used for any purpose agreed between a Client and a Service Provider.

Where a cost report has been prepared in compliance with ICMS, this should be stated in the report.

ICMS can be used to analyse and compare historic, present and future costs of new build and Major Refurbishment programmes and projects. ICMS are not intended, at present, to cover maintenance and repair costs.

Applications include, but are not limited to:
• global investment decisions
• international, national, regional or state cost comparisons
• feasibility studies and development appraisals
• project work including cost planning and control, cost analysis, cost modelling and the procurement and analysis of tenders
• dispute resolution work
• reinstatement costs for insurance and
• valuation of assets and liabilities.

Process flow charts to clarify the use of the Standards are provided in Appendix E.
Part 2 ICMS Framework

2.1 Introduction

Conceptually, the overall framework of ICMS is as shown in Figure 1.

Figure 1: ICMS Framework

<table>
<thead>
<tr>
<th>Level 1: Projects or Sub-Projects</th>
<th>Level 2: Cost Categories</th>
<th>Level 3: Cost Groups</th>
<th>Level 4: Cost Sub-Groups (Discretionary)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roads and motorways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Railways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridges</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tunnels</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste water treatment works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water treatment works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pipelines</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wells and boreholes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power-generating plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refineries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision for further types of Project to be added at a later date</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2 Hierarchical Levels

Using this framework, the hierarchical levels of ICMS are as shown in Figure 2.

Figure 2: ICMS Hierarchy

The description of each level in Figure 2 is as follows:

Project and Sub-Project (Level 1)

ICMS classify Projects according to their essence and principal purpose. The Projects shown in the framework are not exhaustive and will be the subject of further development in future editions of the Standards.

When a Project cannot be described by a single set of Project Attributes and Project Values, it is to be sub-divided for cost reporting into Sub-Projects each described by a single set of Project Attributes and Project Values.

Cost Categories and Cost Groups (Levels 2 and 3)

The Cost Categories at Level 2 and Cost Groups at Level 3, as defined in Table 1, are mandatory and standardised for all Projects to enable high-level comparison between different Projects and Sub-Projects.

Table 1: Definitions of Cost Categories (Level 2) and Cost Groups (Level 3)

<table>
<thead>
<tr>
<th>Cost code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Total Capital Cost (1 + 2 + 3)</td>
</tr>
<tr>
<td>1</td>
<td>Capital Construction Costs</td>
</tr>
<tr>
<td>1.01</td>
<td>Demolition, site preparation and formation</td>
</tr>
<tr>
<td></td>
<td>• Scope: All necessary advance or facilitating work to prepare, secure and form the site to enable substructure construction.</td>
</tr>
<tr>
<td>1.02</td>
<td>Substructure</td>
</tr>
<tr>
<td></td>
<td>• Scope: All the load-bearing work underground or underwater up to and including the following (including related earthwork, lateral support beyond site formation, and non-load-bearing components forming an integral part of composite load-bearing work) and as illustrated in Schedule 2:</td>
</tr>
<tr>
<td></td>
<td>− for buildings: lowest floor slabs, and basement sides and bottom including related waterproofing and insulation</td>
</tr>
<tr>
<td></td>
<td>− for roads and motorways: sub-base to pavements</td>
</tr>
<tr>
<td></td>
<td>− for railways: sub-base to rail track structures</td>
</tr>
<tr>
<td></td>
<td>− for bridges: pile caps, footings, bases nearest ground level or water level if constructed in water</td>
</tr>
<tr>
<td></td>
<td>− for tunnels: external faces of structural tunnel linings</td>
</tr>
<tr>
<td></td>
<td>− for tanks and the like underground: external faces of tanks</td>
</tr>
<tr>
<td></td>
<td>− for tanks and the like above ground: bases supporting tanks</td>
</tr>
<tr>
<td></td>
<td>− for pipelines underground: beds and surrounds to underground pipes</td>
</tr>
<tr>
<td></td>
<td>− for pipelines above ground: bases to structures supporting pipes</td>
</tr>
<tr>
<td></td>
<td>− for wells and boreholes: bases to structures supporting well heads.</td>
</tr>
</tbody>
</table>
### Cost code | Description
---|---
1.03 | Structure  
  - Scope: All the load-bearing work, including non-load-bearing components forming an integral part of composite load-bearing work, excluding that included in Substructure and Architectural works.

1.04 | Architectural works | Non-structural works  
  - Scope: All architectural and non-load-bearing work excluding services, equipment and underground drainage.

1.05 | Services and equipment  
  - Scope: All fixed services and equipment required to put the completed project into use, whether they are mechanical, hydraulic, plumbing, fire-fighting, transport, communication, security, electrical or electronic, excluding external underground drainage.

1.06 | Surface and underground drainage  
  - Scope: All external surface and underground drainage systems specifically serving the Project.

1.07 | External and ancillary works  
  - Scope: All work outside the external face of buildings or beyond the construction required to fulfil the primary function of the Project and not included in other Cost Groups.

1.08 | Preliminaries | Constructor’s site overheads | general requirements  
  - Scope: Constructor’s site management, temporary site facilities, site services, and expenses, not directly related to a particular Cost Group, but commonly required to be shared by all Cost Groups.

1.09 | Risk Allowances  
  - Scope: Those as defined in section 1.2 but related to Capital Construction Costs and not included in other Cost Groups.

1.10 | Taxes and Levies  
  - Scope: As defined in section 1.2.

### 2 Associated Capital Costs

2.01 | Work and utilities off-site  
  - Scope: All payments to government authorities or public utility companies to connect public work and utilities to the site, or services diversions, to enable the Project.

2.02 | Post-completion loose furniture, fittings and equipment  
  - Scope: Those provided for the Project to perform its function close to or after completion.

2.03 | Construction-related consultancies and supervision  
  - Scope: Fees and charges payable to Service Providers not engaged by the Constructors.

2.04 | Risk Allowances  
  - Scope: Those as defined in section 1.2 but related to Associated Capital Costs and not included in other Cost Groups.

### 3 Site Acquisition and Client’s Other Costs

3.01 | Site acquisition  
  - Scope: All payments required to acquire the site, excluding physical construction.

3.02 | Administrative, finance, legal and marketing expenses  
  - Scope: All other expenses associated with Project realisation, from inception to putting the Project into use and which are not part of the Capital Construction Costs or Associated Capital Costs.
Cost Sub-Groups (Level 4)
The costs of components of a Project or Sub-Project under each Cost Group serving a specific function or common purpose are grouped into one Cost Sub-Group, such that the costs of alternatives serving the same function can be compared, evaluated and selected. Cost Sub-Groups are chosen irrespective of their design, specification, materials or construction.

