Victorian Digital Asset Strategy
Guidance

Appendix 3: Sample key decision points

Version	Summary of changes
1.00	Release
Owner:	Office of Projects Victoria
Authoriser:	Victorian Chief Engineer

Appendix 3 contents

Introduction

All major Architecture, Engineering, Construction and Operations (AECO) projects generate, exchange and consume vast amounts of data and information. Historically, much of this data and information is unstructured, proprietary and siloed.

This means that this valuable data and information cannot be re-used and needs to be recreated in the future.

A clear articulation of information requirements, consistency in the specification of data and information, and awareness of the intrinsic value of data and information can increase the productivity of AECO projects. This means more schools, justice facilities, roads and trains for the same level of effort and investment.

The use of plain language questions (PLQs) addresses the legacy issues in information management throughout the asset lifecycle. Using PLQs is a simple approach – enabling the owner to easily articulate their information requirements and use cases throughout the asset lifecycle.

The intended audience for this appendix is the Appointing Party and the Appointed Party as a prompt for an early conversation. PLQs enable this conversation and have been designed to be clear and in a non-technical language. PLQs should be perceived as 'healthy early conversations' by both parties to unearth future questions and decision points.

This appendix includes more PLQs in stages 1, 2 and 3 as 'healthy early conversations' should occur prior to contractual award.

Not all PLQs in this appendix will be applicable to every scenario. They can however be easily adapted to inform the client's decisions and what is feasible.

Purpose

This document provides a list of questions to help the Appointing Party and the Appointed Party reach consensus on critical information management decisions throughout the asset lifecycle.

PLQs allow the Appointing Party to set out the information they require, independent of deep technical knowledge and expertise.

This process creates value and efficiencies.

To be effective, PLQs should relate to decisions required at a project stage or around key decision points.

The response to the PLQ should be documented for future reference.

For more information about the Victorian Digital Asset Strategy (VDAS), visit www.opv.vic.gov.au.

PLQ throughout the asset lifecycle

As an asset advances throughout its lifecycle, the level of information and data rapidly increases. PLQs provide an important way for project stakeholders to step back and ask very simple questions about how the project is progressing.

Moreover, PLQs ensure that issues around future decision points are raised early, where clarification can be sought without large costs to change.

In stages 1, 2 and 3 of the asset lifecycle, the Appointing Party should raise more PLQs for the Appointed Parties. These Appointed Parties are likely designers, planners, contractors and architects.

Worked example

PLQs can enable a 'healthy early conversation' between the owner (project team) and the architect or designer about environmental intensity of the various options proposed during stage 2 of the project. The PLQ in this instance is likely simple: 'Demonstrate how environmental considerations (such as carbon emissions intensity profile) for each of the preferred options has been assessed and validated'.

In this example, the owner is asking the architect or designer to provide evidence and support for the environmental decision-making process. To answer this, digital engineering is invaluable: structured and object-based models complete with performance data and environmental product declarations.

PLQs for future stages should be asked early. This means that in stage 1, PLQs pertinent to stages 2 and 3 should also be raised.

Similarly, when a project is midway through stage 4, PLQs relevant to stages 6 and 7 should be raised. This ensures the project team are continuously looking forward to what is ahead.

1. **Pose (P)**
   At each stage, questions should be posed to the Appointed Party by the client. This ensures important information is made available at the key points in the asset lifecycle across stages 1 to 7.
2. **Answer (A)**
   This marks the event of the Appointed Party answering the questions posed by the Appointing Party.
3. **Review (R)**
   Review is an important process undertaken by the Appointing Party to evaluate the answer from the Appointed Party to the original posed question.

