

# Appendix 5: Exchange information requirements template

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<b>Version</b>	<b>Summary of changes</b>
1.00	Release
Owner:	Office of Projects Victoria
Authoriser:	Victorian Chief Engineer

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# Introduction

The ability for organisations, made up of many stakeholders, to exchange information through structured means is a critical element of digital engineering.

Standardised approaches to information management and, importantly, the exchange information requirements (EIR) aligned with asset lifecycle stages, ensure that information is developed to suit all parties, and can be leveraged for longer-term asset management.

Prior to the development of this EIR by either the VDAS Champion or DE Project Champion, the organisation should have developed an agreed approach to the organisation information requirements (OIR) and asset information requirements (AIR).

The EIR is a distilled subset of these two documents, articulating the level of information need aligned with key decision points.

## Purpose

The purpose of this document is to facilitate communication between the ultimate asset stakeholders and the project delivery team. The exchange information requirements (EIR) template can help define the specific digital information exchange requirements, both in project delivery and operational phases of the asset lifecycle.

This document can be tailored to ensure the digital engineering needs of the organisation meet the organisation information requirements (OIR) and asset information requirements (AIR), as defined by the client/Appointing Party.

This document communicates the information requirements for a project using digital engineering, including building information modelling (BIM), geographic information systems (GIS), computer-aided design (CAD) and other asset information. It should be used as part of a project's tender process and be largely completed prior to stage 2.

Consultants and contractors (Appointed Parties) are to respond to this EIR with a digital engineering execution plan (DEEP). A sample VDAS DEEP template can be found at [opv.vic.gov.au](http://opv.vic.gov.au) and in Appendix 6.

## Audience

The audience for this document is:

- asset owners – Victorian Government departments and agencies, or those representing their best interests;
- facilities management professionals – operators, contractors and subcontractors;
- asset management professionals, including those responsible for asset-level decisions; and
- project delivery professionals, such as engineers, constructors, commissioners.

## Conditions of using the template

Every project, asset, department and organisation is different, and every project responds to a unique organisational need. There is no single template that will be equally applicable in all these circumstances.

It remains the responsibility of the document author, typically the VDAS Champion or DE Project Champion to interpret and validate what the project, asset, department and organisation is seeking to achieve for the project/s, and to compose an EIR document that responds to that need accordingly. This template is a tool that can assist with that process.

The document should be read in conjunction with other VDAS documents addressing the digital engineering process.

**How to use this template:**

This template has instructional text directed at the Appointing Party. It is the obligation of the Appointing Party to fill this out and apply it in the context of the project, the AIR and the OIR.

# Exchange information requirements

## Basis of document

This section is designed to outline the structure of the EIR for the lead Appointed Party. It will need to be modified for each organisation, project and situation.

This EIR is divided into five sections:

- Section 1: Project information – sets out the basic project information, the structure of the EIR and provides relevant glossary and acronyms;
- Section 2: Governance – provides an overview of key owner-side contacts (Appointing Party) for the project;
- Section 3: Management – provides clarification on standards, soft landings, data drops, QA/QC, federation, communication and roles and responsibilities;
- Section 4: Technical requirements – describes the scope and specification of the Services; and
- Section 5: Digital engineering execution plan requirements – describes additional information as required by the Appointing Party from the lead Appointed Party (e.g. Head Contractor, Lead Consultant).

## Requirement terminology

This section articulates the 'language' of compliance. The following terms have defined meanings. Care must be taken to ensure their appropriate use throughout this document. These must be aligned with the norms associated with contracts in the department/agency.

- must – describes mandatory requirements;
- should – describes non-mandatory, best practice recommendations; and
- may – describes possible options that are neither mandatory nor best practice.

It may be worth articulating within this section how the Appointed Parties can demonstrate compliance. Users of this requirement must explicitly demonstrate compliance through:

- adopting appropriate standards and providing explicit reasons for their selection; or
- providing an explicit, evidence based, business case supporting compliance with this standard.

Further, it may be worthwhile articulating the process around deviation from requirements – how, when, who, why?

Where the deliverables of this requirement are not able to be met through the design process, a request for deviation must be made. Requests for deviation must explicitly state the areas where a proposal does not comply. As a minimum, submissions must include detailed commentary on:

- the reason for deviation from this standard;
- how the deviation complies with all other mandatory standards or regulations; and
- any impacts on safety, reliability, ongoing cost, operability and maintenance.

## Section 1: Project information

Project details	
Project name	
Project location (lat/long)	<Lat> -37.8142 <Long> 144.9632
Project identification code	

Contact details	
VDAS DE Project Champion	<Name> <Phone> <Email>
Project Director	<Name> <Phone> <Email>
Senior Responsible Owner	<Name> <Phone> <Email>

### Project summary

Provide a brief summary of the project.

For example, Project X is located approximately 25 km north-west of Melbourne's CBD. Land is owned and operated by YY. The site includes a range of existing scope:

- 

The following scope will be demolished:

- 

Following demolition, the project will embark on early works; the scope of the early works includes:

- 

Following completion of early works, the project will design and construct the following.

- 

The project will hand over the following assets to XX, by YY.

- 

State the overarching objectives for using digital engineering on the project. For example, 'Digital engineering is being implemented on this project for the delivery of a program to return significant time, cost and quality improvements in the way that the program will be delivered, constructed and ultimately operated'.

### Alignment of project phases

This section aligns the lifecycle of the project with that of the contract itself. For example, what are you asking the lead Appointed Party/Appointed Parties to exchange, and to which phase of the asset lifecycle does it apply?

This section will need modification based on each type of contract/procurement methodology that is planned to be employed: PPP, construct only, design and construct, alliance, EpCM, early contractor involvement, etc.

Provided below is an overview table that should be modified as part of the EIR. This table seeks to highlight the project lifecycle process, with DTF's investment lifecycle and a high-level summary of what is 'in scope' and 'out of scope' for the contract.

DTF investment lifecycle		Conceptualise		Prove	Procure	Implement			Realise
VDAS lifecycle		Brief	Concept	Definition		Design	Build and commission	Handover and closeout	Operate and maintain
EIR	Complete	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>
	In scope	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>
	Details	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>	<specifics>

## Section 2: Governance

This section deals with the governance of the project's digital engineering process. It discusses key roles and who is accountable from the client/Appointing Party side.

