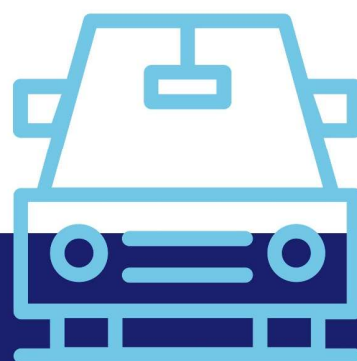


Transport Infrastructure Ireland

BIM for Infrastructure Statement of Intent and Roadmap

June 2026



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1 Introduction

1.1 Scope

This BIM For Infrastructure – Statement of Intent should be applied to all projects which are funded through Transport Infrastructure Ireland (TII) and / or where TII is the Approving Authority, unless otherwise instructed by TII. *(TII is the Approving Authority for national roads and greenways and a Sponsoring Agency for public transport.)*

1.2 Background

Office of Government Procurement (OGP) mandated Building Information Modelling (BIM) requirements in Capital Works Management Framework (CWMF) for public sector projects from Jan 2024. One of Public Sector BIM Mandate's core BIM requirements is to adopt ISO19650 international standard. Following this, Transport Infrastructure Ireland (TII) as an Approving Authority has taken responsibility for developing BIM Statement of Intent and Roadmap in line with this mandate, to ensure consistency across all the projects and successful implementation of BIM. Therefore, accelerating innovation, digital adoption and delivering projects to higher quality and safety level.

TII have both a unique opportunity and a responsibility to spearhead change and drive industry performance in line with Public Sector BIM Mandate's IM and BIM goals. TII BIM for Infrastructure Statement of Intent reflects long-term commitment to maximising the value for money and efficiency in delivering and maintaining the assets.

TII recognises that BIM has a potential to transform the design, construction and operation of public works projects over the coming years. TII supports this digital transformation, adoption and innovation. Foster a collaborative culture to encourage leadership at all levels, which is open to innovation and learn from mistakes.

TII believes that improving information management processes is the most effective way to:

- Manage and maintain assets more effectively
- Address productivity issues within the industry
- Enhance workflow accountability
- Drive seamless collaboration between the multidisciplinary project teams and the supply chain

1.3 Purpose

This Statement of Intent and Roadmap sets out TII's commitments, objectives and implementation timeline in relation to Information Management (IM) through Building Information Modelling (BIM). The document aims to provide a shared understanding of how TII will adopt IM and BIM processes across the whole lifecycle of an asset to transform the delivery of TII projects. It should be read in conjunction with the TII Information Management document suite Figure 1.1.

The document should be read in conjunction with the GE-BIM-00101 – BIM for Infrastructure Implementation Guidelines for National Roads and other relevant documents as show in Figure 1.1. For the full list of applicable documents refer to the GE-BIM-00101 section 1.3.

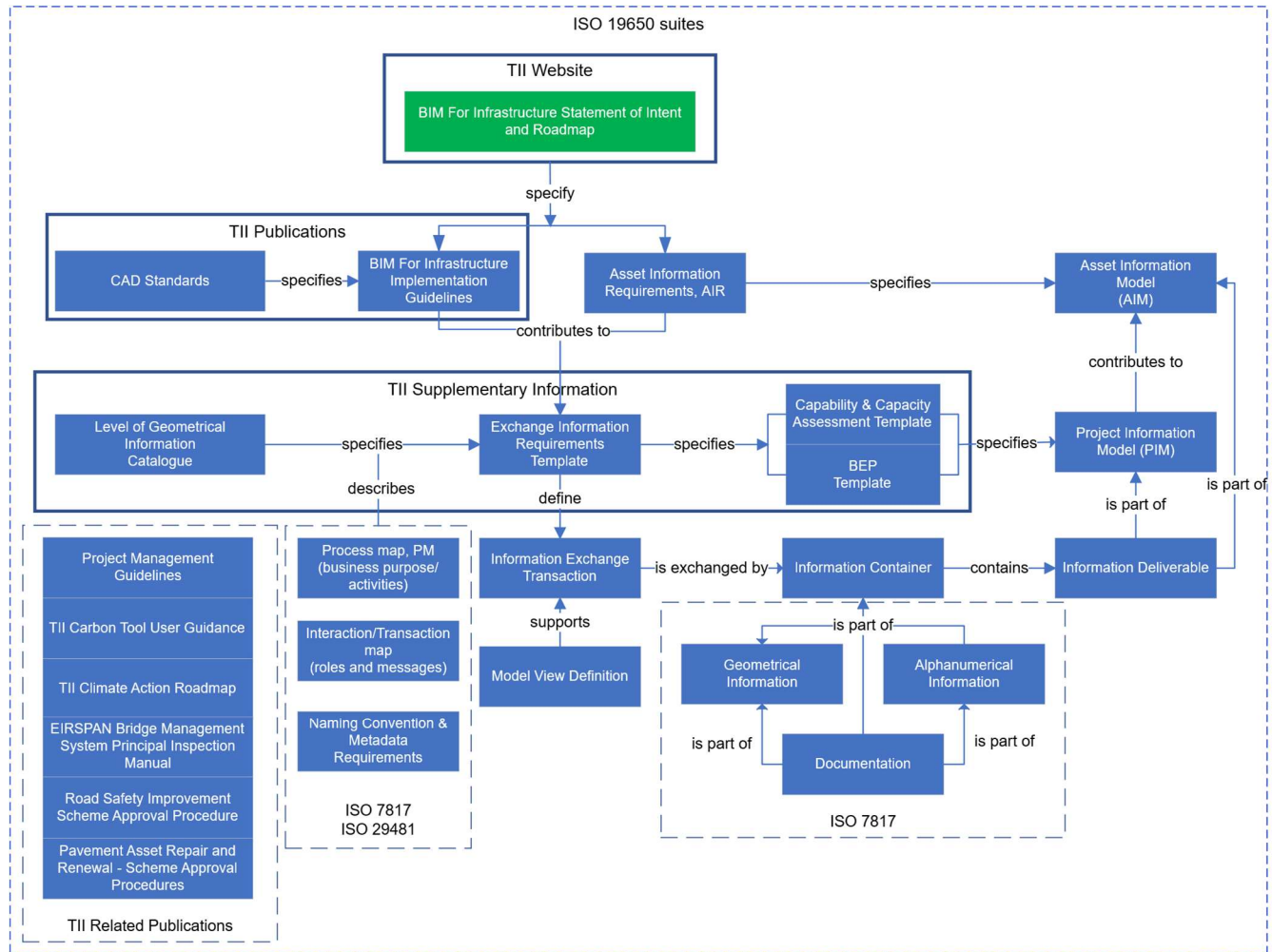


Figure 1.1 Document Relationship

2 BIM for Infrastructure Statement of Intent

Information Management (IM) through Building Information Modelling (BIM) ensures that the right people have the right information at the right time to enable the right and best decisions.