PLQ throughout the asset lifecycle

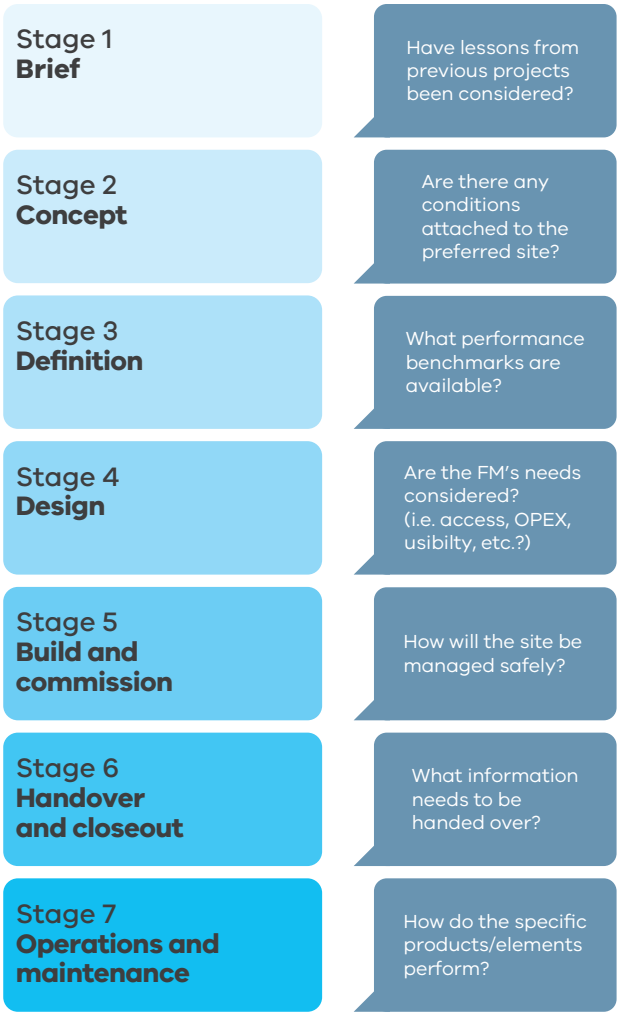
		Plain language questions						
Current stage		S1	S2	S3	S4	S5	S6	S7
	Stage 1							
	Pose	✓	✓					
	Answer	✓	✓					
	Review	✓		✓				
	Stage 2							
	Pose		✓	✓	✓			
	Answer		✓	✓	✓			
	Review		✓			✓		
	Stage 3							
	Pose			✓	✓	✓		
	Answer			✓	✓	✓		
	Review			✓			✓	
	Stage 4							
	Pose				✓	✓	✓	
	Answer				✓	✓	✓	
	Review				✓			✓
	Stage 5							
	Pose					✓	✓	✓
	Answer					✓	✓	✓
	Review					✓		
	Stage 6							
	Pose						✓	✓
	Answer						✓	✓
	Review						✓	
	Stage 7							
	Pose							✓
	Answer							✓
	Review							✓

With this approach, all parties can reach early consensus on the way forward in a non-confrontational manner, without knowledge of technically advanced modelling, designs and engineering.

Note that the success of PLQs depends on the:

- clarity of the PLQ;
- appropriateness of PLQ;
- how early the PLQs are raised;
- how the PLQs the are raised;
- the information supporting the response to the PLQ,s;
- the conversation following the question and response; and
- implementation and follow up from PLQ conversations and responses.

Plain language questions



VDAS example plain language questions

Stage 1: Brief

	PLQ	Supporting evidence
1	What is the proposed information management strategy?	BIM strategy and standards to be used across the portfolio
2	What are the expectations on organisation information management for our project?	OIR
3	What are the expectations on asset information management for our project?	AIR
4	Can we learn from other projects that have occurred before ours?	Lessons learned documentation
5	Is there sufficient information to produce a draft EIR?	OIR AIR Stakeholder meetings
6	What existing information can we gather as part of a desktop study?	VDAS data dictionary Historical project data As-builts
7	Are there other major technology uplift projects planned in our organisation? Will they influence our project?	Organisational technology strategy Meetings with CTO, CIO and VDAS Champion VDAS implementation roadmap
8	What are the performance objectives of the portfolio for which this project forms a part of?	Asset management strategy AIM
9	Has a design standardisation policy been defined?	Library of standard design elements defined in terms of BIM objects
10	Have stakeholders' high-level needs been captured?	List of key deliverables and requirements, where needed, supported by measures – these might be captured in a model or a system for managing requirements