These Standards do not mandate the classification of the Cost Sub-Groups (Level 4), but the following appendices provide examples of what might be included:

• Appendix A – Cost Sub-Groups: Buildings
• Appendix B – Cost Sub-Groups: Civil Engineering Works
• Appendix C – Cost Sub-Groups: Associated Capital Costs
• Appendix D – Cost Sub-Groups: Site Acquisition and Client’s Other Costs

Users of these Standards may adopt a Cost Sub-Group classification based on trades, work breakdown structure or work results according to their local practice.

Cost codes
Cost codes are a unique identifier for digital purposes. They have been assigned to the ICMS hierarchy down to Level 4. However, since the classification of the Cost Sub-Groups at Level 4 is not mandatory, the cost codes there may be suitably adjusted.

2.3 Project Attributes and Project Values
To enable consistent and concise evaluation and comparison between different Projects or different design schemes, these Standards provide a set of Project Attributes and Project Values in Schedule 1 describing the principal characteristics of each Project or Sub-Project.

Costs should, as far as practicable, be stated in their payment currencies. When it is necessary to carry out a currency conversion, the exchange rates or conversion factors used and the applicable dates should be stated.
Schedule 1  Project Attributes and Project Values for Each Type of Project and Sub-Project

Notes:
1. All values should be given so long as the attributes are relevant.
2. Alternative values are separated with a vertical slash ( | ). More than one alternative value may be chosen.
3. All quantities should be rounded to the nearest whole number unless considered inappropriate in special circumstances.
4. These Project Attributes and Project Values capture the minimum principal cost-significant characteristics of a Project or Sub-Project. Users may add more Project Attributes and Project Values to suit their needs.
5. The values of functional units refer to the designed values.

<table>
<thead>
<tr>
<th>Project Attributes</th>
<th>Project Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Common</strong>&lt;br&gt;(Project level only)</td>
<td></td>
</tr>
<tr>
<td><strong>Report</strong></td>
<td></td>
</tr>
<tr>
<td>Project title</td>
<td></td>
</tr>
<tr>
<td>Status of cost report</td>
<td>pre-construction forecast</td>
</tr>
<tr>
<td>Date of cost report</td>
<td>(month and year)</td>
</tr>
<tr>
<td>Revision number of cost report</td>
<td></td>
</tr>
<tr>
<td>Brief description of the Project</td>
<td>• client’s name</td>
</tr>
<tr>
<td></td>
<td>• main Project type (principal Sub-Project)</td>
</tr>
<tr>
<td></td>
<td>• brief scope</td>
</tr>
<tr>
<td>Location and country</td>
<td>International Organisation for Standardisation (ISO) country code (e.g. CN)</td>
</tr>
<tr>
<td>Sub-Projects included</td>
<td>buildings</td>
</tr>
<tr>
<td><strong>Price Level</strong></td>
<td></td>
</tr>
<tr>
<td>ISO currency code</td>
<td>(e.g. USD)</td>
</tr>
<tr>
<td>Base date of costs</td>
<td>(month and year)</td>
</tr>
<tr>
<td>Price basis</td>
<td>fixed</td>
</tr>
<tr>
<td><strong>Currency Conversion</strong></td>
<td></td>
</tr>
<tr>
<td>Conversion date</td>
<td></td>
</tr>
<tr>
<td>Exchange rates or other conversion factors (used to convert a cost report of multi-currencies into a single currency)</td>
<td>(numeric conversion and currency codes)</td>
</tr>
<tr>
<td><strong>Programme</strong></td>
<td></td>
</tr>
<tr>
<td>Project status</td>
<td>initiation and concept phase</td>
</tr>
<tr>
<td>Construction period</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• number of months</td>
</tr>
<tr>
<td></td>
<td>• from start of demolition and site preparation</td>
</tr>
<tr>
<td>Project Attributes</td>
<td>Project Values</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>• to state</td>
<td>completion of commissioning</td>
</tr>
</tbody>
</table>
| • key milestones and dates | • description  
                         | • month and year                                               |
| **Site**                |                  |
| Existing site status    |                  |
| • state of use          | greenfield | brownfield |
| • type of use           | urban | rural | agricultural |
| Legal status of site    | freehold | leasehold | joint venture | not owned | other stated |
| Site topography         | principally flat | principally hilly | mountainous | offshore | other stated |
| Ground conditions       | soft | rocky | reclaimed |
| Site conditions and constraints | • access problems        
<pre><code>                          | difficult | average | easy |
</code></pre>
<p>|                         | • extreme climatic conditions | difficult | average | easy |
|                         | • environmental constraints | difficult | average | easy |
| <strong>Procurement</strong>         |                  |
| Funding                 | private | public | public and private in partnership |
| Project delivery        |                  |
| • pricing method        | lump sum stipulated price | re-measurement | cost reimbursement | other stated |
| • mode of procurement   | design bid build | design and build (turnkey) | build operate and transfer | public private partnership | management contracting | construction management | engineer procure construct | target | other stated |
| • joint venture foreign Constructor | yes | no |
| • predominant source of Constructors | local | foreign |</p>
<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
</table>

- Local functional classification standard
- Name of standard
- Code number of construction

<table>
<thead>
<tr>
<th>Works</th>
</tr>
</thead>
</table>

- Functional type
- Residential | office | commercial | shopping centre | industrial | hotel | car park | warehouse | educational | hospital | airport terminal | railway station | ferry terminal | plant facility | other stated

- Nature
- New build | major refurbishment | temporary

- Grade (qualitative description to be read in conjunction with the location)
- Ordinary quality | medium quality | high quality

- Environmental grade
- Grade and name of environmental certification
- Targeted | achieved | none

<table>
<thead>
<tr>
<th>Principal design features</th>
</tr>
</thead>
</table>

- Structural (predominant)
- Timber | concrete | steel | load-bearing masonry | other stated

- External walls (predominant)
- Stone | brick/block | render/block | curtain walling | other stated

- Environmental control
- Non-air conditioned | air conditioning

- Degree of prefabrication
- Less than 25% | up to 50% | up to 75% | up to 100%, of Capital Construction Costs

<table>
<thead>
<tr>
<th>Project Complexity</th>
</tr>
</thead>
</table>

- Shape (on plan)
- Circular, elliptical or similar | square, rectangular, or similar | complex

- Design
- Simple | bespoke | complex

- Method of working
- Sectional completion | out-of-hours working | confined working | other stated

<table>
<thead>
<tr>
<th>Design life</th>
</tr>
</thead>
</table>

- (years)

<table>
<thead>
<tr>
<th>Average height of site above or below sea level</th>
</tr>
</thead>
</table>

- (m | ft)

<table>
<thead>
<tr>
<th>Dimensions (overall length × width × height of each building to highest point of the building)</th>
</tr>
</thead>
</table>

- (m | ft)

<table>
<thead>
<tr>
<th>Typical storey height (floor level to floor level)</th>
</tr>
</thead>
</table>