Information Management should be the responsibility of everyone working for and with TII, supporting continuous improvement in how we plan, deliver, operate, and manage public infrastructure.

IM provides a foundation for efficient delivery and is an enabler for developing data and technology solutions to meet TII's strategic objectives (Transport Infrastructure Ireland, 2025).

2.1 TII IM Commitments

- To align with Public Sector BIM Mandate across the public-sector capital programme and to support the key recommendations EU BIM Task Group Handbook for implementing BIM in the public sector
- To provide guidance on TII information requirements and standards to TII Project Managers, Local Authorities, National Roads Offices and Supply chain
- To adhere to relevant industry specific working practices, relevant standards, statutory, regulatory and industry specific requirements, including ISO 19650
- To manage information, data, knowledge and records in accordance with this Statement of Intent
- To maintain and continually improve our approach to Information Management, including provision of and access to applicable resources, including guidance and templates

2.2 TII IM Objectives

- Become a data centric public client, for the management of world class Transport Infrastructure project delivery and operations and maintenance
- Achieve consistency in the management of TII project's information and data
- Create a culture that supports working collaboratively to overcome IM challenges
- Utilise structured project information for enhanced analytical decision-making at strategic, regional, and project levels
- Eliminate duplication in data collection efforts, reduce waste, ensuring structured data is efficiently transferred and digitally validated for completeness and integrity
- Integrate advanced digital tools for proactive health and safety management, enhancing hazard identification, risk reduction, safety performance and sustainability
- Provide guidance about the technology including hardware, software and data security required for digital delivery
- Deliver projects in accordance with ISO 19650 standards as business as usual across the lifecycle of an asset

The TII objectives above translate this Statement of Intent into measurable benefits Figure 2.1.

They include strategic transformation—becoming a data-driven client, operational improvements such as safety, cost certainty and planning efficiency and the enablers required to sustain digital delivery across the TII projects.

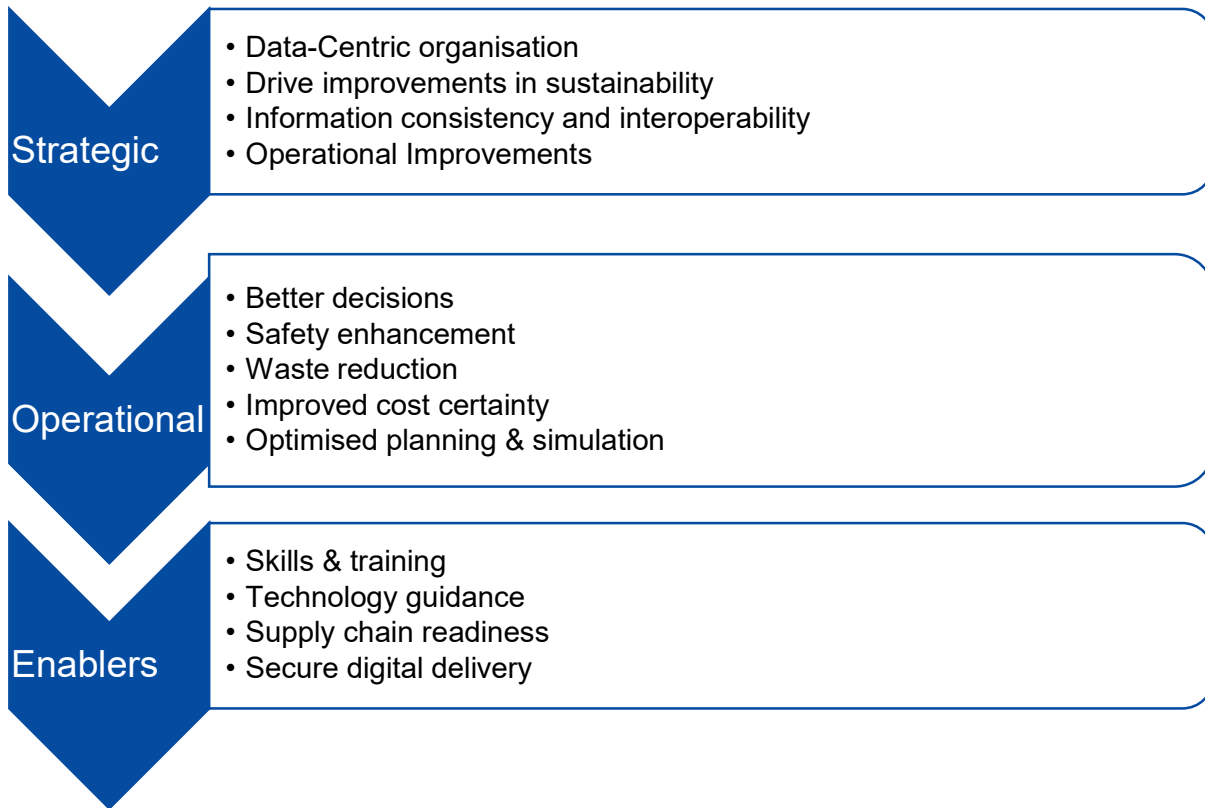


Figure 2.1 TII Objectives

3 Interaction of BIM for Infrastructure Statement of Intent with other Guidelines

The Capital Works Management Framework (CWMF) is a framework developed to achieve the Government’s objectives regarding the reform of public sector construction procurement. It consists of a suite of best practice guidance, standard contracts, and generic template documents.