	PLQ	Supporting evidence
11	What is the initial view of capital cost?	Type 1 or 2 capital cost measures and comparators
12	What is the initial view of revenue income or benefits, as appropriate?	Economic measures and benefit-cost ratios as appropriate
13	How will security requirements be met?	Physical boundaries and evidence of how information and data security arrangements defined in the EIR will be met
14	Have requirements for the delivery of asset information and data been identified?	Asset register for other projects in the portfolio
15	If the works are an addition or refurbishment, how are they to be integrated with existing services?	3D survey of existing services and interfaces
16	How will the proposals be communicated to the client?	A model with separate layers for structure and services compliant with specified standards Ability to provide 3D 'walk through' presentation from the primary model Schedule of facilities included within the development Generic simulation results for the services philosophy and schedules demonstrating that the brief will be met by the resulting development
17	Are there any conditions attached to the preferred site?	Site investigations Acquisitions Site ownership reports
18	What physical constraints exist around the site?	Details of existing structures to be retained and other infrastructure
19	What services constraints (water, drainage, electricity, etc.) exist?	Existing and current utilisation parameters available for inclusion in a model
20	Has the procurement strategy been defined and aligned with the information strategy?	Procurement strategy aligned with EIR

	PLQ	Supporting evidence
21	Have the purposes for which the model will be used been defined?	Purposes documented to inform designers as to what their inputs will need to cater for
22	How are stakeholder needs captured?	An 'electronic brief' that is in a format that may be used for automated validation of proposals
23	What is the initial capital cost?	Model of the development's volumes Schedule of internal volumes, land, floor, wall and roof areas or service runs aligned with generic cost data as aggregated by the cost estimator (fabric not normally represented) Budget breakdown
24	What site information is to be provided?	Survey and associated constraints parametric data from earlier stage
25	Are there any specific facilities management requirements regarding generic products?	Generic model object information for the product type, e.g. required finishes and performance characteristics
26	Are there any specific facilities management requirements regarding specific products?	Manufacturers model object information for mandated products (if any) -– minimal data for cost, volumetric information, part codes and relevant performance parameters
27	How will whole-life cost be assessed?	Model information conforming to BS ISO 15686 and BSI PD 156865 to an agreed level of precision
28	What format shall the information be delivered to the client in?	Model information compliant with the client's technical standards as specified in the EIR
28	How will the outline planning application information be generated?	Drawings, renditions and reports generated from model
30	How will the facility be run?	Building management system requirements
31	Have lessons learned from previous projects been considered?	Identify lessons learned from similar, completed projects

Stage 2: Concept

	PLQ	Supporting evidence
1	For each concept design – what level of accuracy, detail and information do we need?	Schematic design EIR
2	For the preferred concept – what level of accuracy, detail and information do we need?	Schematic design EIR
3	Have the model purposes been defined?	Draft EIR and LOIN process Consultation with asset management and facilities management stakeholders
4	Are there any specific data requirements we need to achieve?	Data custodians Data policies Data and information standards *VDAS guidance*
5	Do we have any specific data standards and formats that can be followed? Do those standards and formats work for us?	Data custodians Data policies Data and information standards *VDAS guidance* Team reviews
6	Is there sufficient information to produce a final EIR?	OIR AIR Stakeholder meetings

	PLQ	Supporting evidence
7	What are the characteristics of the various sites for the project?	Capture technology Sub-surface capture technology Historical and new drilling VDAS data dictionary Historical project data As-builts
8	Are there other major technology uplift projects planned in our organisation? Will they influence our project?	Organisational technology strategy Meetings with CTO, CIO and VDAS Champion VDAS implementation roadmap
9	What performance benchmarks are available?	Analyses of existing assets and facilities using a standard coding system, e.g. Uniclass 2015
10	What is the concept design?	**Prompt:** Rendered block diagram in site context including significant equipment layout to the level of development defined in PAS 1192-2: 2013 and supporting documents
11	Does the design's performance meet the portfolio's requirements?	Early stage simulations, calculations and costs
12	What is the outline proposal for structural design?	Structural design sufficient for simulation modelling for loads, including wind and simulation models and reports Size and weight information in model Temporary construction loads assessed
13	What are the output requirements from services systems?	Zoning of services sufficient for first iteration of spatial requirement
14	Can the services and structure be combined within the concept design in the available 3D volumes?	Combined model to demonstrate the first iteration of coordination
15	Has a commissioning strategy been integrated into the design?	Optimised facility commissioning logic

