Digital Asset Policy

Improving infrastructure productivity through data

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1.1   Digital asset policy

The digital asset policy (Policy) provides clear and consistent organisational and project requirements designed to optimise productivity and be appropriate and proportional to a project's value and risk context.

This Policy applies to all Victorian Government Departments, corporations, authorities, and other bodies under the *Financial Management Act 1994* (Vic). The Policy is applicable to any capital asset investment seeking budget funding, which expects a contract value of $20 million or more.

Project delivery organisations shall adopt the requirements of this policy where any of the contracts to deliver a project are $20 million or more.

The Policy applies across three levels of requirements (aligned to the Project Profile Model assessment as defined within the Department of Treasury and Finance (DTF) Investment Lifecycle):

	DEFINED	MANAGED	OPTIMISING
Definition	Requirements applicable to all capital project contracts greater than $20 million	Requirements applicable to delivering High Value High Risk (HVHR) projects	Recommended for priority or flagship projects, or projects seeking to demonstrate improved efficiency or performance

This Policy outlines requirements which complement:

\   Victorian Digital Asset Strategy (VDAS) Guidance: detailed organisational and project specific guidance across the asset lifecycle; and

\   International Standard ISO 19650: information management using Building Information Modelling (BIM).

1.2 Digital Asset transformation through the Digital Build Program

In the context of this Policy a Digital Asset refers to the digital information required to plan and deliver an infrastructure project and/or operate and maintain the associated built assets. Digital assets developed throughout a project hold valuable information and can be used to improve asset management, including operations and maintenance while also enabling continuous improvement for future projects.

Improved integration within and between Victorian major projects will lead to significant efficiencies, improved productivity and savings while fostering greater collaboration and portfolio oversight.

The Office of Projects Victoria's (OPV) Digital Build Program was established in 2020 to implement the VDAS Guidance and Offsite Construction methods for Victorian Government infrastructure projects. The Digital Build Program comprises:

\ a comprehensive approach to implementing digital tools and systems to enable good practice project delivery;

\ implementing good information management processes such as digital engineering and BIM processes; and

\ providing support to Victorian Government Departments and Agencies to ensure that their digital transformation is effective and consistent by setting requirements through this Policy, implementing pilots, guidance, tools and training.

1.3 Available support

OPV's Digital Build Program will provide centralised Department and Agency support for the implementation of this Policy. This includes providing training and guidance material on the effective implementation of Digital Build approaches and technical advice where needed. Please refer to www.opv.vic.gov.au for further information.

2. Purpose and benefits

2.1 Challenges and priorities for government

Record infrastructure investment is challenging the capacity of Victorian Government Departments and Agencies to deliver and manage projects efficiently. This is set against a widening skills gap, with increasing competition for key project resources.

These challenges are exacerbated by informal and unstructured digital processes and requirements coupled with siloed approaches to information development and management. This can result in inefficient planning and decision making, duplication and rework, challenging design coordination, increased quantity of design and construction errors and variations, and data unable to be fully utilised in operations. These challenges are putting increasing pressure on the delivery of Victorian infrastructure, with risk, time, cost, and quality implications for the design, delivery, and operation of assets.

This Policy aims to support the transition towards the effective use of digital processes by defining the required asset and project information needed to support timely and effective decision making throughout the asset lifecycle.

This Policy aligns to the national approach to BIM implementation endorsed by the Board of Treasurers in August 2019. The Policy supports harmonised and consistent adoption of good information management across Commonwealth, State and Territory Governments.

2.2 Vision and purpose of this policy

To improve whole-of-life productivity of infrastructure assets for the benefit of current and future Victorians.
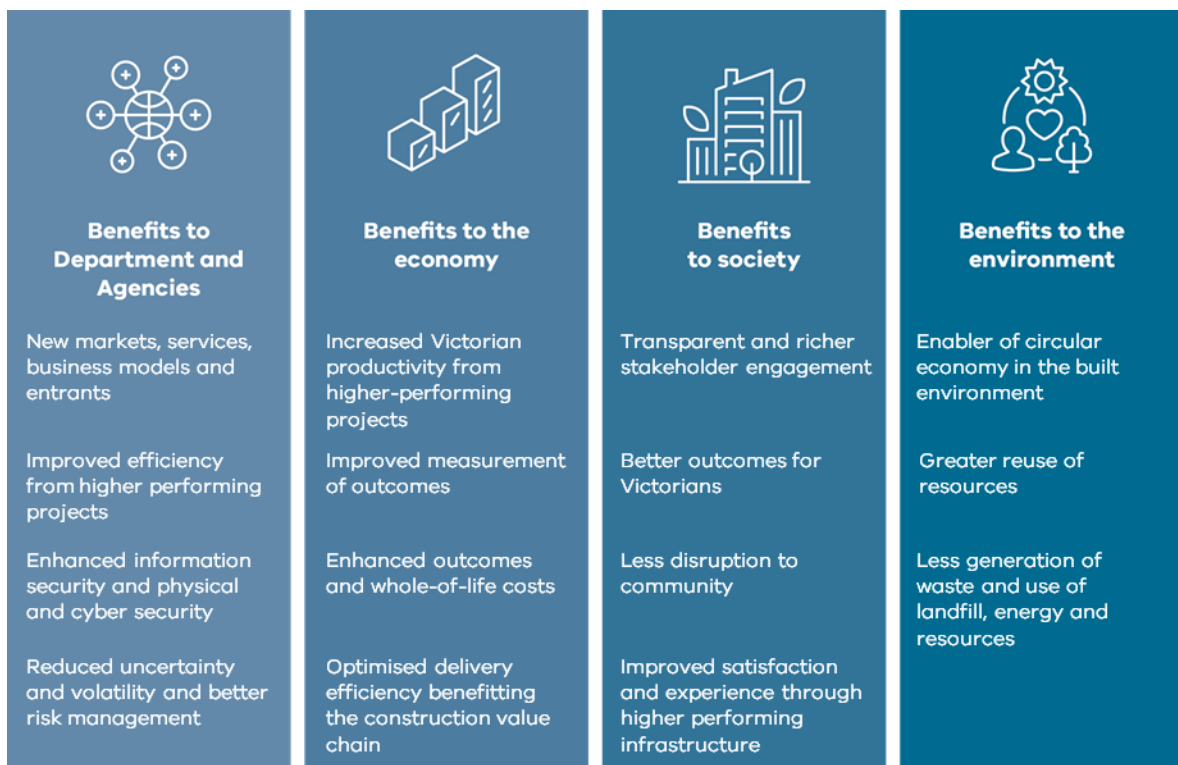
This Policy seeks to increase the productivity of infrastructure projects delivered by Victorian Government Departments and Agencies by uplifting their Digital Asset capability. It enables an integrated approach to organisational capability, project delivery and information management across the DTF Investment Lifecycle.