BIM for Infrastructure Statement of Intent is in alignment with the requirements of the Public Sector BIM mandate published on 4th of July 2023.

The timeline set out in Table 3.1 below (Capital Works Management Framework, 2024) covering the Public Sector BIM Adoption Timeline as part of the CWMF Mandate.

- For Design Teams the mandate should apply to projects commencing Stage 1 of the CWMF on or after the Implementation Date.
- For Contractor and Supply Chain the mandate should apply to projects commencing Stage 1 of the CWMF on or after the Implementation Date.
- It is not appropriate to try and retrospectively implement the mandate where a Project has entered Stage 1 of the CWMF prior to the Implementation date.

Table 3.1 Public Sector BIM Adoption Timeline

Project Value	Milestones	Month
> €100m	01 – Design Team Only	00
> €100m	02 – Contractor and Supply Chain	12
> €20m	03 – Design Team Only	12
> €20m	04 – Contractor and Supply Chain	18
> €10m	05 – Design Team Only	18
> €10m	06 – Contractor and Supply Chain	24
> €5m	07 – Design Team Only	30
> €5m	08 – Contractor and Supply Chain	36
> €1m	09 – Design Team Only	36
> €1m	10 – Contractor and Supply Chain	42
< €1m	11 – Design Team Only	42
< €1m	12 – Contractor and Supply Chain	48

This Statement of Intent should be read alongside the TII Project Management Guidelines (Transport Infrastructure Ireland, 2017) and which provide a framework for a phased approach to the management of the development and delivery of TII projects.

4 Statement of Intent Implementation

This Statement of Intent should be used by all projects which are funded through Transport Infrastructure Ireland (TII) and / or where TII is the Approving Authority, unless otherwise instructed by TII. This Statement of Intent should be used by Information Managers or Project Managers overseeing TII projects.

In this Statement of Intent, the term “Project Manager” refers to the individual responsible for delivering the project on behalf of the Sponsoring Agency. Responsibility for ensuring that the Project is progressed in accordance with applicable legislation, standards, and guidelines should remain with the Project Manager. TII, as the Approving Authority, provides guidance on IM processes that should be followed, unless an alternative agreement is made with the TII Senior Engineering Inspector.

The primary interface between the Project Manager and TII is the TII Senior Engineering Inspector. TII Senior Engineering Inspector will be available to provide guidance and advice to the Sponsoring Agency, as appropriate, to ensure consistency of approach in the application of these processes with the aim of achieving the successful delivery of projects. Given the varying complexity and size of projects, there may be instances where it should not appropriate to fully implement the IM requirements. In such cases, any deviation from the Statement of Intent requirements should receive prior approval from the TII Senior Engineering Inspector overseeing the project, and the deviation should be documented in the Project Execution Plan (PEP).

5 Defining Information Management

Information management is the process by which organisations, with appropriate security controls, specify, procure, assure, store, present, and exploit information to perform core business functions (ISO 19650). The term BIM (Building Information Modelling) is evolving into the Information Management Initiative (IMI), aspiring to become an industry-led and government programme to progressively transform information management practices across the sector. While BIM is a key enabler and delivery mechanism for information management, the Information Management Initiative represents a broader, organisation-wide approach that extends beyond BIM to encompass all information required to support asset lifecycle and business outcomes.

The definition of BIM is often misinterpreted and misunderstood. While it is commonly seen as a 3D model, it involves much more than that. Although the 3D model is a key element, BIM is better understood as a process transformation rather than simply a new technology. The model may serve as a knowledge resource for all project participants, but more than that BIM is a process that enhances collaboration resulting in improved information management and an overall leaner process.

Some BIM definitions are as follows:

“BIM is a digital form of construction and asset operations. It brings together technology, process improvements and digital information to radically improve client and project outcomes and asset operations. BIM is a strategic enabler for improving decision making for both buildings and public infrastructure assets across the whole lifecycle. It applies to new build projects; and crucially, BIM supports the renovation, refurbishment and maintenance of the built environment – the largest share of the sector.” (EU BIM Task Group, 2018).

“BIM is a rich information model, consisting of potentially multiple data sources, elements of which can be shared across all stakeholders and be maintained across the life of a building from inception to recycling” (NBS, 2012).

BIM can be summarised from various perspectives as a “new collaborative business process” an “information management and control tool” and “digital model.”

5.1 Benefits of Information Management (IM)

Adopting IM offers numerous benefits, as its processes and technologies enhance various business practices within an organization. The primary advantages of IM for asset owners or construction clients include:

- Enhanced collaboration
- Improved information sharing
- Improved data integrity and quality
- Reduction in document errors and omissions
- Time and costs savings
- Productivity gains
- Transparency and accountability in decision making
- Reduction in claims and Litigations
- Increased sustainability

Some of the benefits of IM at various phases of project are given below. These are general user cases and benefits. The Project Managers or Information Managers can select the most appropriate ones based on the project’s information management goals, considering the project phase and size and type of the project.

5.1.1 Planning and Design

The application is more evident in the design phase than it is in the construction and operation phases. Some of the applications of IMI through BIM during design phase are given below:

- Site modelling and analysis
- Visualisation
- Collaborative Design Development, co-ordination and review
- Clash detection
- 3D, 4D and 5D analysis
- Cost estimation
- Carbon savings

5.1.2 Construction

The Sponsoring Agency's role during construction is mostly that of inspection. The use of IMI both in the office and on the construction site, increases the Engineers' knowledge and ability to compare the plans with on-the-ground practice.

Below are some of the applications of IMI during the construction phase:

- Usage on the construction site supported by the mobile technologies
- Construction planning, virtual scheduling and work planning
- Progress tracking
- Cost control
- Safety Management
- Better contract management

5.1.3 Asset Management and Operations

Even if the project team disbands after the construction is completed, the benefits of IMI still exist. The information obtained by a state agency can be made available to other regulating agencies. The ability of an emergency response team to access this information in the event of a fire, accident or attack could substantially reduce risk to the responders and the public.