### Organisational contacts

The following table captures information on key organisational level contacts for digital engineering delivery. Add extra rows as needed.

Defined role	Company	Contact name	Email and phone
VDAS Champion			
Senior Responsible Owner			
Asset Owner			

## Project team contacts

The following table captures information on key project contacts for digital engineering delivery. Add extra rows as needed.

Defined role	Company	Contact name	Email and phone
DE Project Champion			
Project Director			
Project Manager 1			
Project Manager 2			
DE Lead			
BIM Lead			
CAD Lead			
GIS Lead			
Document Controller			
Package Lead 1			
Package Lead 2			
Package Lead 3			

Defined role	Company	Contact name	Email and phone
Architectural			
Structural			
Hydraulic			
Mechanical			
Civil			
Electrical			
Instrumentation			
Rail signalling			
Process			
Environmental			
Systems			

## Key information and capability principles

This section articulates the key premise of what the Appointing Party is attempting to achieve for the exchange. The text below is intended to be high level and to articulate the salient components from the rest of the document.

For example, owner requires the delivery team to adhere to and demonstrate the following:

- A common data environment (CDE) for the project must be set up and host the PIM by the lead Appointed Party for use by the delivery team. This must be secure and structured with managed access. Data and information must be categorised.
- Object-based design and construction models (referred to as BIM) must be created to satisfy the requirements of this document and to drive efficiency and predictability throughout the project. BIM must be scalable and interoperable between Appointed Parties, and available for review using complimentary model review software;
- 2D documentation, schedules and visualisations must be produced from relevant BIM/s;
- The Uniclass2015 classification system must be used to populate the BIM/s to ensure consistency of asset identification across all projects;
- The responsibility for the production, development and implementation of the DEEP lies with the delivery team and must be managed by the lead Appointed Party or DE Lead. The delivery team shall ensure that the contents of the DEEP are collaboratively developed with their supply chain. Each Appointed Party must agree to the requirements in the DEEP. The construction DEEP shall be based of the design DEEP to ensure consistency across the project;
- 

- Capability, capacity and competence of the delivery team to meet the EIR must be demonstrated by the returnable capability assessment. If there are any requirements of this EIR that cannot be met due to capability or technical reasons, these must be clearly stated in the returnable pre-contract DEEP. Post award, these items will be addressed and negotiated before final acceptance of the DEEP as a contractually binding document; and
- The delivery team must nominate a dedicated DE Lead for design and also for construction who will manage the digital engineering processes for the project, supporting the delivery of this exchange information requirements document.

## Information management governance

Include the strategy or process for how the lead Appointed Party will manage the information created for digital engineering on the project in accordance with the requirements outlined in the AIR/OIR. Including as a minimum:

- data exchange;
- data backup, including a minimum frequency of weekly back-ups, and retention of backups;
- data archiving; and
- approval state and suitability.

## Data security

This section covers the agreed authorisations for security and project CDE access and authority to distribute documents. In addition, enter here how the VDAS security requirements will be managed and monitored on the project. Provide a data security protocol that outlines the implementation process.

Company	Authorised manager	Authority (upload, download, change access/distribution)

### Email requirements

Enter here any project specific requirements for the classification and management of email. Use the below table to select the appropriate email security classification for the project.

Ref	Security classification
1	Unclassified
2	For official use only
3	Sensitive
4	Sensitive: legal
5	Sensitive: Vic Government

### Section 3: Management

This section deals with the expectations, basic requirements and management and governance of the project's digital engineering deliverables.

#### Project units

This section should articulate critical nomenclature and information about how project units should be specified. This may be already articulated for the organisation as part of an existing engineering standard. If so, reference the standard.

For example, all projects will use the metric system. For buildings and structures, millimetres (mm) must be used and for civil and survey information metres (m) must be used.

#### Project coordinates

A single file that has all the world and local setout coordinates and location settings for the individual discipline files for the project must adhere to the following:

This file, identified as the master coordinate file, will serve as the source of the project coordinates and for sharing such information. Any changes shall be documented and communicated to the team when exchanging this file.

Attribute	Details	Values
Geodetic datum used	Mapping grid of Australia	
Height reference	Australian height datum (AHD)	
Grid datum	Australian geodetic datum (AGD)	
	Local grid reference	
Project location	Enter the project location, identifiable by cardinal points	
Model rotation	In relation to the project north	

## Standards

This section should articulate relevant international, Australian and local standards.

## Appointing party standards

This section should articulate relevant appointing standards, for example, CAD standard, drawing numbering, BIM standard, GIS standard, asset data loading templates etc.

## Soft landings/data drops

The project requires the following data drops across the asset lifecycle:

This section, if used, should articulate what the Appointing Party's requirements are in terms of data information throughout the project lifecycle. This should reflect the Appointing Party's needs in terms of assurance, clients, stakeholders, and process. It may also reflect requirements set out by other departments and agencies.

Soft landings provide a smooth transition from the design and construction phase to the operational phase of a built asset.

Definition	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
	Brief	Concept	Definition	Design	Build and commission	Handover and closeout	Operations and maintenance
Data drop		1	2	3	4	5	

Modify the above table as per the project timeline and needs. The numbered boxes should be moved and cross referenced in the table below.

The above data drops require the following information:

The table below should be modified as per the project's soft landing needs. Contents are provided as a template rather than a guide. The numbered boxes above should cross reference the table below.

