

Project Controls

Master Specification

PC-PL4 Constructability Assessments

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PC-PL4 Constructability Assessment

1 General

- 1.1 This Part defines the Requirements for undertaking and constructability assessment as part of the project scoping or pre-delivery stages of a project.
- 1.2 The scope of Constructability Assessments is limited to an assessment of the Works related concept or detailed design document and drawings and supporting information.
- 1.3 The scope of Constructability Assessment does not include:
 - a) a review of Conditions of Contract;
 - b) community and stakeholder consultation; or
 - c) procurement approach.
- 1.4 The following definitions apply to terms used in this Part:
 - a) **“Constructability”** The optimisation of a project to ensure the project can be constructed and maintained, safely, practically and efficiently whilst meeting the project objectives. This could include project life cycle objectives for safety, cost, time, quality and environmental management.
 - b) **“Constructability Assessment”** A formal examination of the design document and site specific conditions to achieve early identifications of issues relating to construction and Maintenance.
 - c) **“Value Engineering”** A structured, analytical process for developing innovative holistic solutions to complex problems.

Objective

- 1.5 The Objective of the Constructability Assessment is to review the design to incorporate element to optimise the construction process within the Design and Project Requirements.

2 Integration in Project Planning and Concept Design.

- 2.1 Constructability integration involves the identification of construction considerations in advance of the detailed planning and concept design.
- 2.2 Constructability outcomes are to be used to assist in setting the design direction and ensure designers consider issues and constraints.
- 2.3 The Constructability assessment is to incorporate personnel who have experience working as a Project or Construction Manager for a Civil Construction Contractor.

Project Constraints

- 2.4 Potential constraints to the project shall be identified and documented to incorporate within the project requirements and program.
- 2.5 The constructability assessments shall review potential constraints on the delivery of the project including, but not limited to:
 - a) land acquisition;
 - b) services re-location;
 - c) procurement of materials or goods; and
 - d) temporary traffic / railway / pedestrian requirements.

Constructability Planning

- 2.6 The constructability planning shall identify and plan the construction activities and the resources required to successfully deliver the Works.
- 2.7 Constructability planning shall incorporate:
- a) an overall strategy to deliver the Works;
 - b) identification of major hazards and risks;
 - c) principles to apply in design decisions and detailing; and
 - d) review of site investigations to identify site conditions and manage construction risks including:
 - i) geotechnical and hydrological investigations;
 - ii) engineering survey;
 - iii) heritage assessment (Aboriginal and European);
 - iv) environmental investigations (noise, vibration water quality); and
 - v) authority services information.

Optimise

- 2.8 The Constructability shall assess if there are any opportunities to change the concept design or approach to optimise construction activities and increase value for money including, but not limited to:
- a) reduce construction hazards and risk;
 - b) construction efficiencies;
 - c) reduction in project scope (e.g. avoid services relocations / re-use existing assets);
 - d) reducing project scheduling risks (including inclement weather risks);
 - e) challenge assumptions constraints, construction approaches and strategies; and
 - f) reduce the impact to small businesses and the adjacent community.

3 Constructability Assessment of Detailed Design

- 3.1 The Constructability assessment is undertaken to inform the development of the project documentation including:
- a) permanent works design;
 - b) temporary works; and
 - c) Contract Documents.
- 3.2 The Constructability assessment shall consider:
- a) project context (location and background);
 - b) project objectives and outcomes (Business Requirements)
 - c) lessons learnt from previous projects; and
 - d) environmental and sustainability issues.
- 3.3 The constructability assessment (and detailed design) shall demonstrate at least one efficient and effective strategy to construct the Works. It is noted the Construction Contractor may select its own construction strategy and methods to deliver the project.
- 3.4 The deliverables of the Constructability assessment of the detailed design shall be agreed on a project specific basis.
- 3.5 The Constructability assessment shall include:

- a) Work Health and Safety (including probability and consequence) assessment including;
 - i) workers during construction;
 - ii) road users and public during construction; and
 - iii) maintenance activities.
- b) construction optimisation and value engineering including:
 - i) economies of scale;
 - ii) stages and complexity;
 - iii) number of work fronts;
 - iv) procurement lead time and efficiencies; and
 - v) inclement weather risks and mitigation.
- c) maintaining network operational performance;
 - i) temporary traffic management (rail / road / pedestrian) plans; and
 - ii) temporary works required to manage temporary traffic.
- d) authority services relocation;
- e) opportunities to minimise community and small business impact;
- f) project footprint including:
 - i) stockpiling and management of spoil;
 - ii) site facilities and laydown requirements; and
 - iii) land acquisition.
- g) project logistics (e.g. remote projects);
- h) project schedule & milestones (program); and
- i) value management assessments and recommendations.

4 Constructability Workshops

- 4.1 The Constructability Workshop are held at different parts of the project lifecycle to assess constructability issues for project design and documentation.
- 4.2 Prior to the meeting attendees examine the design documents and attend a site inspection to gain an understanding of the project.
- 4.3 The workshop shall review the constructability and identify issues or opportunities to be addressed within the design documents or project program.
- 4.4 The workshop shall be developed on a risk based approach to identify hazards and risks to be managed through the project lifecycle.
- 4.5 The outcome of the Workshop shall be documented including issues recommendations and actions in a Constructability Register or written report.

Workshop Attendees

- 4.6 The workshop attendees shall be determined on a project specific basis determined based on the specifics of the project and the stage in the project lifecycle.
- 4.7 As a minimum the workshop shall incorporate Principal's representatives from:
 - a) Transport Planning (Project Manager – Planning);
 - b) Transport Project Delivery (Project Manager – Delivery); and
 - c) Rail and / or road operations.

- 4.8 Depending on the specifics of the project the constructability workshops may include addition attendees including:
- a) technical services (e.g. road design, structures design, pavement design, environmental, etc.);
 - b) procurement & contracting;
 - c) community engagement;
 - d) authority services representatives; and
 - e) Council representatives.

Site Visit

- 4.9 The workshop attendees shall be familiar with the site prior to constructability workshops, including visiting the site to gain an understanding of the site context and project specific issues.

5 Constructability Register and Report

- 5.1 The outcomes of the Constructability Assessments shall be documented in a Constructability Register and Report.

Constructability Register

- 5.2 The constructability comments and issues identifies through the review at different stages of the lifecycle shall be documented within a constructability comments and issues register.
- 5.3 The constructability comments and issues register shall be reviewed by the project team (planning or delivery) and designer for review and response.
- 5.4 The constructability comments and issues register shall be updated thought he project lifecycle with the outcomes integrated within the project documentation including, but not limited to:
- a) design documents;
 - b) project management documentation;
 - c) project program; and
 - d) risk register.

Report

- 5.5 The Constructability Report shall be developed during the planning phase and updated during the project lifecycle commensurate with the stage of design development.
- 5.6 The Constructability report shall be developed on a project basis and may include:
- a) description of the constructability assessment undertaken and documents reviewed;
 - b) outcomes of the constructability assessment;
 - c) construction constraints and issues;
 - d) principles to apply in design decisions and detailing;
 - e) construction risk and opportunities register; and
 - f) recommendations incorporate within the design to optimise the construction of the Works;
- 5.7 The level and detail of the Constructability Report shall be commensurate with the project size, scope and risk.
- 5.8 Submission of the final Constructability Report shall constitute a **Hold Point**.

6 Hold Points

- 6.1 The following is a summary of Hold Points referenced in this Part:

Document Ref.	Hold Point	Response Time
6.5	Submission of the Constructability report	10 Working Days