Below are some of the applications during the Asset Management and Operations phase:

- Accurate As-Built information
- Asset Management
- Digital twins

5.1.4 Demolition / Deconstruction

IMI will aid in identifying which elements can be recycled, reused and land filled. It will also provide quantities and sequencing to facilitate safe deconstruction.

IMI will help with the following elements:

- Redesign
- Component reuse

- Analyse time and cost reduction

Overall, TII recognise the opportunities offered by IMI. So, TII supports Sponsoring Agencies and supply chain to embrace the change, implement IMI and benefits from it.

6 International IM Standard (ISO 19650)

- ISO 19650 is an international standard that helps to securely manage information over the whole lifecycle of a built asset using BIM. All TII funded projects should adhere to ISO19650 standards and BIM for Infrastructure Statement of Intent and TII IM Documents (Figure 1.1). TII IM Standards are aligned and derived from ISO19650 standards as per Public Sector BIM Mandate.
- The International Standard ISO 19650 series, along with ISO 7818 LOIN are outlined below:
- ISO 19650-1:2018: Organisation and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling - Part 1: Concepts and principles
- ISO 19650-2:2018: Organisation and digitization of information about buildings and civil engineering works, including building information modelling (BIM) - Information management using building information modelling - Part 2: Delivery phase of the assets
- ISO 19650-3:2020: Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM). Information management using building information modelling. – Part 3: Operational phase of the assets
- ISO 19650-4:2022: Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling Part 4: Information exchange
- ISO 19650-5:2020: Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM). Information management using building information modelling. Part 5: Security-minded approach to information management.
- ISO 19650-6:2025: Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) – Information management using building information modelling. Part 6: Health and safety information
- ISO 7817-1:2024: Building information modelling – Level of information need Part 1: Concepts and principles
- ISO 13567-1:2017: CAD Overview and principles
- ISO 13567-2:2017: CAD Concepts, format and codes used in construction documentation
- ISO 29481-1:2017: Building information models – Information delivery manual Part 1: Methodology and format

7 Statement of Intent Context

7.1 European Policy

7.1.1 EU BIM Task Group

The EU BIM Task Group Handbook for the Introduction of Building Information Modelling by the European Public Sector (EU BIM Task Group, 2016) defines BIM as a digital form of construction and asset operations that combines technology, process improvements and digital information to radically improve client and project outcomes and asset operations. They also consider BIM a strategic enabler for improving decision making for buildings and public infrastructure assets across the whole lifecycle and is referred to under European policy and NBC Roadmap to Digital transition under National Policy.

7.2 National Policies

7.2.1 NBC Roadmap to Digital Transition (2018 – 2021)

The National BIM Council developed this roadmap to digital transition for Ireland's construction industry to increase adoption of BIM in Ireland.

The report identified that BIM is at the centre of a digital transformation of the construction sector and the built environment across the world. They highlighted the need for Ireland to drive economic growth and competitiveness while ensuring value for public money by promoting the broader and more structured adoption of BIM, based on international standards and best practices.

7.2.2 Public Sector BIM Mandate

From January 2024 consultants engaged to design and oversee the construction of public works contracts with a value more than €100m will have Building Information Modelling (BIM) requirements included in their scope of service (Capital Works Management Framework, 2024).

Over a period of 4 years these requirements will be extended to include the engagement of consultants and contractors down to projects with a value less than €1m. At that point all public works projects will have BIM requirements incorporated.

The four core BIM requirements set out in Public sector BIM mandate are given below,

1. ISO 19650 Series of Standards

ISO 19650 is an international standard series that helps you consistently manage information over the whole lifecycle of a built asset from concept to end of life. The ISO 19650 series of standards address the organisation and digitisation of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling.

2. Uniclass

Uniclass is a way to organise everything required for built environment assets, and provide a logical code for each general item, which can be used by anyone to identify and refer to it. Uniclass uses a set of tables to group similar things together, arrange them consistently, and make searching easy.

3. Industry Foundation Classes (IFC)

IFC is an open data file format and a universal translator for Building Information Modelling (BIM) data, IFC ensures that all stakeholders involved in a project or asset management, can work with the same project information, regardless of their native software choice.

4. International Cost Management Standard (ICMS)

ICMS are principles-based international standards that set out how to classify, define, record, analyse, present and compare construction project life cycle costs and carbon values in a structured and logical format.

7.2.3 Capital Works Management Framework (CWMF)

This BIM for Infrastructure Statement of Intent complies with the requirements of the Irish Government's Capital Works Management Framework (CWMF). The CWMF is a structure that has been developed to deliver the Irish Government's objectives in relation to public sector construction procurement reform.

Over a period of four years, from January 2024, these requirements will be extended to include the engagement of consultants and contractors to projects with a value less than €1m. At that point, all public works projects will have BIM requirements incorporated. The BIM adoption strategy uses the buying power of the public sector which represents at least 25% of construction activity to incorporate digital delivery requirements as part of the overall Government strategy to digitalise the construction sector by 2030.

Over a period of four years, from January 2024, these requirements will be extended to include the engagement of consultants and contractors down to projects with a value less than €1m. At that point all public works projects will have BIM requirements incorporated.

The BIM adoption strategy utilises the buying power of the public sector which represents at least 25% of construction activity to incorporate digital delivery requirements as part of the overall Government strategy to digitalise the construction sector by 2030.

7.2.4 CWMF ISO 19650 Process Workflow

Build Digital Project created a CWMF ISO 19650 process workflow (Build Digital, 2026), which maps the ISO 19650 activities into the CWMF work stages. This is a useful tool for understanding what is required by ISO 19650 in each work stage, allowing people to work through the standard as it is relevant to their current work.

7.2.5 CWMF BIM Implementation Guidance

To accompany Build Digital's plans, there is an 'Information Management/BIM Implementation Guide' (Build Digital, 2026) that covers the fundamentals to be considered in the implementation of information management BIM.