- (m | ft)

<table>
<thead>
<tr>
<th>Other storeys heights and applicable floors</th>
</tr>
</thead>
</table>

- (m | ft)

<table>
<thead>
<tr>
<th>Storeys above ground (qualitative description to be read in conjunction with the location)</th>
</tr>
</thead>
</table>

- House | low rise | medium rise | high rise

<table>
<thead>
<tr>
<th>Storeys above ground (quantitative)</th>
</tr>
</thead>
</table>

- Specific number | 0–3 | 4–7 | 8–20 | 20–30 | 30–50 | over 50

<table>
<thead>
<tr>
<th>Storeys below ground</th>
</tr>
</thead>
</table>

- Specific number

<table>
<thead>
<tr>
<th>Project Quantities</th>
</tr>
</thead>
</table>

- Site area (within legal boundary of building site, excluding temporary working areas outside the site)
- (m² | ft²)

- Covered area on plan
- (m² | ft²)

- Gross external floor area as IPMS 1
- (m² | ft²)

- Gross internal floor area as IPMS 2
- (m² | ft²)

<table>
<thead>
<tr>
<th>Functional units</th>
</tr>
</thead>
</table>

- Number of occupants | number of bedrooms | number of hospital beds | number of hotel rooms | number of car parking spaces | number of classrooms | number of students | number of passengers | number of boarding gates | other stated
### Roads and motorways

(A pavement providing a thoroughfare, route, or way for vehicular traffic on land between two or more places including but not limited to alley, street, collector and rural roads, motorways, county and interstate highways. Elevated roads and motorways that are an integral part of bridges shall be included in bridges)

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
<td></td>
</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type</td>
<td>motorway</td>
</tr>
<tr>
<td>Nature</td>
<td>new build</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental grade</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• grade and name of environmental certification</td>
<td></td>
</tr>
<tr>
<td>• status</td>
<td>targeted</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• position</td>
<td>at grade</td>
</tr>
<tr>
<td>• design speed</td>
<td>(km</td>
</tr>
<tr>
<td>• number of carriageways</td>
<td></td>
</tr>
<tr>
<td>• number of lanes per carriageway</td>
<td></td>
</tr>
<tr>
<td>• lane width</td>
<td>(m</td>
</tr>
<tr>
<td>• hard shoulders</td>
<td>yes</td>
</tr>
<tr>
<td>• footways</td>
<td>yes</td>
</tr>
<tr>
<td>• footway width</td>
<td>(m</td>
</tr>
<tr>
<td>• surfacing</td>
<td>flexible construction</td>
</tr>
<tr>
<td>• vertical profile</td>
<td>switchbacks</td>
</tr>
<tr>
<td>• plan profile</td>
<td>straight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of grade-separated intersections</td>
<td></td>
</tr>
<tr>
<td>• number of at-grade intersections</td>
<td></td>
</tr>
<tr>
<td>• number of crossings over other roads, railways, waterways, valleys and the like</td>
<td></td>
</tr>
<tr>
<td>• number of access ramps</td>
<td></td>
</tr>
</tbody>
</table>

| Design life | (years) |
| Altitude |  |
| • minimum height of passageway above or below sea level | (m | ft) |
| • maximum height of passageway above or below sea level | (m | ft) |

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• total width of metalled surface of each road or motorway (including hard shoulders but excluding footways)</td>
<td>(m</td>
</tr>
<tr>
<td>• total length (between two places, irrespective of number of lanes)</td>
<td>(km</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total paved area</td>
<td>(m²</td>
</tr>
<tr>
<td>Functional units</td>
<td></td>
</tr>
<tr>
<td>• capacity</td>
<td>(vehicles per hour)</td>
</tr>
</tbody>
</table>
### Railways

(A permanent way, rail track composed of two parallel rails fixed to sleepers, or single monorail that includes spurs, sidings and turnouts for train traffic or the like, including tramways, metro rails, light rails and other rapid mass transit systems)

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
</tr>
<tr>
<td>- name of standard</td>
</tr>
<tr>
<td>- code number of construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Functional type</th>
<th>high speed</th>
<th>express</th>
<th>light rail</th>
<th>tram</th>
<th>freight</th>
<th>mixed traffic</th>
<th>other stated</th>
</tr>
</thead>
</table>

| Nature | new build | major refurbishment |

<table>
<thead>
<tr>
<th>Environmental grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>- grade and name of environmental certification</td>
</tr>
<tr>
<td>- status</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
</tr>
</thead>
<tbody>
<tr>
<td>- position</td>
</tr>
<tr>
<td>- design speed</td>
</tr>
<tr>
<td>- maximum axle loading of traffic</td>
</tr>
<tr>
<td>- train power systems</td>
</tr>
<tr>
<td>- number of tracks</td>
</tr>
<tr>
<td>- track gauge</td>
</tr>
<tr>
<td>- construction rigidity</td>
</tr>
<tr>
<td>- rail joints</td>
</tr>
<tr>
<td>- control system</td>
</tr>
<tr>
<td>- signalling system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>- number of intersections with roads and other railways</td>
</tr>
<tr>
<td>- number of crossings over roads, other railways, waterways, valleys and the like</td>
</tr>
</tbody>
</table>

| Design life | (years) |

<table>
<thead>
<tr>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>- minimum height of track bed above or below sea level</td>
</tr>
<tr>
<td>- maximum height of track bed above or below sea level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>- average width of rail corridor between legal boundaries</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route length (between two places, irrespective of number of tracks)</td>
</tr>
</tbody>
</table>

| Equated track length (being the length of all tracks along the route, including those in passing loops, sidings and depots reduced to a single length) | (km | miles) |

<table>
<thead>
<tr>
<th>Functional units</th>
</tr>
</thead>
<tbody>
<tr>
<td>- weight of traffic expressed as estimated gross million tonnes or tons per annum</td>
</tr>
<tr>
<td>- passenger journeys</td>
</tr>
</tbody>
</table>
### Bridges

(A structure designed to span across a physical obstacle)