	PLQ	Supporting evidence
16	Can the designers show the project can be delivered safely?	Construction logic demonstrated, highlighting how high-risk elements have been avoided or controlled
17	Has the concept been designed for efficient manufacture and assembly? How easy is it to build?	Modularisation strategy evident in the model Build sequence recorded in the model Critical elements of the model designed in detail Critical logistics routes verified in the model
18	What is the preliminary cost estimate?	Identification of key items that will influence the facilities in use Schedule of capital costs based upon aggregated quantity and rate take-off from the model and an associated schedule of assumptions Whole-life cost assessment based on this plus in-use simulation results and documented maintenance assumptions (as per BS) Confidence level: design contingency of 20-25 per cent
19	How shall the facility be procured?	Recommendations based on an analysis of the model and associated cost assessments
20	How will the outline proposals be communicated to the client?	A model with separate layers for structure and services compliant with specified standards Ability to provide 3D 'walk through' presentation from the primary model Schedule of facilities included within the development Generic simulation results for the services philosophy and schedules demonstrating that the brief will be met by the resulting development
21	How will any client specific performance needs be met?	Model based simulations as appropriate

	PLQ	Supporting evidence
22	How will special presentation needs be met (e.g. to stakeholders and approvers)?	Combination of the model plus survey, photographic, rendition and time sequenced information as specified by the client
23	Is the cost plan and cash flow forecast reliable and the risk allowance reasonable, including whole life costing?	Model containing architecture plus cost and time sequence information
24	Has the delivery schedule been validated?	Time attributes associated with the assembly sequence as planned in the model
25	Have the lessons learnt been documented	Relay lessons learnt back to the VDAS Champion for inclusion in future projects/approaches

Stage 3: Definition

	PLQ	Supporting evidence
1	Are there any specific data requirements we need to achieve?	Data custodians Data policies Data and information standards *VDAS guidance*
2	What format shall the information be delivered in?	Data custodians Data policies Data and information standards *VDAS guidance*
3	What standards will be followed?	Data custodians Data policies Data and information standards *VDAS guidance*
4	What are the characteristics of the preferred sites for the project?	Capture technology Sub-surface capture technology Historical and new drilling VDAS data dictionary Historical project data As-builts
5	Are there other major technology uplift projects planned in our organisation? Will they influence our project?	Organisational technology strategy Meetings with CTO, CIO and VDAS Champion VDAS implementation roadmap
6	What performance benchmarks are available?	Analyses of existing assets and facilities using a standard coding system, e.g. Uniclass 2015

	PLQ	Supporting evidence
7	How will BIM be managed and exploited in this project?	EIR DEEP
8	How will the development look (early stage visualisation)?	High definition photo rendition of 3D laser survey 3D solid model overlay onto photo rendition Plans, elevations and data extracted from model
9	Is the design developed to demonstrate detailed proposals for coordinated design intentions?	Zones allocated to demonstrate adequate space for coordination, including building services. Survey of site Point cloud data processed to form 3D site model High definition photography overlay on 3D survey
10	Is the design developed to demonstrate detailed proposals for site layout?	Development model superimposed upon 3D laser survey model viewable from a range of pre-agreed perspectives 2D general arrangement drawings, plans, cross sections and elevations, produced from the model
11	Is the design developed to demonstrate detailed proposals for planning and spatial arrangements?	Demonstration of this through modelling, walk-through visualisations etc. mapping key spatial relationships and showing how these are achieved Schedule of facilities produced from the model
12	Is the design developed to demonstrate detailed proposals for elevation treatments?	Envelope information in the model Rendered model information of the required elevations Structural information in the model
13	Is the design developed to demonstrate detailed proposals for construction systems?	Construction-system specific objects

