

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 a Constructability Assessment as part of the Proving, Pre-delivery or Delivery phases of a project.
- 1.2 The following definitions apply to terms used in this Part:

Table PC-PL4 1-1 Definitions

Term	Definition
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.
Constructability Assessment	A formal examination of the design document and site specific conditions to achieve early identifications of issues relating to construction and Maintenance.
Value Engineering	A structured, analytical process for developing innovative holistic solutions to complex problems.

2 Constructability Assessment of Design

Objective of the Assessment

- 2.1 The Objective is to optimise the construction process within the design and project requirements.
- 2.2 The Constructability Assessment involves the identification of construction considerations as part of the Planning Study and/or Concept Design development. Outcomes of the Constructability Assessment are to be used to assist in setting the design direction and ensure construction issues and constraints are considered in the design.

Scope of the Assessment

- 2.3 The scope of a Constructability Assessment is limited to an assessment of the concept and/or detailed design documents, drawings and supporting information.
- 2.4 The scope of a Constructability Assessment does **not** include:
- a) a review of Conditions of Contract;
 - b) community and stakeholder consultation; or
 - c) procurement approach.
- 2.5 The Constructability Assessment shall consider (as a minimum):
- 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.
- 2.6 The Constructability Assessment shall review potential constraints on the delivery of the project including, but not limited to:
- a) land acquisition;
 - b) services relocation;
 - c) procurement of materials or goods; and
 - d) temporary traffic / railway / pedestrian requirements.

- 2.7 The Constructability Assessment (and design) shall demonstrate at least one efficient and effective strategy to construct the Works. It is noted that the Construction Contractor may select its own construction strategy and methods to deliver the project.
- 2.8 The deliverables of the Constructability Assessment of the detailed design shall be agreed on a project specific basis.
- 2.9 The Constructability assessment shall include:
- a) A Work Health and Safety (including probability and consequence) assessment including:
 - i) Safety of workers during construction;
 - ii) Safety of road users and public during construction; and
 - iii) Safety of undertaking commissioning and 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) The need to maintain network operational performance including:
 - 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.
- 2.10 The Constructability Assessment 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) reduction in 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) reduction in the impact to small businesses and the adjacent community.

Constructability Planning

- 2.11 Constructability planning shall be undertaken as part of the Constructability Assessment to identify and plan the construction activities and the resources required to successfully deliver the Works.
- 2.12 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;
- d) review of site investigations to identify site conditions and manage construction risks including:
- e) ground investigations (e.g., contamination, pavement, geotechnical and hydrological investigations);
- f) engineering survey;
- g) heritage assessment (Aboriginal and non-Aboriginal);
- h) environmental investigations (e.g., noise, vibration water quality); and
- i) authority services information.

Competency

- 2.13 The Constructability assessment is to incorporate personnel who have experience working as a Project or Construction Manager for a Civil Construction Contractor.

3 Constructability Workshops

- 3.1 Constructability Workshops are held at different parts of the project lifecycle to assess constructability issues for project design and documentation. The number of Constructability Workshops to be facilitated shall be determined on a project specific basis.
- 3.2 Prior to the meeting attendees examine the design documents and attend a site inspection to gain an understanding of the project.
- 3.3 The workshop shall review the constructability and identify issues or opportunities to be addressed within the design documents or project program.
- 3.4 The workshop shall be developed on a risk based approach to identify hazards and risks to be managed through the project lifecycle.
- 3.5 The outcome of the Workshop shall be documented including issues recommendations and actions in a Constructability Register or written report.

Workshop Attendees

- 3.6 The workshop attendees shall be determined on a project specific basis based on the specifics of the project and the stage in the project lifecycle.
- 3.7 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.
- 3.8 Depending on the specifics of the project the constructability workshops may include additional 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

- 3.9 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.

4 Constructability Register and Report

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

Constructability Register

- 4.2 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.
- 4.3 The constructability comments and issues register shall be reviewed by the project team (planning or delivery) and designer for review and response.
- 4.4 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

- 4.5 The Constructability Report shall be developed during the planning phase and updated during the project lifecycle commensurate with the stage of design development.
- 4.6 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;
- 4.7 The level and detail of the Constructability Report shall be commensurate with the project size, scope and risk.
- 4.8 A draft version of the Constructability Report will be provided to the Principal electronically via email for review and comment prior to issue of the final version.
- 4.9 Submission of the draft Constructability Report shall constitute a **Hold Point**.
- 4.10 A final version of the Constructability Report will be provided to the Principal electronically via email for review and for approval as an 'Issued for Use' deliverable.
- 4.11 Submission of the final Constructability Report shall constitute a **Hold Point**.

5 Hold Points

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

Table PC-PL4 5-1 Hold Points

Document Ref.	Hold Point	Response Time
4.9	Submission of the draft Constructability report	10 Working Days
4.11	Submission of the final Constructability report	10 Working Days