Data drop	Description
<b>1</b>	<p>When: DD MMM YYYY</p> <p>Methodology: Desktop assessment based on submitted information, supplemented by conversations with project delivery team to clarify any matters.</p> <p>Submission requirements:</p> <ul style="list-style-type: none"> <li>• completed project statement of intent, including key contacts and dates;</li> <li>• design statement in line with XX, and a note of the persons (name and role) involved in the development of the statement – i.e. those stakeholders represented in the development of both the agreed non-negotiables and the benchmarks;</li> <li>• initial list of relevant design guidance to be followed – XX, YY, ZZ;</li> <li>• assessment of current OIR and AIR; and</li> <li>• assessment of how project will align with OIR and AIR.</li> </ul> <p>Format: Information to be provided in an agreed electronic format, e.g. Word/PDF.</p> <p>Intent for data drop use: This information will be used to align the DEEP with the EIR, AIR and OIR and gain buy-in from relevant Appointing Party functions. It will also be used to develop a preliminary understanding of the project opportunity in line with the investment lifecycle.</p>

Data drop	Description
2	<p>When: DD MMM YYYY</p> <p>Methodology: Site feasibility studies and analysis of project options to inform a preliminary business case.</p> <p>Submission requirements:</p> <ul style="list-style-type: none"> <li>• ≤ 1:1000 plot plans and drawings;</li> <li>• where a project is one of a series, or a major development, being considered for a site, a masterplan is required to demonstrate the potential interaction on other services;</li> <li>• analysis of site option(s) (≤ 1:500) in terms of potential for achieving the project's non-negotiables criteria and benchmarks established in the design statement and the inherent design risks (i.e. where the site presents difficulties in achieving the benchmarked standards); and</li> <li>• initial list of relevant design guidance to be followed – XX, YY, ZZ, including a schedule of any key derogations.</li> </ul> <p>Format: Information to be provided in an electronic format.</p> <p>Geometric models: Proprietary 3D BIMs with 2D PDFs cut from the models to the above noted levels of definition/scales. Non-graphical information to be provided in an agreed electronic format, e.g. Word/PDF.</p> <p>Intent for data drop use: This information/model will be used inform executive stakeholders (and select community members) of the project opportunity, including site constraints and options for further assessment. It will also inform a +/- 50 per cent cost estimate.</p>

Data drop	Description
3	<p>When: DD MMM YYYY</p> <p>Methodology: More rigorous feasibility study based on site-confirmed information, basic engineering and detailed stakeholder engagement to clarify any matters.</p> <p>Submission requirements:</p> <ul style="list-style-type: none"> <li>• completed project statement of intent, including key contacts and dates;</li> <li>• developed project brief, including design statement;</li> <li>• evidence of completion of design in line with the procedures set out by the department;</li> <li>• evidence of consultation with local authority planning department on approach to site development and alignment with local development plan;</li> <li>• evidence of consultation with DELWP on approach;</li> <li>• detailed photographs/LiDAR of site showing broader context;</li> <li>• updated list of relevant design guidance to be followed;</li> <li>• outline design study showing proposals considered and favoured development option;</li> <li>• plans should be rendered to distinguish between main use types (circulation, consult, etc.) so that orientation and aspect of areas can be considered;</li> <li>• outline design study should be coordinated and include relevant multi-discipline input, including but not limited to architecture, building services, structural, fire and landscape design concepts (diagrams and sketches demonstrating the key proposals to assess alignment with brief);</li> <li>• relevant energy modelling information; and</li> <li>• 3D models of design intent for key spaces identified in design statement.</li> </ul> <p>Format: Information to be provided in an electronic format.</p> <p>Geometric models: Proprietary 3D BIMs with 2D PDFs cut from the models to the above noted levels of definition/scales. Federated model in an agreed format, e.g. industry foundation class. Non-graphical information to be provided in an agreed electronic format, e.g. Word, PDF.</p> <p>Intent for data drop use: This information/model will be used inform the market of the project opportunity, and would include detailed existing site information, a selected go-forward case/option. It will also inform a tender cost estimate.</p>

Data drop	Description
4	<p>When: DD MMM YYYY</p> <p>Methodology: Desktop assessment based on submitted information, supplemented by conversations with project team to clarify any matters.</p> <p>Submission requirements:</p> <ul style="list-style-type: none"> <li>• completed project statement of intent, including key contacts and dates;</li> <li>• finalised project brief, including design statement;</li> <li>• evidence of completion of design in line with the procedures set out by the department;</li> <li>• integrated cost estimate (in line with XX standard);</li> <li>• Uniclass 2015 object data classification;</li> <li>• integrated project schedule (in line with XX standard) – integrated with XX, YY, and ZZ, project;</li> <li>• 3D models of design proposals for the following: XX, YY, ZZ; and</li> <li>• final design study showing developed proposals (e.g. drawings at <math>\leq 1:200</math>, key interfaces at <math>\leq 1:50</math>, plus key elements <math>\leq 1:20</math> ). Key drawings, (construction details/specs need not be submitted) including: <ul style="list-style-type: none"> <li>– site layout showing wider context and landscape proposals;</li> <li>– plans rendered to distinguish between use types (circulation, consult);</li> <li>– elevations/sections showing design in context;</li> <li>– building services report and layouts;</li> <li>– structural/civil report and layouts;</li> <li>– landscape report and layouts;</li> <li>– specialist report and layouts;</li> <li>– 3D visualisations of the building in context, including key approaches perspectives from a human eye height; and</li> <li>– confirmation of planning permission and building regulation compliance.</li> </ul> </li> </ul> <p>Format: Information to be provided in an electronic format.</p> <p>Geometric models: Proprietary 3D BIMs with 2D PDFs cut from the models to the above noted levels of definition/scales. Federated model in an agreed format e.g. industry foundation class. Non-graphical information to be provided in an agreed electronic format e.g. Word, PDF.</p> <p>Intent for data drop use: This information/model will be used to inform 90 per cent design review and issued as part of the construction tender process on behalf of an Appointing Party.</p>

Data drop	Description
5	<p>When: DD MMM YYYY</p> <p>Methodology: As-built graphical and non-graphical project information and key information handover to the operator, facilities manager and maintenance manager.</p> <p>Submission requirements:</p> <ul style="list-style-type: none"> <li>• geometrical models, federated models and linked data e.g. operation and maintenance manuals plus relevant record survey (e.g. point clouds) all with UniClass 2015 classification;</li> <li>• geometrical models to be correct for the following services to be correct with the following tolerances: <ul style="list-style-type: none"> <li>– mechanical: +/- XX mm;</li> <li>– electrical: +/- XX mm;</li> <li>– architecture +/- XX mm;</li> </ul> </li> <li>• linked data e.g. operation and maintenance manuals plus relevant record survey (e.g. point clouds) all with UniClass2015 classification;</li> <li>• detailed Asset register as per (XX YY standard) – validated by third-party;</li> <li>• retention of native federated project model for XX years with client access; and</li> <li>• handover of planning-critical information to DELWP via XX.</li> </ul> <p>Format: Information to be provided in an electronic format.</p> <p>Geometric models: Proprietary 3D BIMs with 2D PDFs cut from the models to the above noted levels of definition/scales. Federated model in an agreed format, e.g. industry foundation class. Non-graphical information to be provided in an agreed electronic format, e.g. Word/PDF.</p> <p>Intent for data drop use: This information/model will be used as a wayfinding/VR tool for building occupants and will also be integrated into the following facilities and asset management systems: XXX, YY, ZZ.</p>

## Communication

### Reports

Reports/dashboards are required in the following format, frequency and level of detail:

The purpose of this section is to articulate how information management and digital engineering processes are to be reported back to the client/Appointing Party. This should include formats, software, frequency, level of information, audience and decisions that need to be made as a result.