	PLQ	Supporting evidence
14	Is the design developed to demonstrate detailed proposals for environmental systems?	Zones allocated to demonstrate adequate space for coordination, including building services Survey of site, Point cloud data processed to form 3D site model High definition photography overlay on 3D survey Development model superimposed upon 3D laser survey model viewable from a range of pre-agreed perspectives
15	Is the design developed to demonstrate detailed proposals for buildability?	Schedule and modelling of zoning and control strategy to be used Generic services and control systems sizing / capacity information included in the model. Schematics referenced
16	Is the cost plan robust (firm)?	Quantity take off from BIM Schedule assumptions based on build sequence used in BIM Evidence that results of virtual and/or real prototyping of innovative and complex elements of the design have been incorporated into the BIM Assumptions of a predicted range of operational costs for key activities. Confidence level: design contingency of 10-15 per cent
17	Is the cash flow forecast reliable?	Sensitivity analysis, varying aspects identified as high risk in the project risk register
18	Will the development perform as specified by client's requirements, including design, construction and operational budgets?	Model based simulations as appropriate, demonstrating with 95 per cent confidence that the development will perform as required (taking into account the levels of predictability achieved in the past from similar simulations)
19	Have lessons learnt from prior projects been acted upon?	Incorporation of model objects from prior projects

	PLQ	Supporting evidence
20	Use of rule based auto-generation of objects?	Levels 2 and 3 where such rules have been developed
21	Is the design coordinated at a component and building element level of detail?	A detailed model including both geometry and specification information and detailed 2D drawings generated from it
22	Have the calculations in relation to any energy related planning conditions been completed and the wider team informed of the implications of them?	Demonstration that the planning requirements have been met. Demonstration that the design has been modified where necessary so as to deliver them

Stage 4: Design

	PLQ	Supporting evidence
1	Are there other major technology uplift projects planned in our organisation? Will they influence our project?	Organisational technology strategy Meetings with CTO, CIO and VDAS Champion VDAS implementation roadmap
2	Does the design meet statutory standards?	Model with sufficient information to demonstrate a compliant design Simulations of: • energy use during life and related carbon use calculations • acoustics and PAVA performance • fire and smoke modelling and evacuation • vehicle and people movement capacities
3	How will BIM be managed and exploited in this project?	A contractual DEEP for the project will define different levels of design maturity for each project phase, who will develop the content, to what standards, who will be authorised to use it, for what purpose, how it will be coordinated, who will own what and how information incompatibilities shall be resolved – this is to include the means and protocols for the communication of information between parties
4	Is the design safe to use?	3D 'walk through' for stakeholder assessment Assessment of access against M&E and other servicing requirements
5	Is there sufficient design information to get a reliable tender (model, drawings, specifications, schedules, room data, bills of quantities, finishes, walk through etc.)?	Model with both geometric, specification and performance data, with confirmation of the absence of clashes between building, structure and services Confidence level: design contingency of 5-10 per cent.

	PLQ	Supporting evidence
6	Does the design meet the facility manager's needs e.g. access, adaptability, cost, information on the basis of design, accommodation?	Model sourced information that responds to the facility manager's questions, as appropriate
7	Does the design meet the facility manager's cost needs?	For operational costs the design should provide a range that takes account of both energy consumption and required maintenance costs
8	Is there a means of controlling distribution of documents?	Definition of how the nominated supplier shall communicate and obtain responses from the client
9	Have price quotations been obtained for procuring the facility's engineering systems?	Costs incorporated into the model
10	Have lead times been obtained for procuring the facility's engineering systems?	Time sequencing incorporated into the model
11	Where can the appropriate maintenance service be sourced?	Notes to provide guidance for initial market research
12	Has the scope for operational and maintenance manuals for the facility been defined?	A specification, including the BIM elements
13	If existing services are in place, have method statements been produced for how these will interface with the new works?	Method statements referenced in model. Procurement plan for permits, access etc. coordinated with construction sequence