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
<td></td>
</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type (serving)</td>
<td>roads</td>
</tr>
<tr>
<td>Nature</td>
<td>new build</td>
</tr>
<tr>
<td>Environmental grade</td>
<td></td>
</tr>
<tr>
<td>• grade and name of environmental certification</td>
<td></td>
</tr>
<tr>
<td>• status</td>
<td>targeted</td>
</tr>
<tr>
<td>Principal design features</td>
<td></td>
</tr>
<tr>
<td>• support</td>
<td>arch</td>
</tr>
<tr>
<td>• mobility</td>
<td>fixed</td>
</tr>
<tr>
<td>• spans</td>
<td>number of abutments, piers and towers</td>
</tr>
<tr>
<td>• materials</td>
<td>natural materials</td>
</tr>
<tr>
<td>Types of obstacles crossed</td>
<td>river and canal</td>
</tr>
<tr>
<td>Project Complexity</td>
<td></td>
</tr>
<tr>
<td>• curvature (predominant)</td>
<td>straight</td>
</tr>
<tr>
<td>• number of access ramps</td>
<td></td>
</tr>
<tr>
<td>• number of abutments/piers/towers with foundations in water</td>
<td></td>
</tr>
<tr>
<td>Design life</td>
<td>(years)</td>
</tr>
<tr>
<td>Altitude</td>
<td></td>
</tr>
<tr>
<td>• average height of deck above or below sea level</td>
<td>above</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>• width (including walkways, hard shoulders and the like)</td>
<td>(m</td>
</tr>
<tr>
<td>• maximum height above the lowest point land/water</td>
<td>(m</td>
</tr>
<tr>
<td>• minimum clearance height</td>
<td>(m</td>
</tr>
<tr>
<td>• deck length measured from face to face of abutments</td>
<td>(km</td>
</tr>
<tr>
<td>Project Quantities</td>
<td></td>
</tr>
<tr>
<td>Surface area of deck</td>
<td>(m²</td>
</tr>
<tr>
<td>Functional units</td>
<td></td>
</tr>
<tr>
<td>• capacity</td>
<td>(vehicles</td>
</tr>
</tbody>
</table>
Tunnels
(An artificial underground or underwater passageway, completely enclosed except for openings for entrance and exit, commonly at each end, and for ventilation)

| Code |  
|------|--
| Local functional classification standard |  
| • name of standard |  
| • code number of construction |  

| Works |  
|-------|--
| Functional type | road | railway | pipeline | conveyor | other stated |
| Nature | new build | major refurbishment | temporary |
| Environmental grade |  
| • grade and name of environmental certification |  
| • status | targeted | achieved | none |

| Principal design features |  
| • tunnelling method | cut and fill | tunnel-boring machine | drill and blast | immersed | other stated |
| • in compressed air | yes | no |
| • lining | iron | steel | concrete | not lined |
| • curvature (predominant) | straight | curved | other stated |
| • underwater | yes | no |
| • number of passages separated by a dividing wall | yes | no |
| • average depth below water or ground level | (m | ft) |

| Project Complexity |  
| • number of intersections |  
| • horizontal profile (predominant) | flat | undulating |
| • cross sectional shape | circular | oval | rectangular | other stated |
| Design life | (years) |

| Altitude |  
| • minimum height of passageway above or below sea level | (m | ft) |
| • maximum height of passageway above or below sea level | (m | ft) |

| Dimensions |  
| • overall cross section area of the tunnel (range stated in case of varying cross sections) | (m² | ft²) |
| • overall dimensions (width x height | diameter) (range stated in case of varying cross sections) | (m | ft) |
| • length (end to end) | (km | miles) |

| Project Quantities |  
| Volume of excavation | (m³ | yd³). |

<p>| Functional units |<br />
| • capacity | (vehicles | litres | gallons | tonnes | tons per hour) |</p>
<table>
<thead>
<tr>
<th>Waste water treatment works</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A facility for the cleaning and improvement of water that contains waste products, contaminants or pollutants to make it safe for discharge to land or water)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
</tr>
<tr>
<td>• name of standard</td>
</tr>
<tr>
<td>• code number of construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type (descriptions of primary, secondary and tertiary treatment processes)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>new build</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>• grade and name of environmental certification</td>
</tr>
<tr>
<td>• status</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• plant technology</td>
</tr>
<tr>
<td>• number of processes</td>
</tr>
<tr>
<td>• tank materials for each process</td>
</tr>
<tr>
<td>• term of use</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• standard of cleanliness of treated water</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design life</th>
</tr>
</thead>
<tbody>
<tr>
<td>(years)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>• average height of site above or below sea level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• overall external diameter or length × width × height of each major structure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site area (area of land covered by permanent work, excluding temporary working areas outside the site)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional units</th>
</tr>
</thead>
<tbody>
<tr>
<td>• capacity</td>
</tr>
</tbody>
</table>
## Water treatment works

*(A facility for the cleaning and improvement of water to make it potable)*

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
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</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type (descriptions of processes involved)</td>
<td>screening</td>
</tr>
<tr>
<td>Nature</td>
<td>new build</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental grade</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• grade and name of environmental certification</td>
<td></td>
</tr>
<tr>
<td>• status</td>
<td>targeted</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• plant technology</td>
<td></td>
</tr>
<tr>
<td>• number of processes</td>
<td></td>
</tr>
<tr>
<td>• tank materials for each process</td>
<td>steel</td>
</tr>
<tr>
<td>• term of use</td>
<td>fixed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• standard of cleanliness of treated water</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design life</th>
<th>(years)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Altitude</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• average height of site above or below sea level</td>
<td>(m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• overall external diameter or length × width × height of each major structure</td>
<td>(m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Site area (area of land covered by permanent work, excluding temporary working areas outside the site)</td>
<td>(hectares</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional units</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• capacity</td>
<td>(litres</td>
</tr>
</tbody>
</table>
### Pipelines

**(A series of pipes and tubing for the transfer of liquid, gas or powder)**

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
</tr>
<tr>
<td>• name of standard</td>
</tr>
<tr>
<td>• code number of construction</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type (for transporting)</td>
</tr>
<tr>
<td>Nature</td>
</tr>
<tr>
<td>Environmental grade</td>
</tr>
<tr>
<td>• grade and name of environmental certification</td>
</tr>
<tr>
<td>• status</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• principal materials</td>
</tr>
<tr>
<td>• minimum and maximum depths below ground</td>
</tr>
<tr>
<td>• minimum and maximum heights above ground</td>
</tr>
<tr>
<td>• drilling/boring method</td>
</tr>
<tr>
<td>• insulation type, if insulated</td>
</tr>
<tr>
<td>• corrosion protection measures</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• position</td>
</tr>
<tr>
<td>• number of intersections</td>
</tr>
<tr>
<td>• number of specials</td>
</tr>
<tr>
<td>• number of crossings over roads, railways, waterways, valleys and the like</td>
</tr>
<tr>
<td>• number of pumping stations, inspection points, pressure relief points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design life</th>
</tr>
</thead>
<tbody>
<tr>
<td>(years)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>• minimum height above or below sea level</td>
</tr>
<tr>
<td>• maximum height above or below sea level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• number and diameter of each pipe</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of pipes (sum of number × each length)</td>
</tr>
<tr>
<td>Length from servicing inlets to outlets</td>
</tr>
<tr>
<td>Functional units</td>
</tr>
<tr>
<td>• capacity</td>
</tr>
</tbody>
</table>
### Wells and boreholes

(Process of drilling or boring in the ground for extraction of a natural resource or the injection of a fluid or for the evaluation/monitoring of subsurface formations)