Note: reports should be automated where possible. Onerous reporting can be burdensome and erode value for money outcomes.

Report type	Frequency	Stage of project	Audience

### Meetings

Scheduled coordinated clash detection workshops are to coincide with design team meetings/workshops as well as with major design program milestones.

The below table should articulate the where, when and who of digital engineering meetings. It should also indicate the high-level tasks to be completed as part of a standing agenda of those meetings.

Meeting type	Frequency/stage	Convener	Participants	Location	Tasks
Execution planning	Two weeks after a contract is awarded, a review cycle commences until each party agrees with its contents.  Final DEEP required 45 days post award. Revisions only as additional stakeholders become involved with the project and subsequent to client's approval	DE Project Champion			

Meeting type	Frequency/stage	Convener	Participants	Location	Tasks
Safety in design workshop	As per project delivery schedule	DE Champion Project Director QHSE Manager Engineering Manager			
3D coordination/ clash resolution	At a minimum, this must take place fortnightly and prior to each project milestone from the end of design and procurement onwards until handover	DE Project Champion Project Director Engineering Manager			
3D design review meetings	It is expected that the graphical models (and associated data) will be used throughout design team meetings in accordance with the project delivery schedule	DE Project Champion Project Director Engineering Manager			

## Model federation

This section articulates how information should be federated on the project. This could leave the lead Appointed Party with some flexibility, but it should provide a high-level outline for how the Appointing Party/client would like information to be integrated.

This could include federation at a high level, i.e. how cost integrates with schedule, which integrates with the graphical model. Alternatively, it could go into more detail, e.g. the DE Lead must combine all design and construction component models into a single federated model. This federated model will form the basis for all design reviews and must remain in alignment with project progress.

This process must be documented in the pre-contract DEEP by way of a model typology diagram. It is expected that the federated model is used internally by the delivery team to coordinate and as such should be well organised with useful views and ease of navigation a paramount consideration, relevant to the specific project needs.

This section should also articulate graphical data/model viewing tool, i.e. Appointing Party intends to use the federated model as a platform for internal communication and as such may provide issues and/or comments back to the delivery teams as part of milestone reviews.

This section could also articulate how often the model is re-integrated/federated. It could also articulate what the purpose of that model is used for i.e. the federated model must be updated fortnightly – it is used primarily for progress tracking, data validation against this EIR and general scope, as well as operational reviews.

This section should articulate the Appointing Party requirements for clash detection. It may be as simple as a list/report of hard clashes, construction tolerances and safe working/maintenance zones for key scope. Alternatively, it may be as detailed as a federated model which is updated weekly.

## Coordination and clash detection

For example, the DEEP shall identify the clash detection process including:

- proposed software to be used for model federation and clash detection/management;
- responsibilities;
- outputs (e.g. clash reports, excel, dashboarding etc.);
- tolerance strategy;
- the clash detection and management process; and
- clash resolution process.

## Quality control

The following quality control checks are required for the project:

Quality control checks are typically required at each project stage. This table should define checks to be performed at relevant stages.

Checks	Definition	Stages	Responsible party	Software program(s)
Visual check	Ensure there are no unintended model components, they are correctly located in x, y, z and coordination of the model against elements within the same model has occurred	SD, DD, CD, IFC		
Interference check	Detect problems in the model where two components are clashing including soft and hard clashes	DD, CD, IFC		
Standards check	Ensure that the BIM/CAD standards and EIR have been followed (fonts, dimensions, line styles, levels/layers, room names, embedded data, etc.)	SD, DD, CD, IFC		
Model integrity checks	Describe the QC validation process used to ensure that the BIM has no undefined, incorrectly defined or duplicated elements and the reporting process on non-compliant elements and corrective action plans	DD, CD, IFC		

Checks	Definition	Stages	Responsible party	Software program(s)
Model accuracy	Validate the completeness of the model, ensuring all appropriate dimensioning as needed for design intent, analysis and construction are included in the model	DD, CD, IFC		
Data validation	Check the information that is attributed to the object(s) has the correct values for the stage of the project	DD, CD, IFC		
2D output	Check the 3D against 2D output (e.g. drawings and schedules against modelled elements)	DD, CD, IFC		
Asset data check	Check the information that is attributed to the object(s) has been exported correctly to the asset data spreadsheet (e.g. COBie) and has the correct values for the stage of the project	CD, IFC, As Built		

### Data validation

Prior to sharing digital data, implement a validation process to ensure that all information is fit for purpose and meets the EIR.

### Model element responsibilities and detail schedule

The following colours are to be applied to the federated model for ease of identifying the relevant discipline. The table below should be modified according to the type of project. For example, civil may be further broken into tunnels, geotech, etc.

Architectural	ARC	Landscape architect	LAN
Civil	CIV	Structural contractor	SPC-C
Structural consultant	STR	Steel fabrication	STF-C
Mechanical consultant	MEC	Mechanical contractor	MEC-C
Electrical consultant	ELE	Electrical contractor	ELE-C
Plumbing and drainage	PLU	Plumbing and drainage	PLU-C
Fire consultant	FIR	Fire contractor	FIR-C
Traffic consultant	TRF	Acoustic	ACO
Information communication and technology	ICT	Other/Head Contractor	OTH

The ownership of model elements and classification must be defined for each project stage to an appropriate Uniclass level that matches the Appointing Party and delivery team needs. It is up to the Appointing Party/client (in consultation with the lead Appointed Party) to decide how the Uniclass classification should be applied in terms of information management across each project stage.