The requirements in this Policy have been designed to be appropriate and proportional to a project's value and risk context. The Policy requirements aim to support projects in realising their stated benefits and be delivered on time, to budget, and to desired quality.

By elevating the digital maturity of Victorian Government Departments and Agencies, improved project and asset management practices can be more easily implemented, shared, and monitored to leverage a wide range of opportunities for project efficiency and savings.

2.3   Benefits of digital asset approaches

Investing in information management delivers direct productivity gains, increased benefits to Victorians, and value to Victoria's built environment. Effective requirements for information management can reduce costs through increased efficiencies, reduce risk contingency, and transform asset management to improve services for Victorians.

Benefits to Department and Agencies	Benefits to the economy	Benefits to society	Benefits to the environment
New markets, services, business models and entrants	Increased Victorian productivity from higher-performing projects	Transparent and richer stakeholder engagement	Enabler of circular economy in the built environment
Improved efficiency from higher performing projects	Improved measurement of outcomes	Better outcomes for Victorians	Greater reuse of resources
Enhanced information security and physical and cyber security	Enhanced outcomes and whole-of-life costs	Less disruption to community	Less generation of waste and use of landfill, energy and resources
Reduced uncertainty and volatility and better risk management	Optimised delivery efficiency benefitting the construction value chain	Improved satisfaction and experience through higher performing infrastructure	

The Centre for Digital Built Britain (CDBB) undertook analysis of eleven case studies and found widespread examples of information management enabled productivity gains (CDBB, 2021). This includes quantitative evidence which states that investment in the use of information management could secure a return through:

\ labour productivity gain of between 5x to 6x

\ **direct cost savings** of between **690 to 740 per cent** from reductions in delivery and labour time and material use

\ **asset operation costs savings**, ranging from **1.6 to 18 per cent** at various stages of the asset lifecycle

Policy implementation, benefits tracking and evaluation will be done centrally by OPV to understand the Policy efficacy and impact at the whole of Victorian Government (WoVG) level. It is the responsibility of each Department, Agency Lead or Project Lead Implementation functions to establish benefits realisation approaches at the Department, Agency, and Project level in alignment with the DTF Investment Lifecycle.

3.   Implementation functions

Victorian Government Departments and Agencies are responsible for the allocation of resources to plan and implement this Policy. The allocation of the below implementation functions is to be determined on an organisational and project level, ensuring adequate coverage of the responsibilities and actions. The Appointing Party or Lead Appointing Party function allocation will depend on contracting model.

Please refer to the VDAS Guidance Appendix 9 for detailed position descriptions.
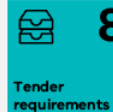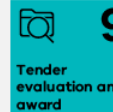
Digital asset function	Policy responsibility	Implementation actions
Appointing party functions		
Department or agency sponsor *See VDAS Champion – VDAS Guidance (Appendix 9).*	An executive function responsible for the application of the requirements within this Policy, including that there is appropriate capability within the Department or Agency.	Understand and own the transformation toward Digital Asset approaches and increased maturity within the Department or Agency. Set the strategic and policy direction for Digital Asset maturity within the Department or Agency.
Department or agency lead *See VDAS Champion – VDAS Guidance (Appendix 9).*	A function responsible for driving the application of the Digital Asset requirements within the Department or Agency. This function will have a fundamental understanding of Digital Asset approaches and practices. This function considers information/data security, privacy, and quality, as well as the commercial, technical and project delivery aspects of the organisation.	Assess the current state and desired future state for the Department or Agency and develop a roadmap for organisational readiness and increased maturity. Engage stakeholders to ensure alignment and collaboration in implementation. Track and report on implementation outcomes, including social, economic, and environmental benefits.

Digital asset function	Policy responsibility	Implementation actions
Project lead *See VDAS Guidance (Appendix 9).*	A project function responsible for planning and overseeing the delivery of Digital Asset requirements, processes, and approaches. They have a thorough understanding of the Digital Asset concepts, design and implementation needs of the project.	Understand the project needs and functions, including applicable policy requirements. Develop a plan for the project and handover, ensuring alignment to existing guidance and frameworks. Review or audit Digital Asset deliverables across the project lifecycle. Ensure adequate selection and oversight of Appointing Party Lead or Appointing Party capabilities and execution of the project Digital Asset strategy. Track the delivery and outcomes through the implementation of digital asset approaches.
Asset or facilities managers	Ensuring Digital Asset approaches are sustained and maintained throughout the lifecycle of an asset.	Work collaboratively with Delivery Teams to plan for and understand Digital Asset and information management operation or maintenance requirements including the identification of Digital Asset lifecycle requirements. Maintain Digital Asset and information outputs across the asset lifecycle. At handover stage, integrate project information with Asset Management Systems.
Interactions with lead appointed party		
Digital engineering lead *See VDAS Guidance (Appendix 9).*	A function within the lead appointed party Delivery Team responsible for ensuring the quality and efficient delivery of planned Digital Asset approaches.	Develop project execution plans and relevant workflows between Appointed Parties, systems, and technologies to ensure the project can appropriately deliver to the information requirements. Ensure compliance with the project Digital Asset strategy. Oversee the quality control and assurance of Digital Assets and information to the nominated data standards.
Project managers	Incorporating Digital Asset Policy requirements into project planning, reporting and delivery to ensure adherence with the Policy requirements.	Collaborate with the government-based Project Lead to understand, plan for, and deliver Digital Asset Policy requirements. Oversight of the delivery of the Digital Asset Policy requirements by appointed parties.
Delivery teams	Applying Digital Asset Policy practices and approaches in design, delivery, construction, maintenance, and operation (where appropriate).	Implement the Digital Asset Policy requirements and associated procurement requirements. Uplift capability to ensure demonstration of the requirements throughout the project lifecycle.