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
<td></td>
</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type (for extracting)</td>
<td>water</td>
</tr>
<tr>
<td>Nature</td>
<td>new build</td>
</tr>
<tr>
<td>Environmental grade</td>
<td></td>
</tr>
<tr>
<td>• grade and name of environmental certification</td>
<td></td>
</tr>
<tr>
<td>• status</td>
<td>targeted</td>
</tr>
<tr>
<td>Principal design features</td>
<td></td>
</tr>
<tr>
<td>• lining material</td>
<td>steel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• position</td>
<td>onshore</td>
</tr>
<tr>
<td>• direction</td>
<td>vertical</td>
</tr>
<tr>
<td>Design life</td>
<td>(years)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Altitude</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• commencing height above sea level</td>
<td>(m</td>
</tr>
<tr>
<td>• commencing height below sea level</td>
<td>(m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of wellheads</td>
<td></td>
</tr>
<tr>
<td>• numbers of each diameter of drilled/bored holes</td>
<td>(m</td>
</tr>
<tr>
<td>• vertical length drilled/bored (sum of number x each depth)</td>
<td>(m</td>
</tr>
<tr>
<td>• inclined or horizontal length drilled/bored (sum of number x each length)</td>
<td>(m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of drilled/bored depth</td>
<td>(m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional units</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• capacity</td>
<td>(m³</td>
</tr>
</tbody>
</table>
### Power-generating plants

(A facility for the generation of electrical power. Major buildings and civil engineering works shall be reported under separate Sub-Projects under a power-generating plant Project)

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
<td></td>
</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
<tr>
<td>Works</td>
<td></td>
</tr>
<tr>
<td>Functional type</td>
<td>nuclear</td>
</tr>
<tr>
<td>Nature</td>
<td>new build</td>
</tr>
<tr>
<td>Environmental grade</td>
<td></td>
</tr>
<tr>
<td>• grade and name of environmental certification</td>
<td></td>
</tr>
<tr>
<td>• status</td>
<td>targeted</td>
</tr>
<tr>
<td>Principal design features</td>
<td></td>
</tr>
<tr>
<td>• generator containment material</td>
<td>concrete</td>
</tr>
<tr>
<td>• coolant</td>
<td>water</td>
</tr>
<tr>
<td>• cycle</td>
<td>open</td>
</tr>
<tr>
<td>• number and size of turbines</td>
<td>(MW)</td>
</tr>
<tr>
<td>Project Complexity</td>
<td></td>
</tr>
<tr>
<td>• cooling system</td>
<td>wind</td>
</tr>
<tr>
<td>Design life</td>
<td>(years)</td>
</tr>
<tr>
<td>Altitude</td>
<td></td>
</tr>
<tr>
<td>• average height of site above or below sea level</td>
<td>above</td>
</tr>
<tr>
<td>Dimensions</td>
<td>(m</td>
</tr>
<tr>
<td>• overall external diameter or length × width × height of each major structure</td>
<td>(m</td>
</tr>
<tr>
<td>Project Quantities</td>
<td></td>
</tr>
<tr>
<td>Site area (area of land covered by permanent work, excluding temporary working areas outside the site)</td>
<td>(hectares</td>
</tr>
<tr>
<td>Functional units</td>
<td></td>
</tr>
<tr>
<td>• capacity</td>
<td>(MW)</td>
</tr>
</tbody>
</table>
### Chemical plants

(A facility for the creation of chemical products excluding petro-chemicals. Major buildings and civil engineering works shall be reported under separate Sub-Projects under a chemical plant Project)

<table>
<thead>
<tr>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
</tr>
<tr>
<td>• name of standard</td>
</tr>
<tr>
<td>• code number of construction</td>
</tr>
</tbody>
</table>

#### Works

| Functional type (product description) |
| Nature |
| new build | major refurbishment |

| Environmental grade |
| • grade and name of environmental certification |
| • status |
| targeted | achieved | none |

#### Principal design features

| • principal processes |
| oxidation | reduction | hydrogenation | dehydrogenation | hydrolysis | hydration | dehydration | halogenation | nitrification | sulphonation | ammoniation | alkaline fusion | alkylation | dealkylation | esterification | polymerization | polycondensation | catalysis | other stated |

| • principal reactor materials |
| mild steel | stainless steel | concrete | other stated |

#### Project Complexity

| • number of processes |

| Design life (years) |
| Altitude |
| • average height of site above or below sea level (m | ft) |

| Dimensions |
| • overall external diameter or length × width × height of each major structure (m | ft) |

#### Project Quantities

| Site area (area of land covered by permanent work, excluding temporary working areas outside the site) (hectares | acres) |
| Functional units |
| • output of product (m³ | ft³ | tonnes | tons | litres | gallons per day) |
Refineries

(A downstream facility for the creation of petro-chemical products. Major buildings and civil engineering works shall be reported under separate Sub-Projects under a refinery Project. Wells and boreholes are upstream and Pipelines are midstream)

<table>
<thead>
<tr>
<th>Code</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local functional classification standard</td>
<td></td>
</tr>
<tr>
<td>• name of standard</td>
<td></td>
</tr>
<tr>
<td>• code number of construction</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional type</td>
</tr>
<tr>
<td>Nature</td>
</tr>
<tr>
<td>Environmental grade</td>
</tr>
<tr>
<td>• grade and name of environmental certification</td>
</tr>
<tr>
<td>• status</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principal design features</th>
</tr>
</thead>
<tbody>
<tr>
<td>• principal processes</td>
</tr>
<tr>
<td>• principal reactor materials</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of processes</td>
</tr>
<tr>
<td>• number of products</td>
</tr>
</tbody>
</table>

| Design life | (years) |
| Altitude |
| • average height of site above or below sea level | above | below | (m | ft) |

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• overall external diameter or width x height of each major structure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site area (area of land covered by permanent work, excluding temporary working areas outside the site)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Functional units</th>
</tr>
</thead>
<tbody>
<tr>
<td>• input of crude oil</td>
</tr>
<tr>
<td>• output of product</td>
</tr>
</tbody>
</table>
Schedule 2  Substructure and Structure Delineation for Each Type of Project and Sub-Project