This approach must not limit the delivery team to use all levels of Uniclass (level 2, 3 and 4) to define elements in more granular detail for their uses. For example, Uniclass level 1 and 2 may be applicable to very early stages of a project where the architects need to tell structural engineers which walls are load bearing and which are not, but not the specific make-up of the wall (e.g. gypsum board). Likewise, the structural engineer need only define the types of systems proposed in the design.

**Architect (stage 1/2 of the VDAS)**

Uniclass level	Format	Architectural (suitable for early stage1/2)
Level 1: Group	Xx_00	Ss_25 Wall and barrier systems
Level 2: Sub-group	Xx_00_00	Ss_25_25 Wall and lining systems
Level 3: Section	Xx_00_00_00	
Level 4: Object	Xx_00_00_00_00	

**Structure (stage 1/2 of the VDAS)**

Uniclass level	Format	Structural (suitable for early stage1/2)
Level 1: Group	Xx_00	Ss_20 Structural systems
Level 2: Sub-group	Xx_00_00	Ss_20_10 Structural frames systems
Level 3: Section	Xx_00_00_00	
Level 4: Object	Xx_00_00_00_00	

Examples of these approaches are provided in two tables below – basic and advanced.

**Basic table**

In the early stages of a project (stages 1 and 2), the basic table could be used to define the highest Uniclass level items required by the Appointing Party to be developed in BIM. The basic table outlines NBS UniClass2015 systems (Ss) down to level 1. Delete UniClass2015 systems that are not in use. If more granularity and detail is required from the lead Appointed Party and/or the delivery team due to the project progressing to Stage 3 and beyond, use the advanced table.

**Advanced table**

The advanced table should be used as a starting point to outline a model element author (MEA) for each Uniclass classification post stage 2. The advanced table starts at level 2 and should be developed with the lead Appointed Party down to a Uniclass level 3 or 4, consummate with the level of information need across all parties. For example, to produce a more refined cost estimate prior to detailed construction documentation (stage 4), it is likely that Uniclass level 4 classifications will be needed to be populated by architect and structural engineer for the quantity surveyor.

### Architect (post stage 1/2 of the VDAS)

Uniclass level	Format	Architectural (suitable for early stage1/2)
Level 1: Group	Xx_00	Ss_25 Wall and barrier systems
Level 2: Sub-group	Xx_00_00	Ss_25_25 Wall and lining systems
Level 3: Section	Xx_00_00_00	Ss_25_25_45 Lining and casing systems
Level 4: Object	Xx_00_00_00_00	Ss_25_25_45_35 Gypsum board wall lining systems

### Structure (post stage 1/2 of the VDAS)

Uniclass level	Format	Architectural (suitable for early stage1/2)
Level 1: Group	Xx_00	Ss_20 Structural systems
Level 2: Sub-group	Xx_00_00	Ss_20_10 Structural frame systems
Level 3: Section	Xx_00_00_00	Ss_20_10_60 Prefabricated framed and panelled structures
Level 4: Object	Xx_00_00_00_00	Ss_20_10_60_84 Structural insulated panel systems

For clarity, not all UniClass2015 Ss level 2, 3, 4 items are provided in the advanced table. The table is to be further developed with the lead Appointed Party as part of the projects setup in stage 2 and/or 3. Delete UniClass2015 systems that are not in use.

Note 1: Uniclass 2015 systems are best thought of as collections of products. For example, a system for a timber pitched roof includes timber structural members, boards, fastenings, etc. A signal system for a railway is made up of signals, detection and warning equipment, posts, cables, etc. Uniclass 2015 is free to use.

Note 2: Seek alignment between the project's CBS, WBS and the asset classification employed by the organisation. Another asset classification system can be used, however, it should be mapped back to UniClass2015.

Note 3: Both tables outline a level of development (LOD) as a measure of design maturity. LOD is not an exhaustive design manual – instead it provides a platform for discussion between the lead Appointed Party and the Appointing Party. Requesting LOD 500 requires considerable effort which can be costly to design. This cost must be met with a need from the Appointing Party. More information about LOD can be found in the NBS toolkit: [toolkit.thenbs.com/Uniclass/Ss](http://toolkit.thenbs.com/Uniclass/Ss).

Note 4: The table also allows the Appointing Party to provide notes where applicable, i.e. if the Appointing Party was to bring their own IP, objects or modelling expertise, this could be highlighted in the section below.

## Basic table

Uniclass system code (Ss) – level 1	CBS/WBS	Project phase	Stage 2			Stage 3			Stage 4			Stage 5			Stage 6		
		Description	Concept design			Schematic design			Detailed design			Issued for construction (IFC) shop drawing			As built		
		Author and design level	MEA	LOD	Notes	ME	LO	Notes	ME	LOD	Notes	ME	LOD	Notes	ME	LOD	Notes
		Description															
Ss 15		Earthworks, remediation and temporary systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 20		Structural systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 25		Wall and barrier systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 30		Roof, floor and paving systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 32		Damp proofing, waterproofing and plaster finishing systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 35		Stair and ramp systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 37		Tunnel, shaft, vessel and tower systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 40		Signage, fittings, furnishings and equipment (FF&E) and general finishing systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 45		Flora and fauna systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 50		Disposal systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 55		Piped supply systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 60		Heating, cooling and refrigeration systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 65		Ventilation and air conditioning systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 70		Electrical systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 75		Communications, security, safety, control and protection systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 80		Transport systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	
Ss 85		Process engineering systems	N/A	N/A	N/A	ARC	200		OTH	200		OTH	300		OTH	300	
Ss 90		Soft facility management systems	ARC	100		ARC	200		OTH	200		OTH	300		OTH	300	