Digital Asset Policy

4. Digital asset policy requirements

The graphic below provides an overview of how the Policy requirements are aligned to the DTF Investment Lifecycle. They also include organisational readiness requirements to support Department or Agency requirements and activities.

Refer to ISO 19650-2 'information management requirements during the delivery phase of assets' for detailed application.

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No.	Requirement	Description
Organisational readiness		
1.	**Governance**	Defined digital asset strategy, governance structure (including steering committees or working groups), reporting lines and accountabilities including clear change or variation management decision making processes.
2.	**Resourcing and support**	Funding allocated to adopt this Policy. Defined organisational and information management functions. Training and education plans established (organisational/function based).
3.	**Business processes and Information needs**	Key business processes mapped and defined that are aligned to the level of information needed, supporting timely decision making.
4.	**Data standards and quality**	Data standards and quality assessment requirements established, and monitoring performed. Departmental and Agency commitment to improving data quality and support decision-making.
5.	**Technology and systems**	Technology and systems that support the organisation's needs for information management. Legacy systems are integrated where possible and newer technologies, which support this Policy, are planned for implementation.
Business case		
6.	**Delivery approach**	Delivery approach (including digital delivery approach) aligns to business case and procurement strategy, processes, and documentation. Project information deliverables are aligned to organisational needs.
7.	**Business case preparation**	Policy requirements are included in business case preparation. Benefits realisation metrics are aligned to key business decisions.
Procurement		
8.	**Tender requirements**	As a key principle of project delivery, Tender Requirements include information management connected to contractual obligations of all parties. Information requirements are defined.
9.	**Tender evaluation and award**	(VDAS Appendix 3) Information requirements are defined and have a fit-for-purpose information delivery plan, addressing the project and digital operational objectives.
Delivery		
10.	**Mobilisation**	Technology and systems are tested. Information management function fulfilled. Existing information collated. Information delivery plans, including asset data are updated and reference the project methodology.
11.	**Design**	Design requirements consider Asset or Facilities Managers, security and sharing requirements, design review and coordination, and information exchange requirements are defined and implemented.
12.	**Construction**	Considers schedule, information delivery approach, digital workflows, quality, and Asset or Facilities Management acceptance requirements and enables resources to be onboarded early.
13.	**Information handover**	Information handover requirements include information quality, project and asset information model requirements, information exchange approach and ongoing resources required to realise effective information management.
14.	**Operational integration**	Operational integration requirements include Asset Management Accountability Framework (AMAF) compliance, benefits realisation, asset information, information management, and disposal.

Organisational readiness

About this section

This section provides requirements to support Departments and Agencies in assessing project needs and accurately defining the organisational requirements to be applied throughout the DTF Investment Lifecycle.

Who is this section for?

Implementing an organisational digital asset strategy requires a change to how assets are procured, delivered and accepted into operation. Preparing the Department or Agency for implementation is a crucial first step to realising the benefits and opportunities offered by the procurement of built assets (refer to VDAS Guidance – implementation roadmap).

Key concepts

Organisational readiness requirements support the Department or Agency in undertaking the activities needed to ensure internal capability is proportionate to the value and risk of the project and its future digital needs. These considerations help inform the governance, resourcing, processes, standards, and systems that are required by organisations to make the most of the digital assets for their projects.

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1. Governance

Governance requirements consider the decisions required to endorse a strategy and implementation plan, culture, funding models, benefits, and organisational change aspects.

	DEFINED	MANAGED	OPTIMISING
1.1. Strategy/ implementation (VDAS)	**1.1.1** The Department/Agency Digital Asset Implementation Plan is defined and aligned to VDAS.	**1.1.2** Digital Asset benefits are defined at the project and organisational level.	**1.1.3** The Digital Asset Implementation Plan describes coordination with other Departments/Agencies and/or affected stakeholders.
1.2. Functional accountability	**1.2.1** A nominated individual or committee is responsible for the Department/Agency digital functions.	**1.2.2** A Department/Agency Lead is accountable for managing organisational digital uplift.	**1.2.3** A Department/Agency Lead is accountable for the efficient progressive acceptance of assets from the Project.
1.3. Benefits	**1.3.1** The Department/Agency Lead defines project and organisational Digital Asset benefits.	**1.3.2** Benefits and efficiencies realised through implementation of good information management are measured and tracked.	**1.3.3** Benefits data shared to drive continuous improvement.
1.4. Funding	**1.4.1** The Department/Agency provides funding for organisational information management capability to meet project needs.	**1.4.2** The Department/Agency provides funding for dedicated digital resources (see VDAS).	**1.4.3** The Department/Agency creates project funding models to drive organisational innovation.

2. Resourcing and support

Resourcing and support requirements consider how functional information management accountabilities and responsibilities are allocated, reflecting internal needs, training needs, and project supply chain capability.

	DEFINED	MANAGED	OPTIMISING
2.1 Roles/responsibilities	**2.1.1** Department/Agency information management roles and responsibilities are defined.	**2.1.2** The Department/Agency supports information management on projects and shares lessons learnt.	**2.1.3** The Department/Agency supports information management on projects and shares lessons learnt.
2.2 Capability/training	**2.2.1** Department/Agency information management capability established. Maturity and training needs have been assessed.	**2.2.2** Information management responsibility assigned for critical Department/Agency data sets, including training for appropriate users.	**2.2.3** The Department/Agency uses training to continuously improve information management practices.
2.3 Supply chain capability	**2.3.1** Department/Agency information requirements are clearly communicated to the supply chain.	**2.3.2** The supply chain information management capability is regularly evaluated against the Department/Agency requirements.	**2.3.3** The Department/Agency leads industry initiatives to uplift supply chain capability.

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3. Business processes and information needs

Business Processes and Information Needs requirements consider how business processes are mapped to key asset lifecycle activities and information management needs (Organisation/Asset/Project level).