There are also guides available on the concepts and principles for ISO 19650-1, -2 and -3 (Build Digital, 2026), these guides have been designed to match the structure of the corresponding standard and are a plain language explanation of what the standard requires and should be read in conjunction with the standards. The Little Book of BIM (The British Standards Institution, 2023) provides guidance for gaining an understanding of BIM concepts and standards.

7.2.6 Build Digital Project

The Build Digital Project (Build Digital, 2026) was established under Project Ireland 2040 (Department of Public Expenditure, 2018) to foster increased levels of innovation in the Irish Construction Sector. Project Ireland 2040 needs a competitive, dynamic, and sustainable construction sector to deliver new social, economic and climate resilient infrastructure.

The Build Digital Project is one of seven priority action points arising from the Building Innovation Report (Department of Public Expenditure, 2020) which drew upon a wide-ranging survey and consultation, international benchmarking process and an economic analysis of causes of productivity trends in the Construction Sector in Ireland.

The aim of the Build Digital Project is to ensure the adoption of world-class digital practices across the construction industry and supply chain in Ireland. The project provides guidance and leadership on the digital tools, standards, approaches, education, and training required by the sector. At the end of 2023, Build Digital released guidance and templates as the initial version to support BIM adoption. These will be further refined alongside future templates to meet the needs of the appointed party and address asset information requirements. The information management plans released by Build Digital in late 2023 capture the requirements in accordance with I.S. EN ISO 19650-1 and -2.

8 TII IM Implementation Action Plan

The TII IM implementation action areas are categorised into three groups: People, Process and Technology. The following priority actions sets out the next steps to shape a consistent approach to enhance the adoption of IM and BIM in all TII projects.

8.1 People

- Encouraging the development of IM skills and building capabilities

8.2 Process

- Providing clear direction about Public Sector BIM mandate and TII requirements
- Develop Roadmap for transition plan, in line with Public Sector BIM mandate to align with ISO19650
- Integrate IM into TII Project Management and organisational processes
- Determine TII Organisational and Asset Management information needs and develop requirements.
- Develop standards and guidance in line with ISO19650 and CWMF
- Providing guidance on defining the Exchange Information Requirements (EIR)
- Develop standard templates for various elements, such as Exchange Information requirements (EIR) and BIM Execution Plan (BEP) to suit all TII funded projects
- Determine key contractual issues and provide guidance for contractual arrangements
- Identify pilot projects and implement IM through BIM

8.3 Technology

- Providing guidance for collaborative data environment.
- Providing guidance on software and hardware needs
- Providing guidance on secure Information Management

For further detailed guidance on BIM implementation for TII-funded projects, refer to the BIM For Infrastructure Implementation Guidelines for National Roads (GE-BIM-00101) and the supplementary documents such as templates, which are available to download from the TII publications website.

TII is currently developing Asset Information Requirements (AIR), which establish the basis for all information management requirements and will be published in the future.

9 BIM For Infrastructure Roadmap

9.1 Context

Transport Infrastructure Ireland (TII) as an Approving Authority has taken responsibility for developing BIM Roadmap in line with this mandate, to ensure consistency across all the projects and successful implementation of BIM. Therefore, accelerating innovation, digital adoption and delivering projects to higher quality and safety level.

Following activities were undertaken to develop the Roadmap:

- **Discovery and Planning Activities:** This includes finding and documenting the “as-is” situation or the “current state” regarding IM approach, processes and techniques in use across TII and Local Authorities. This task is carried out through number of stakeholder consultations and reviewing TII documents and the OGP mandate and ISO 19650 series.
- **Develop IM Implementation onboarding approach:** This Task looks at the gaps in the processes from the “current state” and maps that against the ISO requirements for IM implementation, and OGP mandate timeline.
- **Develop IM implementation Roadmap:** Based on the findings of the first two tasks, a practical roadmap outlining actions against a timeline is developed for implementing the OGP mandate.

9.2 Methodology for Developing the Roadmap

Initial research and stakeholder consultation process was undertaken to understand the current state of Information Management adoption and document management practices within various Local Authorities in Ireland. The objective of this exercise was to inform the development of a Statement of Intent and Strategic Roadmap for the IM implementation in projects funded by TII.

Following stakeholder consultation, the Roadmap has been developed to enable progression from the current position to compliance with ISO 19650 Part 1, Section 4.2 (Level 2).