## Advanced table

Uniclass system code (SS) – level 2	CBS/WBS	Project phase	Stage 2			Stage 3			Stage 4			Stage 5			Stage 6		
		Description	Concept design			Schematic design			Detailed design			Issued for construction (IFC) shop drawing			As built		
		Author and design level	MEA	LOD	Notes	ME	LOD	Notes	ME	LOD	Notes	ME	LOD	Notes	ME	LOD	Notes
		Description															
Ss_15_10		Groundworks and earthworks systems	ARC	100		CIV	100		CIV	200		CIV	300		CIV	400	
Ss_15_10		Groundworks and earthworks systems	ARC	100		CIV	100		CIV	200		CIV	300		CIV	400	
Ss_15_30		Remediation, repair and renovation systems	ARC	100		CIV	100		CIV	200		CIV	300		CIV	400	
Ss_15_95		Temporary works systems	ARC	100		CIV	100		CIV	200		CIV	300		CIV	400	
Ss_20_05		Substructure systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_10		Structural frame systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_20		Structural beams	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_30		Structural columns	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_40		Structural sheet and cable systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_50		Bridge abutment and pier systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_60		Retaining wall systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_70		Structure covering and finishing systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_80		Structure accessory systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_20_95		Temporary structural systems	ARC	100		STR	100		STR	200		STR	300		SPC-C	400	
Ss_25_10		Framed wall systems	ARC	100		ARC	100		ARC	200		MEC	300		MEC	400	
Ss_25_11		Monolithic wall structure systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_12		Panel wall structure systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_13		Unit wall structure systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_14		Fence systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_15		Fixed pedestrian barrier systems	N/A	N/A	N/A	LAN	100										
Ss_25_16		Fixed traffic and protective barrier systems	N/A	N/A	N/A	LAN	100										
Ss_25_17		Dam and levee structure systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_20		Wall cladding systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_25		Wall lining systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_30		Door and window systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_32		Gate access systems	N/A	N/A	N/A	N/A	N/A	N/A	ELE	100		ELE	300		ELE	300	
Ss_25_34		Operable pedestrian barrier systems	N/A	N/A	N/A	N/A	N/A	N/A	MEC	200		MEC	300		MEC	300	
Ss_25_36		Operable traffic barrier systems	N/A	N/A	N/A	N/A	N/A	N/A	MEC	200		MEC	300		MEC	300	
Ss_25_38		Wall and barrier opening hardware systems	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Ss_25_45		Wall covering and finish systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_50		Wall mounted canopy and screen systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_60		Wall and barrier accessory systems	ARC	100		ARC	100		ARC	200		ARC	300		ARC	300	
Ss_25_95		Temporary wall and barrier systems	N/A	N/A	N/A	N/A	N/A	N/A	CIV	100		CIV	100		N/A	N/A	

## Competency assessment

This section should outline competency requirements for key personnel from the lead Appointed Party:

An assessment shall be completed by all appropriate organisations within the proposed delivery team so that they can demonstrate their competence and understanding of digital engineering pre-contract award.

Competence, skills, experience and knowledge of digital engineering and BIM (both internal and externally) must be continuously evaluated by the DE Project Champion.

Provided below are some commonly used competence assessment tools that can be leveraged:

Individual assessments:

- ACIF – BIM knowledge and skills framework
- BuildingSMART BIMCreds

Organisational assessments:

- CPlx BIM assessment form
- CPlx supplier assessment form
- CPlx resource assessment form

## Training

Add training to this section, if required.

Training of the delivery team personnel in the use of digital engineering, BIM, GIS, CAD and other such systems should meet the requirements of this EIR. This will be the responsibility of the Appointed Parties.

## Section 4: Technical

### Technical requirements

The technical information requirements include software, exchange formats and contents, and the level of detail required by the project

Item	Description	Information requirements	
		Client	Contractor
Software platforms	Define the platform for the BIM as well as other software platforms to be used. The purpose of this section is to communicate software platforms and versions where these are known and where they might influence the preparation of a bid.		
Data exchange format	The purpose of this section is to define the formats used to deliver data at various project stages.		
Project coordinates	The purpose of this section is to mandate the adoption of a common coordinate system for all BIM data with consistent adoption for all models.		
Level of detail	The purpose of this section is to define the requirements for information at project stages.		
Training	The purpose of this section is to provide details of training that will be provided in connection with project systems or training requirements, which the stakeholder group will be required to deliver as part of their appointment.		

#### Asset information requirements

Define the project-specific asset information requirements. This could reference elements of the organisation-wide asset information requirements, an external asset data model or through an asset data loading spreadsheet. It is important that the DE Project Champion highlights only the required asset information relevant to the project.

#### Asset classification and referencing

Uniclass 2015 is structured into a hierarchical set of tables ranging from the broadest view of assets to the most detailed components. The main tables for broad classification include complexes, entities, spaces and activities, as shown in the following figure.

The lead Appointed Party should describe the application of asset classification in the DEEP as per the project-specific requirements. i.e. UniClass 2015 classification system and hierarchy.

## Location classification and referencing

The number of locations included in the register will increase over the life of the project. For example, concept design project location is only required at a high level (Uniclass2015 level 1 or 2) whereas by handover, the locations are specified to the lowest level of Uniclass2015.

The lead Appointed Party must describe the application of project locations as per the project-specific requirements.

## Project object library

The project will adopt and utilise an existing object library. Details of the library are:

If a centralised object library is to be used, please nominate the approach for this below. If independent object libraries are to be used, please nominate the sources, e.g. BIM object, XXX company library, YYY company library.

Please note all objects must contain a Uniclass 2015 classification.

If additional technical assurance is required for pre-approved technical authority, then process for this should be articulated within this section.

The location of the library should also be articulated.

## Existing asset information

The following asset-level information is available for use:

Define the extent of existing asset information that is available for use. The client should articulate whether the information made available can be for use, reliance, etc.

## Practical completion

For example:

Before, and as a pre-requisite to, the date for practical completion being achieved, the as-built BIM/s with associated asset data and Uniclass 2015 classification for maintainable assets must be issued to the Appointing Party in accordance with the conditions of contract. This information will be verified prior to practical completion being achieved, and should:

- be in electronic format and in the latest version of the adopted BIM environment;
- comply with the contract (including the project scope and DEEP), including all drawings, irrespective of the source of the drawing and drawings from vendors and third parties. It is not acceptable to submit as-built documentation as part of vendor manual;
- include asset datasheets with all design, construction and asset management relevant information, aligned to Uniclass 2015, extracted and issued to Appointing Party Asset management team for integration with the CMMS;
- detail the management of digital operations and maintenance manuals connected to the relevant digital asset within BIM (responsibility of the lead Appointed Party); and
- build on the construction model to a level of development (LOD), whereby the model element is graphically represented within the model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, commissioning and installation information fields verified.