	DEFINED	MANAGED	OPTIMISING
3.1 Digital asset implementation plan	**3.1.1** The Digital Asset Implementation Plan is defined including timing, strategy, and improvement requirements.	**3.1.2** Actions within the Digital Asset Implementation Plan are fully funded.	**3.1.3** A Departmental/Agency continuous improvement program is in place to uplift information management capability.
3.2 Key decisions points (ISO 19650)	**3.2.1** Key decision points are defined in line with ISO 19650.	**3.2.2** Key decision points and Plain Language Questions are defined.	**3.2.3** Key decision points are documented in a common data environment (CDE) to optimise and maintain the portfolio.
3.3 Information requirements (ISO 19650)	**3.3.1** Asset Information Requirements (AIR) are defined.	**3.3.2** The AIR is aligned to an 'Asset Information Model' (AIM).	**3.3.3** 'Organisation Information Requirements' (OIR) are defined and there is a change management process in place to agree changes.
3.4 Asset classification system	**3.4.1** Assets are classified as per a consistent structure and location referenced.	**3.4.2** Integrated data structures/schemas (e.g., Industry Foundation Classes and Uniclass 2015) are used.	**3.4.3** Department/Agency functions (e.g. Finance, customer, Asset Management) use an interoperable classification system.

4. Data standards and quality

Data standards and quality requirements consider how data is managed including definition, classification, requirements, quality, and validation.

	DEFINED	MANAGED	OPTIMISING
4.1 Data formats (ISO19650, VDAS)	**4.1.1** Data format requirements are created and documented to support the organisational 'level of information need'.	**4.1.2** Common data formats are used and maintained.	**4.1.3** Consistent and open data formats are used to enable automated interoperability.
4.2 Data classification (ISO19650, VDAS)	**4.2.1** Data classification and associated meta-data is defined.	**4.2.2** Structured data management is applied consistently across projects.	**4.2.3** Department/Agency functions (e.g. Finance, customer, Asset Management) use an interoperable classification system.
4.3 Data quality (ISO19650, VDAS)	**4.3.1** Organisational data quality needs are defined.	**4.3.2** A data quality assurance process is in place.	**4.3.3** Missing or incomplete information is actively remedied, forming validated, trusted data.
4.4 Data validation (ISO19650, VDAS)	**4.4.1** Data validation rulesets are defined and implemented.	**4.4.2** Data validation is semi-automated based on data requirements and open data formats.	**4.4.3** Automated data validation is preferred and implemented.
4.5 Data security (ISO 19650-5)	**4.5.1** The Department/Agency Lead implements organisational data security, interoperability, access, and reporting requirements in line with ISO 19650–5.	**4.5.2** The Department/Agency Lead implements organisational data security, interoperability, access, and reporting requirements in line with ISO 19650–5.	**4.5.3** The Department/Agency Lead maintains portfolio-wide information/data security controls including interoperability requirements.

5. Technology and systems

Technology and systems requirements consider how technology and systems are defined, optimised, used, integrated, and hosted. This includes the digital processes, environments, tools, and workflows required to support effective project delivery and ongoing outcomes.

	DEFINED	MANAGED	OPTIMISING
5.1 Legacy systems and common data environments (ISO19650, ISO55000)	**5.1.1** Existing systems are assessed against future project delivery and operational information needs.	**5.1.2** Legacy systems are integrated with a CDE or retired or replaced if unsuitable. Consistent identifiers/codification is implemented to enable effective access.	**5.1.3** Legacy systems are integrated with a CDE or retired or replaced if unsuitable. Consistent identifiers/codification is implemented to enable effective access.
5.2 Master data management (ISO 55000)	**5.2.1** Master data management needs are assessed and responsibility for maintaining data quality is allocated.	**5.2.2** The Department/Agency data architecture is mapped across project and operational systems establishing a 'single source of truth'.	**5.2.3** Consolidated systems enable effective search capability across the CDE. A data improvement program is in place.
5.3 Visualisation	**5.3.1** Key stakeholders have the appropriate technologies to interact with Digital Asset information, including spatial data.	**5.3.2** Information is available through visualisation tools to inform decision making.	**5.3.3** Real time asset information is available spatially, overlaid with other critical information enabling analysis.
5.4 Technology integration (ISO19650, ISO55000)	**5.4.1** Technology interface points with key stakeholders are understood. Data transfer processes are defined.	**5.4.2** Data transfer processes between the Department/Agency and key stakeholders are interoperable and open where possible.	**5.4.3** Data transfer processes allow real time interoperability.

Business case

About this section

The business case establishes the service need, defines the benefits, explores interventions, estimates costs, and identifies delivery processes. Organisational readiness activities undertaken prior to business case development will support the Department and Agency to achieve optimal digital outcomes.

To ensure Government is setting up a project for success, this section provides the Digital Asset requirements to support Departments and Agencies throughout the development of a Business Case.

Who is this section for?

This section provides requirements for Departments and Agencies preparing Business Cases, setting project objectives and scope, and defining the information management delivery approach.

As part of good information management practice, Asset or Facilities Managers play an important role in defining asset requirements and service outcomes.

Key concepts

These business case requirements support Departments/Agencies in demonstrating how the proposed investment will deliver value by embedding best practice information management. By leveraging best practice information management processes and workflows, Departments and Agencies can drive a consistent approach across a program of works or a single project.

6. Delivery approach

These requirements consider how the proposed project integrates with the organisational objectives. Additionally, these requirements ensure the business case includes all information required to execute the procurement and delivery of built assets, skills, reference information, resources, and that the information management approach is fit-for-purpose.

	DEFINED	MANAGED	OPTIMISING
6.1 Procurement approach	**6.1.1** The Department/Agency Lead considers ownership, reliance and transferring Digital Asset information between parties aligned to the commercial/contract model.	**6.1.2** The Department/Agency Lead ensures information/data ownership, reliance, risk, reward and transferring requirements are embedded in Digital Asset information requirements between all parties.	**6.1.3** The Department/Agency Lead considers the optimal procurement approaches for enabling integrated information creation processes, ownership, reliance, risk, reward and transferring digital asset information between all parties.
6.2 Internal skills to deliver	**6.2.1** Digital Asset capability and training needs have been assessed by Department/Agency Lead before Business Case submission.	**6.2.2** The Department/Agency Lead has ensured the appropriate internal digital asset capability and training has been completed and resources allocated to the proposed HVHR project before Business Case submission.	**6.2.3** The Department/Agency Lead has comprehensive Digital Asset delivery skills and mentoring programs in place. These skills exist on all projects and operational functions.
6.3 Reference information and shared resources (ISO 19650)	**6.3.1** Asset/Facilities Managers are consulted to determine existing conditions information. Shared Resources (templates) are made available.	**6.3.2** Asset/Facilities Managers are consulted to determine existing conditions information. Shared Resources (templates) are made available.	**6.3.3** Shared Resources are actively managed in a CDE and used by all projects.
6.4 Information management delivery (ISO 19650)	**6.4.1** The digital approach and required maturity are defined by the Project Lead.	**6.4.2** The required supporting resources (people, data, technology) for the digital approach are defined by the Project Lead.	**6.4.3** The digital approach details how information will be integrated with other business activities.
6.5 Project/exchange information requirements (ISO19650)	**6.5.1** Project scoping documents include Project Information Requirements (PIR) and Exchange Information Requirements (EIR).	**6.5.2** Project scoping documents require the Delivery Team to create a detailed EIR between parties, managed by the Lead Appointed Party.	**6.5.3** PIR and EIR are aligned to the OIR.