- **Structure**
- **Substructure**

**Buildings without basement**

**Buildings with basement**

**Roads, motorways and rail track structures close to surrounding ground level**

**Roads, motorways and rail track structures higher than surrounding ground level**

**Bridges**

**Bridges**

<table>
<thead>
<tr>
<th>Substructure and Structure Delineation for Each Type of Project and Sub-Project</th>
<th>Substructure and Structure Delineation for Each Type of Project and Sub-Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings without basement</td>
<td>Buildings with basement</td>
</tr>
<tr>
<td>Finished ground</td>
<td>Basement</td>
</tr>
<tr>
<td>Pavilion/railway track structure</td>
<td>Sub-base</td>
</tr>
<tr>
<td>Pavement/railway track structure</td>
<td>Finished ground</td>
</tr>
<tr>
<td>Sub-base</td>
<td>Finished ground</td>
</tr>
<tr>
<td>Bridges</td>
<td>Bridges</td>
</tr>
<tr>
<td>Deck</td>
<td>Deck</td>
</tr>
<tr>
<td>Caps</td>
<td>Finished ground/water</td>
</tr>
<tr>
<td>Piles</td>
<td>Finished ground/water</td>
</tr>
<tr>
<td>Tunnels and tanks underground</td>
<td>Tanks above ground</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Finished ground</td>
<td>Finished ground</td>
</tr>
<tr>
<td>Tunnel or tank lining</td>
<td>Tank</td>
</tr>
<tr>
<td>Base and surround</td>
<td>Base</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pipelines underground</th>
<th>Pipelines above ground</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished ground</td>
<td>Finished ground</td>
</tr>
<tr>
<td>Base and surround</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wells and boreholes</th>
<th>Waste water treatment works, water treatment works, power-generation plants, chemical plants and refineries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finished ground</td>
<td>Use the same principles as illustrated above</td>
</tr>
</tbody>
</table>
Appendices

General notes

a. Accepted alternative terms are separated with a vertical slash (|). Bullet points under Cost Sub-Groups serve to illustrate the scope but without limitation.

b. Allocate costs to their most relevant Sub-Project, Cost Group and Cost Sub-Group as far as possible without omissions or duplications. Add a separate Sub-Project called ‘Common’ to capture costs that are common to all or most Sub-Projects and which should better be shown separately to permit reallocation in the appropriate way when the specific need arises.

c. Add a Cost Sub-Group ‘All Other Costs’ within the relevant Cost Group to take account of the costs of those Cost Sub-Groups whose value is insufficient to warrant a separate Cost Sub-Group (typically whose value is less than 5% of the relevant Cost Group).

d. All costs should represent those payable by the Client and include the payees’ overheads and profits where applicable.

e. Include design fees payable by the Constructors under Capital Construction Costs, and those not payable under Associated Capital Costs.

f. Group costs of preparatory or enabling work with the principal items they are serving.

g. Group costs of ancillary items, such as temporary lateral supports/temporary drainage/dewatering/slope treatment and protection for earthwork, falsework/formwork/reinforcement for concrete work, ironmongery/hardware, fixing accessories, inline fittings for pipes/drains/conduits/cables, painting/coating, etc. with their principal items unless otherwise shown as a Cost Sub-Group. Group costs of testing and commissioning with the relevant services.

h. Round off costs suitably and commensurate with the accuracy of the amounts.

i. State ‘Excluded’ if the cost exists but is not reported. State ‘N/A’ (not applicable) if the cost does not exist.

j. Apportion the costs of cost code 1.08–1.10 into cost code 1.01–1.07 in case of simplified presentation.

k. As the Project develops, the Risk Allowances under cost code 1.09 may be gradually expended and the expended costs would be reflected in the costs of other items. The allowances may be explicitly shown in the Constructor’s contract sum build-up or reserved in the Client’s own budget not known to the Constructor. For cost reports on actual costs after construction, any surplus allowances should not be included.

l. The ‘Design development allowance’ under cost code 1.09 is an allowance in a pre-construction forecast estimate or cost plan for unforeseen extra costs due to the development of the design as it evolves. Once the design is complete, this allowance should become zero.

m. The ‘Construction contingencies’ under cost code 1.09 is an allowance for unforeseen extra costs during construction. Typically, it is to cover unforeseen events after awarding a construction contract. After the completion of the final account for the construction contract, this allowance should become zero.

n. Typically, a pre-construction cost estimate may be prepared based on the price level at a certain date, which may be current at the time of preparing the estimate or at an earlier base date, with or without allowance for the possible increases or decreases due to inflation or deflation during construction. A construction contract may be priced based on the price levels at a certain Base Date around the time of tendering and permit adjustments for rises or falls in the costs during construction. A provisional allowance should be made inside or outside the contract for the possible increase or decrease, and should gradually be replaced with the actual outcome. The ‘Price Level Adjustments’ under cost code 1.09 are to allow for the aforesaid possible change until the time of tendering, and further change during construction.
### Appendix A – Cost Sub-Groups: Buildings

<table>
<thead>
<tr>
<th>Cost code</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Capital Construction Costs</td>
<td></td>
</tr>
<tr>
<td>1.01</td>
<td>Demolition, site preparation and formation</td>
<td></td>
</tr>
<tr>
<td>1.01.010</td>
<td>Site survey and investigation</td>
<td></td>
</tr>
<tr>
<td>1.01.020</td>
<td>Environmental treatment</td>
<td></td>
</tr>
<tr>
<td>1.01.030</td>
<td>Sampling for construction, geophysical, geological or similar purposes</td>
<td></td>
</tr>
<tr>
<td>1.01.040</td>
<td>Temporary fencing</td>
<td></td>
</tr>
<tr>
<td>1.01.050</td>
<td>Demolition of existing buildings and support to adjacent structures</td>
<td></td>
</tr>
<tr>
<td>1.01.060</td>
<td>Site surface clearance (clearing, grubbing, topsoil stripping, tree felling, minor earthwork, removal)</td>
<td></td>
</tr>
<tr>
<td>1.01.070</td>
<td>Tree transplant</td>
<td></td>
</tr>
<tr>
<td>1.01.080</td>
<td>Site formation and slope treatment</td>
<td></td>
</tr>
<tr>
<td>1.01.090</td>
<td>Temporary surface drainage and dewatering</td>
<td></td>
</tr>
<tr>
<td>1.01.100</td>
<td>Temporary protection, diversion and relocation of public utilities</td>
<td></td>
</tr>
<tr>
<td>1.02</td>
<td>Substructure</td>
<td></td>
</tr>
<tr>
<td>1.02.010</td>
<td>Foundation piling and underpinning:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>010 – mobilisation and demobilisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>020 – trial piles and caisson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>030 – permanent piles and caisson</td>
<td></td>
</tr>
<tr>
<td></td>
<td>040 – pile and caisson testing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>050 – underpinning</td>
<td></td>
</tr>
<tr>
<td>1.02.020</td>
<td>Foundations up to top of lowest floor slabs:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>010 – excavation and disposal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>020 – lateral supports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>030 – raft footings, pile caps, column bases, wall footings, strap beams, tie beams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>040 – substructure walls and columns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>050 – lowest floor slabs and beams (excluding basement bottom slabs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>060 – lift pits</td>
<td></td>
</tr>
<tr>
<td>Cost code</td>
<td>Description</td>
<td>Note</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>1.02.030</td>
<td>Basement sides and bottom:</td>
<td></td>
</tr>
<tr>
<td>010</td>
<td>excavation and disposal</td>
<td></td>
</tr>
<tr>
<td>020</td>
<td>lateral supports</td>
<td></td>
</tr>
<tr>
<td>030</td>
<td>bottom slabs and blinding</td>
<td></td>
</tr>
<tr>
<td>040</td>
<td>sides</td>
<td></td>
</tr>
<tr>
<td>050</td>
<td>vertical waterproof tanking, drainage blanket, drains and skin wall</td>
<td></td>
</tr>
<tr>
<td>060</td>
<td>horizontal waterproof tanking, drainage blanket, drains and topping slab</td>
<td></td>
</tr>
<tr>
<td>070</td>
<td>insulation</td>
<td></td>
</tr>
<tr>
<td>080</td>
<td>lift pits, sump pits, sleeves</td>
<td></td>
</tr>
</tbody>
</table>