Non-graphic information may also be attached to the model element.

## Deliverables

A primary benefit of the model for the Appointing Party is its use in post-occupancy facilities management. Relevant model information captured and developed during the design and construction process constitute important handover documentation to Appointing Party. The following deliverables will be required at agreed times within the project brief and associated construction program.

### Digital engineering deliverables

Please state how the models in the following deliverables are to be coordinated across disciplines and the formats in which they will be submitted by the lead Appointed Party:

- systems engineering deliverables;
- digital survey deliverables;
- CAD deliverables;
- BIM deliverables; and
- GIS deliverables.

### 3D geometric deliverables – design and construction model(s)

Please state how the model is to be coordinated across disciplines and the formats in which they will be submitted by the contractor.

List proposed detailed design drawing deliverables and IFC drawing deliverables for this project, which are to be updated post-award.

The design team should update design model(s) throughout the design and construction phase to reflect changes to design intent, and on-site changes as advised by the contractor.

The contractor is responsible for providing the client with consolidated as-built models for all elements of the project and are to remain updated throughout the construction phase and align with all issued drawings submitted, as specified in issued for construction (IFC) drawings.

### As-built documentation

Specify the native formats, published formats and BIM deliverables for each discipline with a hyperlinks and/or parameters populated in the model.

The lead Appointed Party must provide all as-built documentation in accordance with the general conditions of contract.

This guidance recommends that each information container’s author retains ownership and is the only individual that can make amendments.

All as-built documentation must be delivered in a portable document format (PDF) and native editable file types.

Document type	Native format	Published format	Digital engineering deliverables
Operations manuals			
Asset registers			
Commissioning results			
Product data sheets			
Design intent information			
Field-verified construction documentation			
Others			

## Hardware/technology infrastructure requirements

All hardware in use by the delivery team should have sufficient capacity to allow users to operate the models, undertake analysis and perform coordination and visualisation processes. The hardware specifications become valuable once information is shared between several disciplines or the Appointing Party organisation.

Specifications	Values
Processor speed	
Operating system	
Memory storage	
Graphics	
Network card	
Monitor(s)	

## Software selection matrix

The lead Appointed Party must utilise or interface with the Appointing Party in the following software platforms:

If applicable, nominate the preferred software to be used on this project in the table below.

Area	Authoring software	Version	Native format	Comments
<b>General</b>				
Cost estimating				
Scheduling				
Document management				
Design reviews				
<b>Verticals</b>				
Architectural				
Interior design				
Landscape architecture				
Quantity surveyor				
Structural				
Mechanical				
Hydraulic				

Area	Authoring software	Version	Native format	Comments
Electrical				
Communications (ICT)				
Security				
Fire protection				
Baggage handling				
Civil and infrastructure				
Geotechnical				
Tunnels				
Bridges				
Roads				
Culverts				
Water and wastewater treatment				
Drainage				
Transmission				
Coordination tool				

### Software version update policy

The lead Appointed Party must follow the following software update policy

For example:  
 Versioning of software must be managed by the DE Lead throughout the project lifecycle and only upgraded with prior approval from the DE Project Champion.  
 Any software version update(s) must be agreed with the delivery team across all disciplines/trades prior to updating. Once agreed, the nominated representative (Appointing Party/Lead Appointed Party) will endorse the upgrade. Only then should the BIM/s be upgraded. It is recommended that the timing of any updates should align with the end/start of project milestone dates to avoid disruption to delivery team deliverables.

### Data and exchange formats

Data and exchange formats should be developed with consideration of the most reliable and appropriate means of communicating data and information.

Deliverable	Stakeholder	Software version	Native format	Exchange format to CDE
Models				
Drawings				
Final drawing format				
Schedules or spreadsheets				
Spatial				
Others				

### Common data environment (CDE)

The following common data environment is to be used

This section is designed to articulate how the organisation/project’s CDE is currently structured and how it is intended to be structured throughout design and implementation.

While a dedicated Appointing Party CDE may not exist (or the Appointing Party may seek the lead Appointed Party to develop one), some preliminary information should be provided, including:

- collaboration tools;
- validation process to be implemented to ensure that all information, meets organisational requirements;
- access requirements;
- IT architecture;
- folder/file structure;
- how work in progress, shared, published and archived is to be used, including sharing with other project stakeholders; and
- information flow, and frequency.

### Project data schemas (PDS)

The lead Appointed Party must cross reference the table below with all schemas used on the project. Refer to the schemas provided within this template and add project specific detail where necessary.

Ref	Digital engineering deliverable	Schema title	Schema	Relevant classifications
1	Documents and correspondence			
2	Systems assurance			
3	Survey			
4	CAD drawings	CAD layer naming table		
5	BIM models	MIDP schema		Discipline, asset and location
6	GIS			
7	Scheduling (4D)	Work breakdown structure (WBS)		
8	Cost estimating (5D)	Cost breakdown structure (CBS)	As per contract payment schedule	
9	Asset data (6D)	Asset data handover template		Discipline, asset and location
10	Others	Asset data handover template		Discipline, asset and location

## Existing data review

Provide the process for validating or checking any information inherited or provided to the lead Appointed Party from the relevant agency/stakeholder.

## Naming conventions

Please specify a numbering system to be applied across projects. File naming identifies the project naming convention. Information contained in the table is taken from the project work breakdown structure.

## Request for information process

Provide the process for how to request information on the project during the different phases.

Project	Zone/subzone	Package	Type	Originator	Discipline	AWB	Number
NEL	000	100	MLP	CFS	100	000	0100

i.e. NEL-000-100-MLP-CFS-100-000-0100

## Interface with the CDE

Define the detailed workflows for the sharing of data and information between the contractor's CDE and owner's CDE, specifying any specific access or security requirements.

## Level of information need

The level of information about each asset class shall progressively be developed in the design and construction phases of the project for incorporation into the AIS system.