7. Business case preparation

These requirements consider how the project delivers on organisational objectives, leverages existing information, is reasonably founded on a data driven service need, and generates social, environmental, and economic benefits.

	DEFINED	MANAGED	OPTIMISING
7.1 Scope (RTCC)	**7.1.1** Information management scope is clearly delineated between the Appointing party and lead appointed party.	**7.1.2** Information management requirements are integrated with the principal project requirements (PPR) or project scope and delivery requirements (PSDR).	**7.1.3** Information management scope is defined by a performance specification.
7.2 Benefits realisation (RTCC)	**7.2.1** The department/agency lead includes digital assets benefits in the business case.	**7.2.2** The department/agency lead defines how benefits will be measured and reported including consideration of sustainability outcomes.	**7.2.3** The department/agency lead maintains benchmark data for digital benefits to inform business cases.
7.3 Risk Management (RTCC)	**7.3.1** Risk management processes are considered in Business Case processes and are implemented systematically and consistently.	**7.3.2** The department/agency lead has used a risk-based approach in defining the AIR, PIR, and EIR. The department/agency Lead actively reports these to support risk modelling.	**7.3.3** The department/agency lead uses previous project risk data to improve future department/agency information requirements.
7.4 Time Management (RTCC)	**7.4.1** The Work Breakdown Structure (WBS) includes information management activities and project milestones and links duration to scope.	**7.4.2** The department/agency lead specifies how time-related information is managed in the PIR and EIR.	**7.4.3** The department/agency establishes and maintains a project master schedule and enterprise system.
7.5 Cost and Contingency Management (RTCC)	**7.5.1** The cost breakdown structure (CBS) links cost and scope.	**7.5.2** The CBS is linked to the work breakdown structure (WBS) in the PIM.	**7.5.3** The CBS is integrated in an Appointing Party CDE and linked to available information (e.g. risk, time, cost, contingency etc.)

Procurement

About this section

The procurement stage finalises the delivery plan, engages the market and awards one or more contracts. This stage should be aligned with the procurement strategy developed in the approved Business Case.

Who is this section for?

This section provides requirements for Departments, Agencies and Delivery Teams preparing and undertaking procurement activities.

Key concepts

Digital Asset procurement requirements support the clear articulation of organisational and project information needs within the procurement approach and documentation. This improves both the understanding of the tendered requirements and a more accurate assessment of value for money.
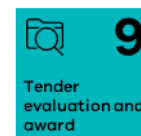
8. Tender requirements

Tender Requirements consider the organisational information needs, key decision points, and how these requirements are integrated with broader tender requirements. Effective application of these requirements will assist Departments, Agencies, and Delivery Teams to request the right information to be able to assess more accurately value for money. It will also assist Tenderer's to have a better understanding of what they are required to deliver and hence provide a more accurately estimate.

	DEFINED	MANAGED	OPTIMISING
8.1 Key decision points (ISO19650, ISO55000)	**8.1.1** Information management requirements are included in the project's defined key decision points.	**8.1.2** The tender documents include AIR, EIR, and PIR to support project key decision points.	**8.1.3** The AIR, EIR, and PIR are integrated with the OIR.
8.2 Information Delivery Plan (ISO19650-2)	**8.2.1** The department/agency lead has assessed data security requirements, specified open data formats, and data integration needs across systems and users.	**8.2.2** Tenderers are required to develop an 'Information Delivery Plan' per ISO 19650.	**8.2.3** The department/agency lead continuously develops information management requirements applicable to all projects.
8.3 Commercial aspects (ISO19650-2)	**8.3.1** The Department/Agency Lead has defined commercial requirements including Intellectual Property (IP), reliance on existing information, licencing, and information security for portfolio-wide use.	**8.3.2** The Department/Agency Lead defines commercial agreements for digital information sharing.	**8.3.3** The Department/Agency Lead holds all rights to use or otherwise the Digital Assets developed in Delivery, including supporting reports or analysis e.g. solution reuse for a separate contract or project, as part of the development of an asset standard, etc.

9. Tender evaluation and award

Tender evaluation and award requirements support Departments and Agencies in meaningfully evaluating the proponents proposed delivery approaches and the alignment with broader organisational objectives.

To support a robust evaluation process, these requirements ensure the assessment criteria, expertise, and information management considerations are addressed to demonstrate value for money.

	DEFINED	MANAGED	OPTIMISING
9.1 Assessment criteria (ISO 19650)	**9.1.1** Information management and collaboration approaches are included in assessment weightings.	**9.1.2** Assessment criteria includes the requirement for an information management plan aligned to VDAS/ISO 19650 (e.g. BIM execution plan (BEP) or digital engineering execution plan (DEEP)).	**9.1.3** The department/agency maintains a standardised BEP/DEEP template with information management assessment criteria for use in tenders.
9.2 Required expertise	**9.2.1** The evaluation panel includes a member with information management experience.	**9.2.2** The evaluation panel includes a dedicated lead for reviewing proposals against the information management criteria.	**9.2.3** The department/agency lead participates in the evaluation panel.
9.3 Information management function	**9.3.1** Responsibility for information management is clear in the tender.	**9.3.2** Tenderers have nominated individuals to fulfil the project's information management function as key personnel.	**9.3.3** Tenderers provide additional resources to support Department/Agency information management processes.
9.4 Information classification (ISO 19650-2)	**9.4.1** Tenders are assessed on the completeness of their information classification approach including asset classification, WBS, and CBS.	**9.4.2** Tender submissions are aligned to Department/Agency classification systems, to support effective interoperability and information handover.	**9.4.3** Tender submissions utilise the Department/Agency information classification structure and 'Shared Resources' (e.g. 3D object libraries or templates).