1.03 Structure

1.03.010 Structural removal and alterations

1.03.020 Basement suspended floors (up to top of ground floor slabs): |
| 010 | structural walls and columns |
| 020 | beams and slabs |
| 030 | staircases |

1.03.030 Frames and slabs (above top of ground floor slabs): |
| 010 | structural walls and columns |
| 020 | upper floor beams and slabs |
| 030 | roof beams and slabs |
| 040 | staircases |
| 050 | fireproofing to steel structure |

1.03.040 Tanks, pools, sundries

1.04 Architectural works | Non-structural works

1.04.010 Non-structural removal and alterations

1.04.020 External elevations: |
| 010 | non-structural external walls and features |
| 020 | external wall finishes except cladding |
| 030 | facade cladding and curtain walls |
| 040 | external windows |
| 050 | external doors |
| 060 | external shop fronts |
| 070 | roller shutters and fire shutters |

1.04.030 Roof finishes, skylights and landscaping (including waterproofing and insulation): |
<p>| 010 | roof finishes |
| 020 | skylights |
| 030 | other roof features |
| 040 | roof landscaping (hard and soft) |</p>
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<td>020 – staircases and catwalk not forming part of the structure, cat ladders</td>
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<td>window and split-type air conditioners</td>
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<td>160 –</td>
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<td>170 –</td>
<td>fans</td>
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<td>190 –</td>
<td>submissions, testing and commissioning</td>
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1.05.020 Electrical services:
- 010 – high-voltage transformers and switchboards
- 020 – incoming mains, low-voltage transformers and switchboards
- 030 – mains and submains
- 040 – standby system
- 050 – lighting and power
- 060 – uninterruptible power supply
- 070 – electric underfloor heating
- 080 – local electrical heating units
- 090 – earthing/lightning protection and bonding
- 100 – submissions, testing and commissioning

1.05.030 Fitting out lighting fittings

1.05.040 Extra low voltage electrical services:
- 010 – communications
- 020 – staff paging/location
- 030 – public address system
- 040 – building automation
- 050 – security and alarm
- 060 – close circuit television
- 070 – communal aerial broadcast distribution and the like
- 080 – submissions, testing and commissioning
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<td>Constructor’s submissions, reports and as-built documentation</td>
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<td>Quality monitoring, recording and inspections</td>
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## Appendix B – Cost Sub-Groups: Civil Engineering Works

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<th>Railways</th>
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<th>Tunnels</th>
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<th>Water treatment works</th>
<th>Pipelines</th>
<th>Wells and boreholes</th>
<th>Power generating plants</th>
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# Appendix C – Cost Sub-Groups: Associated Capital Costs

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<th>Code</th>
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<tr>
<td>2.01</td>
<td>Work and utilities off-site</td>
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<td>2.01.010</td>
<td>Connections to, diversion of and capacity enhancement of public utility mains or sources off-site up to mains connections on-site:</td>
</tr>
<tr>
<td>2.01.020</td>
<td>Public access roads and footpaths</td>
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<tr>
<td>2.02</td>
<td>Post-completion loose furniture, fittings and equipment</td>
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<td>Production, process, operating and loose furniture, furnishing and equipment not normally provided before completion of construction</td>
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<td>2.03</td>
<td>Construction-related consultants and supervision</td>
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<td>2.03.010</td>
<td>Consultants’ fees and reimbursable:</td>
</tr>
<tr>
<td>2.03.020</td>
<td>Charges and levies payable to statutory bodies or their appointed agencies (in connection with planning, design and contract approvals, supervision and acceptance inspections)</td>
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<tr>
<td>2.03.030</td>
<td>Site supervision charges (including their accommodation and travels)</td>
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<tr>
<td>2.03.040</td>
<td>Payments to testing authorities or laboratories</td>
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## Appendix D – Cost Sub-Groups: Site Acquisition and Client’s Other Costs

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<td>Cost Sub-Group (Level 4)</td>
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<td>Site Acquisition and Client’s Other Costs</td>
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<td>3.01</td>
<td>Site acquisition</td>
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<td>3.01.010</td>
<td>Costs and premium required to procure site including additional cost and premium to be paid by foreign investors</td>
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<td>3.01.020</td>
<td>Compensation to existing occupiers</td>
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<td>Demolition, removal and modification of existing properties by way of payment to existing owners instead of carrying out physical work</td>
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<td>3.01.040</td>
<td>Contributions for the preservation of heritage, culture and environment</td>
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<td>3.01.050</td>
<td>Related fees to agents, lawyers, and the like</td>
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<td>3.01.060</td>
<td>Related taxes and statutory charges</td>
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<td>3.02</td>
<td>Administrative, finance, legal and marketing expenses</td>
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<td>Client’s general office overheads</td>
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<td>Client’s project-specific administrative expenses:</td>
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<td>010 – in-house project management and design team</td>
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<tr>
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<td>020 – supporting project staff</td>
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<tr>
<td></td>
<td>030 – project office venue, furniture and equipment if not included in Constructor’s preliminaries</td>
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<td>040 – stores and workshops</td>
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<td>050 – safety and insurances</td>
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<td>060 – staff training</td>
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<td>070 – accommodation and travelling expenses for in-house team and external parties</td>
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<td>Sales, leasing, marketing, advertising and promotional expenses</td>
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<td>Licence and permit charges for operation and use</td>
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Appendix E – Process Flow Charts

Level 1: Projects or Sub-Projects

- Total project cost
- Total Capital Cost

Level 2: Cost Categories

- Capital Construction Costs
  - Demolition, site preparation and formation
  - Substructure
  - Structure
  - Architectural works | non-structural works
  - Services and equipment
  - Surface and underground drainage
  - External and ancillary works
  - Preliminaries | Constructor's site overheads | general requirements
- Associated Capital Costs
  - Work and utilities off-site
  - Post-completion furniture, furnishing and equipment
  - Construction-related consultants and supervision
  - Risk Allowances
- Site Acquisition and Client’s Other Costs
  - Site acquisition
  - Administrative, finance, legal and marketing expenses

Level 3: Cost Groups

- Risk Allowances
- Taxes and Levies
Step 1

Collect Project information

Project has Sub-Projects

Yes

Select all Project types

No

Select Project type

Determine main Project type

Complete Project Attributes by assigning values for all selected Project types (Schedule 1)

Go to step 2
Appendix F – Reporting Templates

Specific notes
- **Project Attributes** and **Project Values** are not shown in this example, but should be provided in the actual cost report.
- ‘$M’ = $ million.

