

香港特別行政區政府

The Government of the Hong Kong Special Administrative Region

政府總部
發展局
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Development Bureau
Technical Circular (Works) No. 7/2017

**Adoption of Building Information Modelling
for Capital Works Projects in Hong Kong**

Scope

This Circular sets out the policy and requirements on the adoption of Building Information Modelling (BIM) technology.

2. This Circular applies to works either by in-house government staff, consultants or contractors.

Effective Date

3. This Circular takes effect on **1 January 2018**.

Effect on Existing Circulars and Circular Memoranda

4. This Circular has no effect on existing circulars.

Background

5. In its meeting in April 2013, Works Policies Coordination Committee (WPCC) endorsed the proposal to adopt an incremental strategy in using BIM in public works projects. Pilot projects with relatively complex building and/or structural works, and of different nature (such as water/sewage treatment plant, various building projects, etc.) were to be selected for trial with a view to obtaining more information on the performance of the technology in public works projects in various aspects.

6. In 2014, WPCC endorsed the proposal to promote wider use of BIM in different stages of public works projects of any nature, scale or complexity and explore the use of BIM for asset management so as to enable staff of Works Departments (WDs) from senior management to frontline staff to appreciate the benefits of the technology and acquire the hands-on experience.

7. Under the endorsed proposal, WDs should continue to provide training to their staff from introductory level to advanced level for smooth delivery of pilot projects and to establish a pool of colleagues capable of building up and administering BIM models.

8. The Government is firmly committed to the promotion and adoption of BIM technology in capital works projects with a view to enhancing the design, construction, project management, asset management and improving the overall productivity of the construction industry. The 2017 Policy Address has stated that Government will actively seek to require consultants and contractors to use this modelling technology when undertaking design of major government capital works projects from 2018 onwards. This Circular sets out the details of this Policy Address initiative.

Policy

9. Capital works projects with project estimates more than **\$30 Million**¹ shall use BIM technology. The policy is applicable for projects in the investigation, feasibility, planning, design or construction stages in the Capital Works Programme irrespective of the modes of delivery as detailed in the ensuing paragraphs. For entrustment works, subvented capital works projects and works that are undertaken by private parties but will be handed back to the Government for maintenance, the BIM adoption policy is covered in paragraph 16.

BIM Adoption for Government Projects

Investigation, Feasibility and Planning Stage

10. Sometimes a detail information model may not be required at the early stage of a project or has little reference value at subsequent stages. Thus the use of BIM is **optional** for projects in the investigation, feasibility study and planning stage. However WDs should critically review the project technical and information requirements, and if there is benefit of using BIM at this stage, it can be so used.

Design Stage

11. All projects to be designed under Design and Construction consultancy agreements (DC) or Investigation, Design and Construction consultancy agreements (IDC) with technical and fee proposals to be invited on or after 1 January 2018, and all in-house projects submitted in 2017 CWRAE at Cat B- status, the use of BIM technology is **mandatory**.

¹ Project estimate data recorded in the FSTB Capital Works Expenditure database.

12. Existing Cat B- projects with construction work tenders to be invited before 1 January 2019, the use of BIM is **optional** in the design stage. For other existing Cat B- projects, the use of BIM in the design stage is **mandatory**².

Construction Stage

13. All construction works contracts with tender to be invited on or after 1 January 2018 shall use BIM. For contracts that do not adopt BIM in the design, the use of BIM shall at least cover the requirement for an as built BIM model.

14. For the avoidance of doubt, this requirement applies also to Design-Build and Design-Build-Operate projects.

Asset Management

15. In addition to enhance productivity and reduce risks and costs of our capital works projects, BIM technology can also optimize operation and maintenance. The development of this branch of the technology is fast and handover of information models for operation and maintenance becomes standard practice. WDs should critically review their departmental asset management strategy in order to leverage the technology to enter into the digital built environment.

² If detail design for a project has commenced and change to adopt BIM uses may causes substantial delay, WDs may apply exemption from Heads of WDs.

BIM Adoption for Entrustment Projects, Subvented Projects and Private Projects to be Handed Over to Government

16. This BIM technology adoption policy is also applicable to entrusted project within Government departments. For projects entrusted to organizations outside Government (Airport Authority, MTR Corporation Limited, private developer etc.), subvented projects and private projects to be handed over to Government, the scope of BIM implementation should be aligned with the BIM adoption/implementation policy of the organisations. However, WDs shall encourage these organizations to use BIM technology as far as practicable.

Mandatory BIM Uses

17. A number of mature BIM uses have been identified and a list of mandatory and optional BIM uses in **Annex 1** should be implemented in capital works projects. To keep up with the fast BIM technology development, the BIM uses in works projects will be reviewed and updated from time to time.

Exemption

18. On exceptional grounds such as serious contractual implications, substantial impact on project delivery or projects of little technical content³, the Heads of WDs may exempt the adoption of BIM technology as required under this Circular. WDs shall appropriately keep records on the approvals for exemptions with detailed justifications.

³ Project's main scope of work has little technical content such as operation of public fill banks, paving and painting works, slope maintenance works, greening works, maintenance works under term contracts and procurement of vehicles.