Delivery

About this section

The delivery stage implements the delivery approach and transitions the completed built asset into normal business operations. As the project is constructed, the Delivery Teams will be focusing on managing the project information through time, cost, and quality aspects.

Digital asset delivery requirements help the Department or Agency, and Delivery Teams mobilise an effective project, coordinate the design process, and manage information throughout construction. Critically, this stage includes information handover and operational integration requirements to ensure the value of the Digital Asset extends into the operation phase.

Who is this section for?

This section provides requirements for Departments, Agencies, and Delivery Teams in delivering the project aligned to good information management practice. End-users and Asset and Facility Management teams are critical contributors to the delivery approach.

Key Concepts

Digital Asset delivery requirements support the Department or Agency in delivering the project and transitioning it effectively to operations. These requirements help improve information management throughout design, construction and create the link to operations. These requirements execute on the procurement requirements, improve the design and construction process, including coordination of schedule, cost, quality, and project controls information. Delivery requirements also include how the Delivery Team should transfer quality information to the asset owner and how the operator will accept and utilise that information.

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10. Mobilisation

Application of mobilisation requirements supports the Delivery Teams in setting the project up for a successful delivery. The Appointing Party will support the Delivery Team in executing the delivery approach, establishing the key foundational components of how the project will effectively manage information, aligned to key decision points.

	DEFINED	MANAGED	OPTIMISING
10.1 Security (ISO19650-5)	**10.1.1** The delivery team shall assess whether a 'security-minded approach' is required in collaboration with the appointing party.	**10.1.2** A 'security-minded approach' is applied and managed.	**10.1.3** Refer to 10.1.2
10.2 Asset knowledge (ISO19650-3)	**102.1** Asset/facilities managers are included in the mobilisation phase and are regularly consulted throughout delivery, enabling knowledge transfer of existing conditions/assets to the delivery team.	**10.2.2** Asset/facilities managers are primary stakeholders and support the delivery team in understanding the operational service needs.	**10.2.3** Asset/facilities managers are embedded within the delivery team.
10.3 Mobilisation plan (ISO19650-2) (RTCC)	**10.3.1** The lead appointed party defines the mobilisation activities, including project objectives, program, costs, safety, quality, risks, information management and delivery per the appointing party and delivery team needs.	**10.3.2** Mobilisation activities are mapped in a common WBS and CBS. This is shared and consistent across appointed parties and complies with the PIR and EIR.	**10.3.3** Mobilisation activities are performed by all parties in a CDE.
10.4 Information planning and delivery (ISO19650-2)	**10.4.1** The information management approach/function is defined and agreed by all 'appointed parties' within the delivery team.	**10.4.2** An information management plan is developed by the lead appointed party and endorsed by the appointing party. Information has been classified, allocated to relevant parties, and can be 'rolled-up' to provide an overall master information delivery plan. Information container naming is established for use in a CDE.	**10.4.3** The appointing party trains the delivery team to understand information requirements. department/agency maintain standardised information management templates.

11. Design

Application of Design requirements helps Delivery Teams manage information, including inputs from Asset/Facilities Managers and other end-user security and sharing requirements, design review and coordination, and data exchanges throughout delivery.

	DEFINED	MANAGED	OPTIMISING
11.1 Generate information (ISO19650-2)	**11.1.1** Design information is generated based on known existing condition information.	**11.1.2** Design information is generated from verified existing conditions and cross-referenced to other project design data in a CDE.	**11.1.3** Design information is wholly generated and integrated within a CDE.
11.2 Design reviews	**11.2.1** Design reviews use digital visualisation tools (BIM/geographic information systems (GIS)/digital engineering) throughout project delivery.	**11.2.2** The design review process is wholly managed on a fully federated design in a single digital visualisation tool.	**11.2.3** Relevant standard and code requirements are integrated with the digital visualisation tool to support and automate the design review process.
11.3 Information quality assurance (CDE workflows ISO 19650-2)	**11.3.1** Designers perform QA of their information against their own requirements and other parties' requirements before information is 'shared' with others.	**11.3.2** QA is performed within the CDE before information is 'shared'.	**11.3.3** Standard departmental/agency level information requirements and validation checks are used as the basis for delivery team QA.
11.4 Appointing party acceptance (ISO 19650-2)	**11.4.1** Lead appointed party submits 'published' information to department/agency for acceptance or rejection.	**11.4.2** Information and deliverables are 'published' in a CDE.	**11.4.3** Standard departmental/agency level information requirements and validation checks are used as the basis to progress to 'published'.
11.5 Benefits	**11.5.1** The project lead tracks benefits against the business case projections.	**11.5.2** Refer to 11.5.1	**11.5.3** The project lead reports design benefits to department/agency to support benchmarking.

12. Construction

Application of construction requirements supports Delivery Teams in managing information, improving the coordination of construction scheduling, project controls information and delivering quality outcomes. Establishing the construction information delivery approach creates opportunities to leverage advanced digital workflows and improve handover to operations.

	DEFINED	MANAGED	OPTIMISING
12.1 Information delivery (ISO 19650-2)	**12.1.1** The information delivery process is defined by the delivery team ensuring compliance with the information requirements (AIR, PIR, EIR).	**12.1.2** The delivery team develops and manages information within a CDE.	**12.1.3** Refer to 12.1.2
12.2 Construction	**12.2.1** The PIM is referred to for construction and includes critical asset information.	**12.2.2** The PIM includes asset information generated in construction and is used by the delivery team as the primary source of information.	**12.2.3** The PIM is used by the delivery team as the exclusive source of information.
12.3 Information quality (ISO 19650-2)	**12.3.1** The delivery team has an ongoing process for information validation and quality assurance which is monitored by the appointing party.	**12.3.2** Information is validated and transferred to a CDE by the delivery team.	**12.3.3** Information validation and transfer is semi-automated or automated within the CDE.
12.4 Asset/facilities management onboarding	**12.4.1** Asset/facilities managers are aware of the assets and associated information and this information.	**12.4.2** Asset/facilities managers assist in determining the likely asset management interventions (trigger events) and required information.	**12.4.3** Asset/facilities managers are involved in the asset selection process and trigger events definition.
12.5 Benefits	**12.5.1** The project lead tracks benefits against the business case projections.	**12.5.2** The project lead uses business case metrics to track benefits during construction.	**12.5.3** The project lead reports construction benefits to department/agency to support benchmarking.