## Graphical: Level of development

The lead Appointed Party shall specify the level of development (LOD) for each element that will be generated at each project milestone and information exchange to meet the specified BIM uses. The LOD and LOI determine the extent and nature of geometry and data to be included within BIM objects.

The extent of development required for elements or systems at various project stages will necessarily depend upon the project procurement method to be used, as well as project-specific requirements. Elements shall be modelled in accordance with LOD assignments defined in the DEEP.

The different levels of development are defined in the table to the right, based on the US BIM forum level of development specification.

Level of development	Model element (BIM LOD Forum 2019)
LOD 100	<p>The model element may be graphically represented in the model with a symbol or other generic representation, but does not satisfy the requirements for LOD 200. Information related to the model element (i.e. cost per square metre, tonnage of HVAC, etc.) can be derived from other model elements.</p> <p>Note: LOD 100 elements are not geometric representations. Examples are information attached to other model elements or symbols showing the existence of a component but not its shape, size or precise location.</p> <p>Any information derived from LOD 100 elements must be considered approximate.</p>
LOD 200	<p>The model element is graphically represented within the model as a generic system, object, or assembly with approximate quantities, size, shape, location, and orientation. Non-graphic information may also be attached to the model element.</p> <p>Note: at this LOD, elements are generic placeholders. They may be recognisable as the components they represent, or they may be volumes for space reservation. Any information derived from LOD 200 elements must be considered approximate.</p>
LOD 300	<p>The model element is graphically represented within the model as a specific system, object or assembly in terms of quantity, size, shape, location and orientation. Non-graphic information may also be attached to the model element.</p> <p>Note: the quantity, size, shape, location and orientation of the element as designed can be measured directly from the model without referring to non-modelled information such as notes or dimension call-outs. The project origin is defined and the element is located accurately with respect to the project origin.</p>

Level of development	Model element (BIM LOD Forum 2019)
LOD 350	<p>The model element is graphically represented within the model as a specific system, object, or assembly in terms of quantity, size, shape, location, orientation, and interfaces with other building systems. Non-graphic information may also be attached to the model element.</p> <p>Note: parts necessary for coordination of the element with nearby or attached elements are modelled. These parts will include such items as supports and connections. The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modelled information such as notes or dimension call-outs.</p>
LOD 400	<p>The model element is graphically represented within the model as a specific system, object or assembly in terms of size, shape, location, quantity, and orientation with detailing, fabrication, assembly, and installation information. Non-graphic information may also be attached to the model element.</p> <p>Note: an LOD 400 element is modelled at sufficient detail and accuracy for fabrication of the represented component. The quantity, size, shape, location, and orientation of the element as designed can be measured directly from the model without referring to non-modelled information such as notes or dimension call-outs.</p>
LOD 500	<p>The model element is a field verified representation in terms of size, shape, location, quantity and orientation. Non-graphic information may also be attached to the model elements.</p> <p>Note: LOD 500 relates to field verification and is not an indication of progression to a higher level of model element geometry or non-graphic information.</p>

### Non-graphical: alphanumerical data

Set out the proposed approach for how the delivery team will deliver this information from BIM into the CMMS (e.g. COBie) in line with the project stages using the delivery team proposed design and construction platforms.

LOI	Level of information (non-graphical)	Tagline
100	Generic identity and functionality of space and object	Sufficient for identification
200	<p>Metadata for functionality of space and object, conditions of space, generic object</p> <p>Details of design calculation information, material specification, proposed generic object information</p>	Sufficient for investigation

300	Identity and functionality of space and object (specific categorisation) Design specification and specified system performance information	Sufficiency for design
400	Identity and functionality of space and object (specific categorisation) Design specification and specified system performance information Manufacturer make and model	Sufficient for procurement
500	Identity and functionality of space and object (specific categorisation) Further data, as per asset information requirements	Sufficient for management as per AM/OM requirements

## Section 5: Digital engineering execution plan requirements

This section articulates what the Appointing Party wants the lead Appointed Party to respond to within the DEEP. Depending on the contract type and what phases the contract extends across, these sections will need to change.

For example, if this is a design-only EIR (i.e. no construction within the contract), then various parts will need to be modified.

The project requires a detailed response from the lead Appointed Party on this EIR. It will include the lead Appointed Party's response to how information management, digital engineering, BIM and digital asset management will occur throughout the project lifecycle. This is to occur in the form of a DEEP.

A DEEP template can be found on [opv.vic.gov.au](http://opv.vic.gov.au)

### Consider:

All Appointed Parties must appoint a DE Lead to collaboratively develop, prepare and manage the DEEP for the project at both design and construction stages.

The DEEP template must be used to create the DEEP and reference the relevant sections of this EIR for ease of tender assessment by Appointing Party.

The delivery team DEEP must consider/include:

- acknowledgement of the vision, goals and objectives of the organisation;
- acknowledgement of the design intent, goals and objectives of the project;
- identification of the entire delivery team including all appointed (or proposed) parties;
- responsibility matrix (roles and responsibilities);
- alignment of response to the proposed project phases/stages/gates;

- consideration of existing data: existing assets, models, object libraries and data sources, etc.;
- alignment of nominated start/end dates with the schedule of digital engineering activities including milestones and submittals;
- specification of relevant industry and organisation standards that will be applied to develop and execute the project;
- demonstrated understanding of the specific end-uses of digital engineering/asset data aligned to this EIR;
- processes of communicating the design to the Appointing Party as per the proposed data drop/soft landings approach;
- project delivery team communication and collaboration strategies
- a formal response to the model element responsibility and detail schedule via a RACI scope checklist;
- a plan for file sharing, storage and retrieval, and data security (CDE);
- a proposed file folder structure and file naming conventions commiserate with Appointing Party requirements;
- methodology for ensuring the validation of GIS, BIM and CAD files across the project;
- required elements and outcomes for clash detection;
- requirements and processes for each of the subcontractors for the project; and
- hardware requirements and software selections including file format and file exchange requirements.

### Suggested:

Once agreed, the DEEP needs to be endorsed and signed by each of the relevant delivery team's authorised representative as the contractual digital engineering deliverables. Any revisions to the DEEP must be documented and agreed to by all appointed parties prior to implementation on the project.

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

**Accessibility**

This document is available in PDF and Word format on the internet  
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*Published January 2020*

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