Stage 5: Build and commission

	PLQ	Supporting evidence
1	Are there other major technology uplift projects planned in our organisation? Will they influence our project?	Organisational technology strategy Meetings with CTO, CIO and VDAS Champion VDAS implementation roadmap
2	How will BIM be managed and exploited in this project?	A contractual DEEP for the project will define different levels of design maturity for each project phase, who will develop the content, to what standards, who will be authorised to use it, for what purpose, how it will be coordinated, who will own what and how information incompatibilities shall be resolved – this is to include the means and protocols for the communication of information between parties
3	What site-specific safety considerations need to be made?	Safety briefing information contained in model (e.g. location of power cables, gas pipes, filled in basements, pits etc.) Reference to any existing OH&S file or O&M systems
4	How will the construction site be managed safely?	Visualisations of potentially hazardous aspects to demonstrate how risks have been mitigated and for briefing staff
5	How will the client be consulted with respect to detailed changes to designs during construction?	Model based information and product samples shall be provided

	PLQ	Supporting evidence
6	How will client witnessing of commissioning work be scheduled?	Using a project management scheduling tool which is linked to the construction plan sequence
7	How will evidence to support claims be presented?	Model representations plus 3D scanned survey information as appropriate
8	How accurate will the information be?	Confidence level: design contingency of 2–5 per cent
9	Data identification and transfer method between design stage lead Appointed Parties (e.g. architect) CDE to the construction phase lead Appointed Parties (contractor) CDE	Communication and management between the two parties evidenced in prior planning and ideally a part of the procurement process

Stage 6: Handover and close out

	PLQ	Supporting evidence
1	What information do facilities managers need to manage the soft and hard utilities?	Extracts from the BIM strategy and standards to be used by facilities management across the portfolio
2	Does the facility meet the brief?	3D model, test and commissioning attribute information, performance simulations, room/ other schedules, functionality assessment, lifecycle carbon assessment, lifecycle cost assessment
3	What changes have been incorporated?	Traceability information (configuration management)
4	What has been built?	As-built model positional accuracy attribute information 3D laser or radar survey generated model information Commissioning information comparing planned performance with actual
5	What is the basis for a valuation?	Schedule of quantities and cost build up
6	How does a specific product / element perform?	Object test result and date attribute information for transfer to facilities management systems. Update of O&M manuals to reflect amended (performance and settings)
7	How will the facility be operated?	Associated operation guides and attribute information referenced and available for transfer to facilities management systems
8	How is the facility to be maintained?	Associated maintenance manuals and attribute information referenced and available for transfer to facilities management systems
9	Is the lifecycle plan confirmed?	Maintenance information (see above) plus asset replacement plan attribute information for transfer to facilities management systems
10	Information to run soft facilities management for actual products used?	Referenced in model(s)

Stage 7: Operation and end of life

	PLQ	Supporting evidence
1	What targets are to be used for post occupancy evaluation?	Data from model(s) to be referenced when the targets relating to business outcome, environmental, people, social and economic factors
2	Has the aftercare process been outlined?	Planned interventions (maintenance and replacement intervals) identified for significant elements of the facility
3	Initial period aftercare: are systems working?	Inputs to the building post occupancy evaluation (POE): specifications (from COBie data set) compared to actual values for metered consumption of energy, CO2 emissions, water etc.
4	How do the specific products/elements perform?	Metered performance
5	Years 1–3 aftercare: are systems working and are the stakeholder's needs satisfied?	Inputs to the building operational performance evaluation (BOPE) – specifications (from COBie data set) + inclusion of soft user perception ratings (comfort etc.) Metered consumption of energy, water etc.
6	How can the facility be decommissioned?	Current as built model information combined with the original construction and commissioning sequencing information reviewed to obtain insight and guidance, including recyclability and safety information

Authorised by the Victorian Government
1 Treasury Place, Melbourne, 3002

Accessibility
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Email: enquiries@opv.vic.gov.au
Telephone: 03 7005 9130

Published January 2020