13. Information handover

Application of information handover requirements is critical and delivers on efforts throughout previous stages to ensure the Asset and Facility Management team can effectively operationalise the assets. This establishes the information quality, transfer of the project into the asset information model, the approach for soft landings and long-term information management.

	DEFINED	MANAGED	OPTIMISING
13.1 Information acceptance	**13.1.1** A formal process is used by the department or agency lead to accept project information at project completion.	**13.1.2** Project information is progressively accepted during project delivery.	**13.1.3** Project information is accepted in real-time through an integrated system during project delivery.
13.2 Project information model (ISO 19650-2)	**13.2.1** The asset/facilities manager/s verifies project information against the AIR and AIM.	**13.2.2** PIM data is digitally transferred to the Asset Information Management System (AIMS).	**13.2.3** PIM data is progressively transferred into the AIMS during delivery and validated against the AIR and AIM.
13.3 Asset Information Model (ISO 19650-2/3)	**13.3.1** The asset/facilities manager/s performs final assurance of the AIM against the AIR before assets are placed in service.	**13.3.2** The AIM is assessed against the AIR progressively throughout delivery.	**13.3.3** The AIMS supports real-time spatial visualisation of progressively verified assets.
13.4 Funding	**13.4.1** The asset/facilities manager/s identifies ongoing funding requirements for the maintenance of asset information.	**13.4.2** Ongoing funding requirements for maintaining specific asset information to current standards are identified.	**13.4.3** The uplift and maintenance of asset information is part of the organisations BAU approach to Asset Management.

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14. Operational integration

The operational integration of project information ensures the Department or Agency can realise the value of data created in design and construction for the life of the asset. These requirements include AMAF compliance, benefits realisation, asset information, information management, and disposal - enabling information created during delivery can be connected appropriately to the necessary people, processes, technology, and systems.

	DEFINED	MANAGED	OPTIMISING
14.1 AMAF compliance	**14.1.1** All devolved assets are known to the department/agency and nominated asset/facilities manager/s.	**14.1.2** The asset/facilities manager/s manages all devolved assets, and the associated asset information are readily available during project delivery.	**14.1.3** Asset information is available in real-time to the relevant department/agency.
14.2 Asset information management (ISO 55000 series)	**14.2.1** The asset/facilities manager/s are accountable for accurate asset information management to support asset refurbishments/upgrades.	**14.2.2** Accurate historical asset information is actively linked to financial information, supporting the long-term planning of the asset.	**14.2.3** Accurate historical and predictive asset information supports detailed business decisions and portfolio-wide maintenance budgets and plans.
14.3 Soft landings (CIBSE)	**14.3.1** Designers and contractors are available to support occupants post occupation.	**14.3.2** Designers and contractors train and transfer asset and commissioning knowledge to occupants and asset/facilities managers.	**14.3.3** Designers and contractors provide post-occupancy evaluation and extended aftercare.
14.4 Disposal (ISO 55000 series)	**14.4.1** Asset health and performance history is monitored to inform decommissioning and disposal strategies. Asset information is updated in relevant systems after disposal.	**14.4.2** The asset/facilities manager/s has systems to visualise and summarise accurate asset information, health, and performance history.	**14.4.3** At all lifecycle stages, asset information is optimised considering decommissioning and disposal costs, risks, and residual value.

5. References

Asset Management Accountability Framework (AMAF)	**Source**: https://www.dtf.vic.gov.au/infrastructure-investment/asset-management-accountability-framework
Asset management (ISO55000 series)	**Source**: https://www.iso.org/standard/55088.html
BIM Level 2 Benefits Measurement Methodology Report	**Source**: https://www.cdbb.cam.ac.uk/news/2018JuneBIMBenefits
Chartered Institution of Building Services Engineers (CIBSE) – Soft Landings 2015	**Source**: https://www.cibse.org/networks/regions/australia-new-zealand/anz-regional-news/anz-regional-news-archive/the-soft-landing-framework-australia-new-zealand-m
International Standards for Information Management when using Building Information Modelling (ISO 19650)	**Source**: ISO 19650 Part 1, Part 2, Part 3, and Part 5. **VPS access**: http://www.opv.vic.gov.au/Victorian-Chief-Engineer/Victorian-Digital-Asset-Strategy/VDAS-Resources/VDAS-access-to-international-standards
Information and documentation — Records management (ISO 15489-1:2016)	**Source**: https://www.iso.org/standard/62542.html
Investment Lifecycle and High Value High Risk (HVHR) Guidelines	**Source**: https://www.dtf.vic.gov.au/infrastructure-investment/investment-lifecycle-and-high-value-and-high-risk-guidelines
National Digital Twin Programme (Centre for Digital Built Britain, 2021)	**Source**: https://www.cdbb.cam.ac.uk/what-we-do/national-digital-twin-programme
Project Development and Due Diligence (PDDD) Guidelines	**Source**: https://www.dtf.vic.gov.au/investment-lifecycle-and-high-value-high-risk-guidelines/stage-1-business-case
Project Profile Model (PPM)	**Source**: http://www.dtf.vic.gov.au/Publications/Investment-planning-and-evaluation-publications/Gateway/Gatewayproject-profile-model-form
Risk, Time, Cost and Contingency (RTCC) Guidelines	TBD
Victorian Digital Asset Strategy (VDAS)	**Source**: http://www.opv.vic.gov.au/Victorian-Chief-Engineer/Victorian-Digital-Asset-Strategy
Victorian Government Resource Management Framework (RMF)	**Source**: https://www.dtf.vic.gov.au/planning-budgeting-and-financial-reporting-frameworks/resource-management-framework
Victorian protective data security standards –	Source: https://ovic.vic.gov.au/data-protection/standards/

6.   Glossary

For a full list of definitions, please refer to the VDAS – http://www.opv.vic.gov.au/Victorian-Chief-Engineer/Victorian-Digital-Asset-Strategy.