Building project
- Columns for the unit cost calculated using additional project quantities may be added if required.

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<td>1.01</td>
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<td>1.02</td>
<td>Substructure</td>
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<td>1.04</td>
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<td>1.05</td>
<td>Services and equipment</td>
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Comparison between two design schemes
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<td></td>
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</tr>
<tr>
<td>3.01</td>
<td>Site acquisition</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.02</td>
<td>Administrative, finance, legal and marketing expenses</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Project with Sub-Projects

Additional columns for other **Sub-Projects** may be added as appropriate.

A set of columns for ‘Common’ may be added before the ‘Total’ to show the costs that may be spread across all or most **Sub-Projects**. These costs may be shown separately to permit reallocation in the appropriate way when the need arises.

<table>
<thead>
<tr>
<th>Cost code</th>
<th>Description</th>
<th>Hotel</th>
<th>Apartment</th>
<th>Roads and motorways</th>
<th>Total</th>
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<tr>
<td></td>
<td><strong>Project Quantity</strong></td>
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<tr>
<td>0</td>
<td>Total Capital Cost (‘1’ + ‘2’ + ‘3’)</td>
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<td><strong>Capital Construction Costs</strong></td>
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<tr>
<td>1.01</td>
<td>Demolition, site preparation and formation</td>
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<tr>
<td>1.02</td>
<td><strong>Substructure</strong></td>
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<td></td>
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<tr>
<td>1.03</td>
<td><strong>Structure</strong></td>
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<tr>
<td>1.04</td>
<td>Architectural works</td>
<td>non-structural works</td>
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<tr>
<td>1.05</td>
<td>Services and equipment</td>
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<td>1.06</td>
<td>Surface and underground drainage</td>
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<td>1.07</td>
<td>External and ancillary works</td>
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<td>1.08</td>
<td>Preliminaries</td>
<td>Constructor’s site overheads</td>
<td>general requirements</td>
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<td>1.09</td>
<td><strong>Risk Allowances</strong></td>
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<tr>
<td>1.10</td>
<td><strong>Taxes and Levies</strong></td>
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<td><strong>Associated Capital Costs</strong></td>
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<td>2.01</td>
<td>Work and utilities off-site</td>
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<td>Post-completion furniture, furnishing and equipment</td>
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<td>Construction-related consultants and supervision</td>
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<td><strong>Site Acquisition and Client’s Other Costs</strong></td>
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<td>3.01</td>
<td>Site acquisition</td>
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<td>Administrative, finance, legal and marketing expenses</td>
<td></td>
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</tbody>
</table>
Measurement of Floor Areas for Buildings for ICMS Cost Reports

The various cost analysis standards worldwide require the measurement of a gross floor area (either external (GEFA) or internal (GIFA)) or similar variations thereof to permit the representation of overall costs in terms of currency per floor area. However, even though the use of these terms is commonly understood, the definitions and interpretations of these terms are also subject to considerable regional variations.

Measurement guidelines and definitions vary considerably between countries. Linking ICMS with IPMS provides a valuable tool for overcoming these inconsistencies. ICMS require a cost report to include both GEFA (IPMS 1) and GIFA (IPMS 2) measured in accordance with the rules set out in IPMS.

IPMS are evolving on a building-sector basis (offices, residential, retail, etc.). These rules are summarised below, but reference to the specific Standard, for the particular building type, is recommended.

IPMS 1: Gross external floor area

Use
IPMS 1 is used for measuring the area of a building including external walls. IPMS 1 is consistent for all building types.

Definition
IPMS 1 is the sum of the areas of each floor of a building measured to the outer perimeter of external construction features, which may be reported on a component-by-component basis for each floor of a building. The definition is the same for all classes of building.

Inclusions
IPMS 1 ‘includes all areas and walls, columns, and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest floor level.’

‘In the absence of external construction features, for example an open-sided Building or a free-standing canopy, IPMS 1 is to be measured to the Covered Area.’

‘If there are no available plans for a basement, the area must include an estimation of the exterior wall thickness.’

Measurements included but stated separately
‘Balconies, Verandas, internal Catwalks, Sheltered Areas and internal Permanent Mezzanines are included. They are to be measured to their outer face and their areas are to be stated separately.’

Exclusions
Measurement for IPMS 1 is not to include the area of temporary mezzanines, open light wells or the upper level voids of an atrium, open external stairways that are not an integral part of the structure, for example, an open framework fire escape, external areas such as external vehicle parking, external catwalks, vehicle circulation and other areas or structures (such as equipment yards, cooling equipment, refuse areas), and patios and decks at ground level.

Measurement for IPMS 1 excludes any other ground-level areas or structures beyond the covered area. Such areas may be measured and stated separately.

IPMS 2: Gross internal floor area

Use
IPMS 2 is used for measuring the interior area of a building. Currently, IPMS 2 only deals with certain building types, although a multi-use IPMS is intended to be published in the future. However, the principles can be used for all building types and these are summarised below.

Definition
IPMS 2 is the sum of the area of each floor of a building measured to the internal dominant face (IDF), which may be reported on a component-by-component basis for each floor of a building. For the purposes of ICMS, the definition is the same for all classes of building.

Inclusions
IPMS 2 ‘includes all areas within the IDF including internal walls, columns and enclosed walkways or passages between separate Buildings, available for direct or indirect use. Covered void areas such as atria are only included at their lowest floor level.’

Measurements included but stated separately
‘Balconies, internal Catwalks, covered galleries, internal Loading Bays internal Permanent Mezzanines and Verandas. They are to be measured to their Finished Surface and their areas are to be stated separately.’

Exclusions
Measurement for IPMS 2 is not to include any ground-level areas or structures beyond the external wall such as sheltered areas, external catwalks and external loading bays, temporary mezzanines or open light wells and the upper-level voids of an atrium.

Such areas may be measured and stated separately.
Appendix H – Bibliography

- Eurostat: http://ec.europa.eu/eurostat
- Prices and purchasing power parities: www.oecd.org/std/prices-ppp/
- ISO 3166-2: 2013, *Codes for the representation of names of countries and their subdivisions – Part 2: Country subdivision code*
- ISO 4217: 2015, *Codes for the representation of currencies*