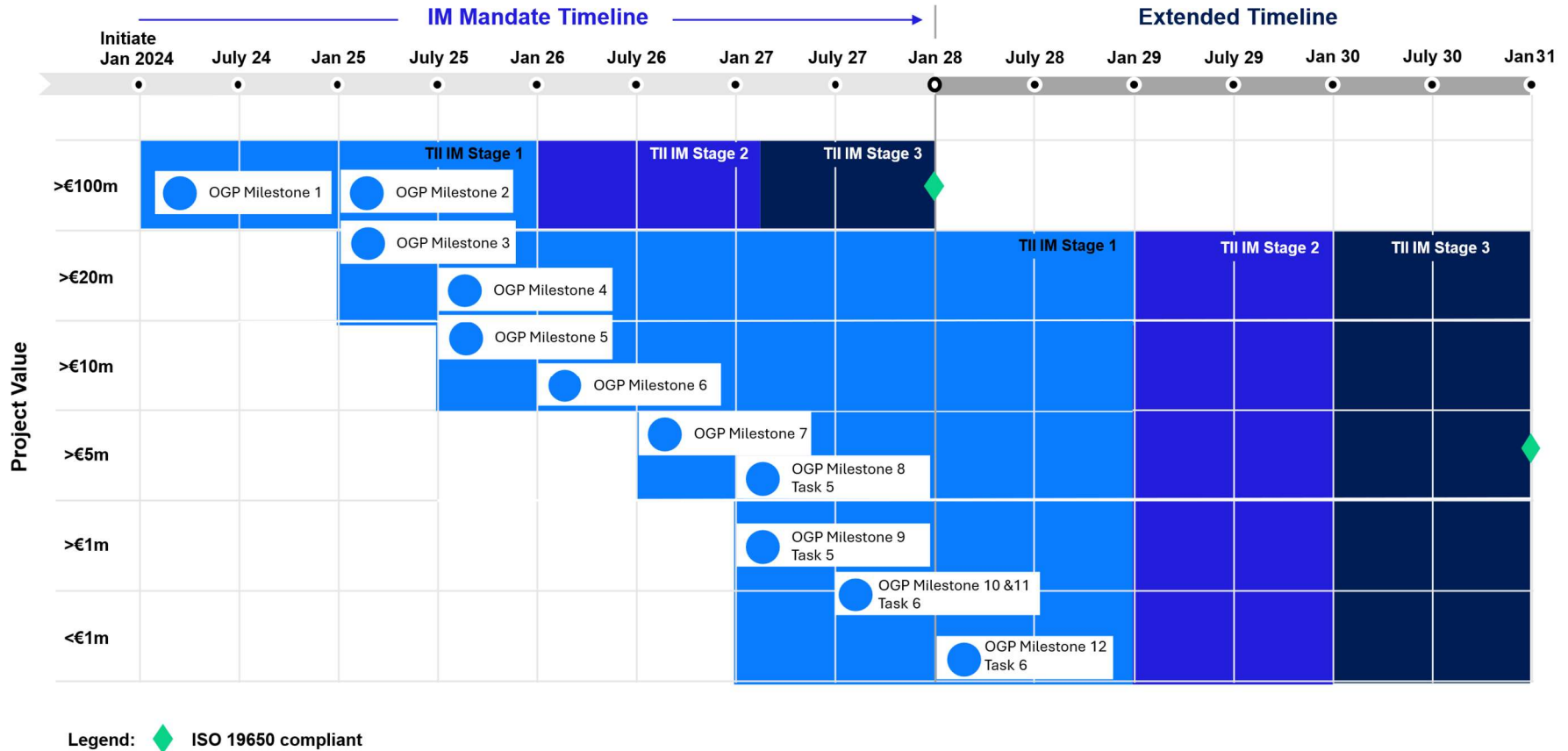
In recognition of the practical challenges highlighted by the Authorities, a phased approach to implementing Information Management was recommended to support more achievable and sustainable progress.

Sections 2 and 3 of the Roadmap recommend progression from the current stage to TII IM Stages 1 and 2, enabling partial collaboration (Level 1 in accordance with ISO 19650 Part 1, Section 4.2).

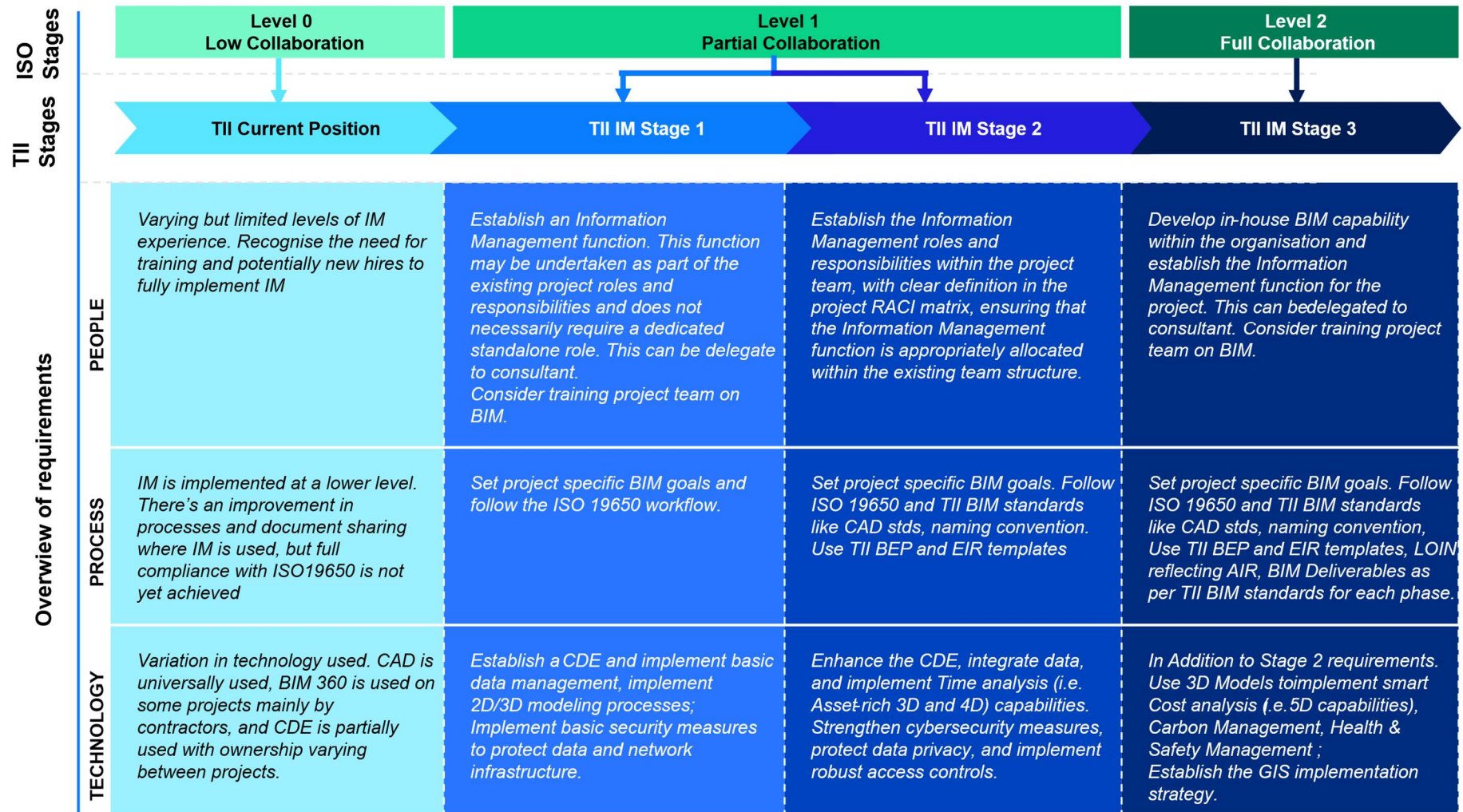
Full collaboration is then achieved by the end of TII IM Stage 3, corresponding to Level 2 in accordance with ISO 19650 Part 1, Section 4.2.