Asset	Defined as an 'item, thing or entity that has potential or actual value to an organisation'. Assets can be tangible or intangible through physical and non-physical (digital) assets. Data and information are considered a digital asset. *Source: ISO 55000.*
Building information modelling (BIM)	Use of a shared digital representation of a built or to be built asset to facilitate design, construction, and operation processes to form a reliable basis for decisions. *Source: ISO 19650-1: 2018*
Data	Information represented in a manner suitable for automatic processing. *Source: 701-01-11.* Reinterpretable representation of information in a formalised manner suitable for communication, interpretation, or processing. Information can be processed by human or automatic means. Also known as digital information. *Source: ISO/IEC 2382-1.*
Delivery team	Lead appointed party and their appointed parties. A delivery team can be any size, from one person carrying out all the necessary functions through to complex, multi-layered task teams. The size and structure of each delivery team are in response to the scale and complexity of the asset management or project delivery activities. Multiple delivery teams can be appointed simultaneously and/or sequentially in connection with a single asset or project, in response to the scale and complexity of the asset management or project delivery activities. A delivery team can consist of multiple task teams from within the lead appointed party's organisation and any appointed parties. A delivery team can be assembled by the appointing party rather than the lead appointed party. *Source: ISO 19650-1: 2018*
Digital asset	In the context of this Policy a digital asset refers to the digital information required to plan and deliver an infrastructure project and/or operate and maintain the associated built assets. Digital assets developed throughout the course of delivering a project are immensely valuable and should be captured and used to better manage and operate assets at the conclusion of a project or for the purposes of continuous improvement on other projects. *Source: Digital Asset Policy*

Digital Engineering	A contemporary and collaborative approach to working on assets allowing for a faster and more efficient approach to delivering projects and managing physical assets. It is a convergence of emerging technologies such as BIM, GIS, and other related systems for deriving better businesses, projects, and asset management outcomes. Digital engineering enables a collaborative way of working using digital processes to enable more productive methods of planning, designing, constructing, operating, and maintaining assets through their life cycle. The core elements of digital engineering include a standardised classification system, open data format, object-based models, spatially located data, and common data environment across all asset phases. *Source: Victorian Digital Asset Strategy*
High Value High Risk (HVHR)	Mandatory requirements exist for High Value High Risk (HVHR) projects. These requirements are detailed in the DTF HVHR Project Assurance Framework which comprises a series of project assurance checks and processes to increase the likelihood that such projects achieve their stated benefits and will be delivered successfully, on time and to budget. To determine whether a project should be subject to the HVHR project assurance framework the DTF Project Profile Model (PPM) is used to assign a risk assessment grade based on the intrinsic characteristics and complexity of a proposed project. Projects that exceed the set risk and value thresholds are classified HVHR and are required to comply with more rigorous processes. *Source: RTCC Guidelines May 2021*
Information management	Specification for what, when, how and for whom information is to be produced. *Source: ISO 19650-1: 2018* Information Management (IM) is the process by which an organisation collects, structures, stores, uses, and shares its data to perform its core business across asset lifecycle activities. In the construction and infrastructure sector, IM is enabled by the application of the UK BIM Framework and supports wider digital transformation approaches (data analytics, data science, Internet of Things, Artificial Intelligence/ Machine Learning applications). Together, these approaches improve the quality, availability, and timeliness of the information available to organisations – facilitating more efficient and effective decisions and investments across the asset lifecycle. *Source: Centre for Digital Built Britain (CDBB)*
Key Business Decisions/Key decision points	During the asset life cycle, a point in time, when a decision crucial to the direction or viability of the asset is made. During a project, these key decision points generally align with project stages. *Source: ISO 19650-1: 2018*
Exchange Information Requirements (EIR)	Information requirements in relation to an appointment. EIR set out managerial, commercial, and technical aspects of producing project information. The managerial and commercial aspects should include the information standard and the production methods and procedures to be implemented by the delivery team. The technical aspects of the EIR should specify those detailed pieces of information needed to answer the PIR. These requirements should be expressed in such a way that they can be incorporated into project-related appointments. EIR should normally align with trigger events representing the completion of some or all project stages. *Source: ISO 19650-1: 2018*

Appointing party	Provider of information concerning works, goods, or services.
	The appointing party should understand what information is required concerning their asset(s) or project(s) to support their organisational or project objectives. These requirements can come from their own organisation or interested external parties. The appointing party should be able to express these requirements to other organisations and individuals that have to know them to either specify or inform their work.
	In some countries, the appointing party can be termed client, owner, or employer but the appointing party is not limited to these functions.
	Source: ISO 19650-1: 2018
Lead appointed party	A lead appointed party should be identified for each delivery team
	The relevant Appointing Party information requirements should be issued to each prospective lead appointed party as part of the procurement process. This also applies when work instructions are issued by one part of an organisation to another part of the same organisation. A response to each requirement should be prepared by the prospective lead appointed party and reviewed by the appointing party before appointment. The response to the information requirements is then managed and developed by each lead appointed party and included in the plan for their asset management or project delivery activities. Information is managed and delivered by each lead appointed party and accepted by the party specifying the requirements.
	Source: ISO 19650-1: 2018
Meta-data	Metadata for recordkeeping refers to descriptive information about the content, context, structure, and management of records.
	It can be created, captured, and managed automatically by a piece of software or system, manually by a person, or by using a combined approach. Metadata about records may be held across a number of different systems within an agency, including recordkeeping and/or business systems.
	Source: https://prov.vic.gov.au/recordkeeping-government/a-z-topics/metadata
Trigger Events	Trigger events can involve asset interventions that are:
	(a) foreseen and scheduled in advance; or
	(b) not scheduled in advance or cannot be foreseen.
	These two types of trigger events differ when the preparatory activities of identifying and appointing the Lead Appointed Party can occur.
	Source: ISO 19650-3: 2020

7. Acronyms

AIM	Asset information model
AIMS	Asset information management system
AIR	Asset information requirements
AMAF	Asset Management Accountability Framework
BIM	Building information modelling
CAD	Computer aided design
CBS	Cost breakdown structure
CDE	Common data environment
CEO	Chief Executive Officer
DEEP	Digital engineering execution plan
DEER	Digital engineering execution response
DTF	Department of Treasury and Finance
EIR	Exchange information requirements
GIS	Geographic information system
HVHR	High Value High Risk
IFC	Industry FOUNDATION CLASSES
IP	Intellectual property
ISO	International organization for standardization
OIR	Organisational information requirements
OPV	Office of Projects Victoria
PIM	Project information model
PPR	Principal project requirements
PSDR	Project scope and delivery requirements
QA/QC	Quality assurance/quality control
RACI	Responsible, accountable, consulted, and informed
SRO	Senior responsible officer
VDAS	Victorian Digital Asset Strategy
VGRMF	Victorian Government risk management framework
WBS	Work breakdown structure