Contractual Requirements

19. Contractual provisions adopted in pilot projects may continue to be used until advised otherwise. To cater for cases where small consultant or contractor firms may not be very well equipped with BIM expertise, provisions will be stipulated in the agreement or contract allowing the consultant or contractor to engage BIM sub-consultant or sub-contractor to assist them. The agreement or contract shall also contain terms requiring the consultant or contractor to train up a number of staff of the employer/their staff and their sub-consultant/sub-contractor staff during the assignment. As the Construction Industry Council (CIC) has reserved a total of about 380 BIM training places of different levels⁴ in year 2018 for WDs to allocate to their consultants/contractors successfully awarded the Agreements/Contracts, the additional training requirement should also be included. Sample provisions for these requirements are enclosed in **Annex 2** for reference. CIC training provisions for 2019 and onwards will be updated separately by Circular Memoranda.

Enquiries

20. Enquiries on this Circular should be addressed to Chief Assistant Secretary (Works) 4.

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Permanent Secretary for Development (Works)

⁴ The CIC will provide BIM basic modelling courses and BIM discipline-specific advanced modelling courses of about 380 training places in 2018. These training places will be allocated by WDs free of charge to a limited number of staff of the consultants and contractors and to be approved by the Director/Engineer.

BIM Uses

1. Works Departments shall adopt the stipulated mandatory BIM uses in respective stages of a project. Works Departments may adopt the optional BIM uses as and when necessary.

	BIM Use	Investigation, Feasibility and Planning	Design	Construction
1	Design Authoring	O	M	M
2	Design Reviews	O	M	M
3	Existing Conditions Modelling	O	O	M
4	Site Analysis	O	M	
5	3D Coordination		M	M
6	Cost Estimation	O	O	O
7	Engineering Analysis		O	O
8	Facility Energy Analysis		O	O
9	Sustainability Evaluation	O	O	O
10	Space Programming	O	O	
11	Phase Planning (4D Modelling)		O	M
12	Digital Fabrication		O	O
13	Site Utilization Planning			O
14	3D Control and Planning			O
15	As-Built Modelling			M
16	Project Systems Analysis			O
17	Maintenance Scheduling			O
18	Space Management and Tracking			O
19	Asset Management			O
20	Drawing Generation (Drawing Production)		M	M

Legend:

M – Mandatory BIM Use for the mentioned stage, including that carried forward from previous stage.

O – Optional BIM Use

2. Explanations of each of the above BIM use shall be referred to the latest version of the BIM Project Execution Plan of the Construction Industry Council or that of the Penn State (<http://bim.psu.edu/uses/>), if it cannot be found in the former document.

Organization, Training and Sub-contracting Requirements

BIM Team Structure

The Consultant/Contractor* shall propose and establish a BIM team that are appropriate for the scale and complexity of the Assignment/Contract*, highlighting key roles and responsibilities of each position, within [14] calendar days after commencement of Assignment/Contract*. The team shall be led by a BIM team leader who holds a key position in the Consultant/Contractor's* project team structure. The BIM team shall include sufficient and technically competent resources in order to complete all BIM tasks and deliverables specified in the Assignment/Contract*. Notwithstanding, the BIM team shall at least comprise [3] staff well trained in relevant disciplines. The BIM team leader shall either have corporate membership of an appropriate professional institution or shall have [5] years relevant post-qualification experience plus university degree or equivalent in an appropriate engineering discipline. The BIM team leader shall have a minimum of [3] years of practical experience in management of BIM projects or a professional member of the Hong Kong Institute of Building Information Modelling (HKIBIM) or equivalent. The disciplinary BIM coordinators shall have [3] years related construction project experience. The coordinators shall have a minimum of [1] year practical experience in BIM projects or an associate member of the HKIBIM or equivalent.

The BIM team leader shall be responsible for the overall BIM managements and process controls. The BIM team leader shall delegate BIM coordinator(s) for handling BIM tasks such as BIM modelling, collaborate information exchange amongst related stakeholders and maintain a drawing/information register to record the information to be incorporated in the model(s).

For any proposed staff movement or change in the BIM team, the Consultant/Contractor* shall provide a CV of the replacement personnel together with evidence of equivalent BIM competency to the Director/Engineer* within [7] calendar days for approval.

BIM Sub-Consultant/Sub-Contractor*

If the Consultant/Contractor* does not have the necessary expertise, the Consultant/Contractor* shall engage a sub-consultant/sub-contractor* with suitable expertise for the performance of BIM related tasks. If the Consultant/Contractor* intends to or is required to sub-contract the BIM works to a BIM sub-consultant/sub-contractor*, the Consultant/Contractor* shall obtain approval from the Director/Engineer* before formal engagement and shall indicate this clearly in the project team structure. The positions of the staff members from the BIM sub-consultant/sub-contractor* shall also be indicated clearly in the BIM team organisation structure.

Additional BIM Training Requirements for Courses Offered by the Construction Industry Council

The Consultant/Contractor* is required to nominate his staff or sub-consultant/sub-contractor*'s staff to attend, within [6] months from the commencement of the Assignment/Contract*, training courses organised by the Construction Industry Council as follows:

- [4]#staff members to attend the Building Information Modelling Basic Modelling Courses and
- [4]#staff members to attend the Building Information Modelling discipline-specific Advanced Modelling Courses.

The Consultant/Contractor* shall liaise with the Construction Industry Council for the schedule of the above courses and shall obtain necessary approval of the nomination from the Director/Engineer* before the commencement of the training courses.

* Delete as appropriate

Number will depend on the actual number of assignments/contracts awarded in a year and is subject to change.