The Roadmap outlines the minimum requirements for achieving each TII IM stage across three categories: People, Processes and Technology.

10 IM and BIM Implementation Roadmap Overview



11 IM and BIM Implementation Roadmap TII Stages



TII IM Stage 1

	REQUIREMENTS	RECOMMENDED KEY ACTIVITIES	REQUIRED DOCUMENTS	DOCUMENTS PROVIDED TO SUPPORT THE KEY ACTIVITIES
PEOPLE	<p>Appoint Information Management function for the project. This can be a consultant. Consider training project team on BIM.</p>	<ol style="list-style-type: none"> 1. Establish Information Management function This function may be undertaken as part of the existing project roles and responsibilities and does not necessarily require a dedicated standalone role; This can be external consultant. 2. Awareness and Training Conduct workshops and training sessions to introduce ISO 19650 concepts and benefits to project teams. 3. Role Definition and Assignment Identify IM roles and responsibilities within the project team. 	<p>1. RACI Chart This chart will clearly define the roles and responsibilities of all stakeholders involved in the Information management process, including the Information management function.</p>	<p>TII Information Management Roles Guidance (Section 3.8 GEBIM-00101)</p> <p>TII Capability & Capacity Assessment (Appendix M GEBIM-00101)</p>
PROCESS	<p>Set project specific BIM goals in accordance with ISO 19650. Create a governance framework to ensure consistent and efficient BIM implementation</p>	<ol style="list-style-type: none"> 1. Follow ISO 19650 workflow 2. Set project specific BIM goals: Minimum general goals to be considered at Design stage: e.g Site modelling, Site/route analysis, Visualization, Design authoring, Surface analysis, Design review, Design changes. Minimum general goals to be considered for Construction Stage Health & Safety, Enhanced Sustainability, Site coordination plans, Site layout and logistic procurement. 3. Set Procurement process specific to BIM. 	<p>1. EIR: Guidelines for information exchange and conflict resolution. Procedures for data collection, storage, and sharing.</p> <p>Output 3: BIM Execution Plan Project's IM approach, goals, and standards. Define IM deliverables and their requirements.</p> <p>Output 4: Standardized File Naming Convention</p> <p>Output 5: Policies and standards for the appropriate use of the Digital Health & Safety Management system</p>	<p>TII BIM For Infrastructure Statement of Intent and Roadmap</p> <p>TII CAD Standards for National Roads (GE-BIM-00102)</p> <p>TII Pre-Appointment BIM Execution Plan (Appendix N GEBIM-00101)</p> <p>TII Exchange Information Requirements (Appendix L GE-BIM-00101)</p> <p>TII BIM For Infrastructure Implementation Guidelines for National Roads (GE-BIM-00101)</p>
TECHNOLOGY	<p>Minimum requirement: Appointing Party to establish a CDE and implement basic data management, Asset-rich 2D/3D modeling processes; Implement basic security measures to protect data and network infrastructure..</p>	<ol style="list-style-type: none"> 1. Minimum requirement: CDE – owned by the Appointing party. 2. Data Migration: Migrate existing project data into the CDE. Ensure data integrity and compatibility. 3. Basic Workflow Automation: Implement basic workflow automation to streamline processes and improve efficiency. Automate tasks like document approval and issue resolution. 4. Security Foundational Setup Data Security Implement basic security measures to protect project data, including access controls, encryption, and regular backups. <p>- Network Security Ensure the network infrastructure is secure, with firewalls, intrusion detection systems, and secure remote access protocols.</p>	<p>1: Common Data Environment (CDE) for ALL projects.</p> <p>2: Tools Use 2D and 3D CAD software to create project models.</p> <p>3: Basic Data Exchange Format Adopt formats like IFC for interoperability.</p> <p>4: Security Policy Document Outlining basic security measures, access controls, encryption standards, and backup procedures.</p> <p>5: Security Awareness Training for project team members, covering basic security best practices.</p>	<p>TII BIM For Infrastructure Implementation Guidelines for National Roads (GE-BIM-00101)</p>

TII IM Stage 2

	REQUIREMENTS	RECOMMENDED KEY ACTIVITIES	REQUIRED DOCUMENTS	DOCUMENTS PROVIDED TO SUPPORT THE KEY ACTIVITIES
PEOPLE	Expand Information Management function for the project to include other Information Management roles and responsibilities within the project team defined in RACI.	<p>1. Appoint Information Management function: This function may be undertaken as part of the existing project roles and responsibilities and does not necessarily require a dedicated standalone role; This can be external consultant. Consider introducing specialized functions like Information management Modeler, Data Analyst and Information Management Coordinator.</p> <p>2. Awareness and Training Role Definition and Assignment: Provide advanced training on IM methodologies and tools. Focus on 3D modeling, information modeling, and data analysis.</p>	<p>1. Refined RACI Chart: An updated RACI chart reflecting the refined IM roles and responsibilities.</p>	Documents listed out in TII IM Stage 1
PROCESS	Set project specific BIM goals. Follow ISO 19650 and TII BIM standards like CAD standards, naming convention. Use TII BEP and EIR templates	<p>1. Follow ISO 19650 and TII IM standards: for CAD, naming convention. Use TII BEP and EIR templates</p> <p>2. Set project specific BIM goals: Minimum general goals: be considered at Design stage : In addition to TII IM Stage 1, Engineering analysis, Cost estimation, Clash detection, Health & Safety, Enhanced sustainability (measuring carbon reduction). Minimum general goals to be considered for Construction Stage: In addition to TII IM Stage 1, sequential construction planning, virtual scheduling and work planning 4D - Digital Rehearsals for structures, Quantity take-off and Accurate cost, Stakeholder Management, Virtual and augmented reality</p>	<p>1. Updated BIM Execution Plan</p> <p>2. Quality Assurance (QA) Procedures: Implement processes to ensure data quality and accuracy.</p> <p>3. Align LOIN to the Appointing party needs.</p>	Documents listed out in TII Stage 1 Level of Geometrical Information Catalogue (GE-BIM-0010 1)
TECHNOLOGY	Minimum requirement: CDE owned by Appointing Party. Enhance the CDE, integrate data, and implement Time analysis (i.e. Assetrich 3D and 4D) capabilities. Strengthen cybersecurity measures, protect data privacy, and implement robust access	<p>1. Minimum requirement: CDE: Owned by Appointing Party . CDE Enhancement: Enhance the CDE capabilities to support more advanced features.</p> <p>2. CDE Enhancement: Enhance the CDE capabilities to support more advanced features. Implement tools for 3D model visualisation, clash detection, and quantity takeoff.</p> <p>3. Data Integration: Integrate data from various sources (e.g., design software, construction management systems). Ensure data consistency and interoperability.</p> <p>4. 4D Modeling: Implement 4D (time) modeling to support project scheduling and cost management. Integrate IM data with scheduling tools.</p> <p>5. Security Advanced Integration & Analysis: Data Privacy: Comply with relevant data privacy regulations and protect personal information. Cybersecurity: Strengthen cybersecurity measures to mitigate risks from cyber threats, such as phishing attacks and malware. Access Control: Implement robust access controls to limit access to sensitive data and systems.</p>	<p>1. 4D IM Tools: Use tools for 4D (time) analysis.</p> <p>2. Data Analytics Tools: Employ software to analyse project data.</p> <p>3. Cloud-Based CDE: Consider migrating the CDE to a cloud-based platform for enhanced accessibility.</p> <p>4. : Data Privacy Impact Assessment (DPIA): Identifying and assessing privacy risks associated with data processing activities.</p> <p>5. Security Incident Response Plan (SIRP): Outlining procedures for detecting, responding to, and recovering from security incidents.</p>	Documents listed out in TII Stage 1

TII IM Stage 3

	REQUIREMENTS	KEY ACTIVITIES	REQUIRED DOCUMENTS	DOCUMENTS PROVIDED TO SUPPORT THE KEY ACTIVITIES
PEOPLE	<p>Appoint Information Management Team for the project. Responsibilities can be delegated to a Consultant. Consider training project team on BIM. Develop inhouse expertise on BIM.</p>	<ol style="list-style-type: none"> 1. Appoint Information Team:This can be external consultant. Consider training project team on BIM. Develop inhouse expertise on BIM. 2. Awareness and Training Role Definition and Assignment:Provide advanced training on IM methodologies and tools. Focus on 3D modeling, information modeling, and data analysis. 3. Knowledge Management:Implement a knowledge management system to capture and share project lessons learned. Encourage knowledge sharing and collaboration 	<ol style="list-style-type: none"> 1. Internal appointed BIM Roles:IM Experts: Provide high-level IM expertise and guidance. 2. Knowledge Management System: A centralised repository for storing and sharing IM knowledge, lessons learned, and best practices. A mechanism for capturing and analysing project data to inform future decisions. 	<p>Documents listed out in TII Stage 1</p>
PROCESS	<p>Set project specific BIM goals. Follow ISO 19650 and TII BIM standards like CAD stds, naming convention, Use TII BEP and EIR templates, LOIN reflecting AIR, BIM Deliverables as per TII BIM standards for each phase</p>	<ol style="list-style-type: none"> 1. Follow ISO 19650 and TII IM standards:for CAD, naming convention. Use TII BEP and EIR templates. Use TII BEP and EIR templates, LOIN reflecting AIR, BIM 2. Set project specific BIM goals: Minimum general goals:be considered at Design stage In addition to TII IM Stage 2, Data Management and Analytics and reporting, Stakeholder Management, Virtual and Augmented Reality. Minimum general goalsto be considered for Construction Stage:In addition to TII IM Stage 2, usage on the site (Mobile BIM)/ GPS guidance, Data Management & Analytics. Reality Capture of the site, Laser scanning and Asset tagging. 3. Process Standardisation:Develop standardised processes for IM activities across the organisation. Create templates and guidelines for common tasks. 	<ol style="list-style-type: none"> 1. Policy: outlining information lifecycle stages, retention schedules, disposal procedures, security measures, roles, responsibilities, and monitoring procedures. 2. Lifecycle Asset Management (LAM) Plan: Develop a plan for managing the building's lifecycle. Performance monitoring process: 	<p>Documents listed out in TII Stage 1</p>
TECHNOLOGY	<p>In Addition to Stage 2 requirements. Use 3D Models to implement smart Cost analysis (i.e. 5D capabilities), Carbon Management, Health & Safety Management ; Establish the GIS implementation strategy.</p>	<ol style="list-style-type: none"> 1. 5D Modeling: implement 5D (cost) modeling to support project scheduling and cost management. Integrate IM data with cost management tools. 2. Carbon Management:Utilize 3D models for Carbon Management. 3. Health and Safety Management:Utilize 3D Models for Health and Safety Management in line with ISO 19650-6. 4. GIS:Establish GIS implementation plan. 5. Data Analytics:Utilise data analytics tools to extract insights from BIM data. Support data-driven decision making and risk management. 	<ol style="list-style-type: none"> 1. 5D IM Tools:Use tools for 5D (cost) analysis. 2. Carbon Management:Integration of Carbon Information into the Project Information Model and alignment with TII Carbon tool. 3. Health and Safety Management:Integration of Health and Safety Information into the Project Information Model. 4. Advanced Data Analytics Tools:Use sophisticated tools for data analysis and visualisation. 	<p>Documents listed out in TII Stage 1</p>

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Appendix A – Acronyms and Abbreviations

Acronym	Definition
3D	<p>Three-Dimensional</p> <p>The creation of a detailed digital model of the building or infrastructure in three dimensions</p>
4D	<p>Time / Construction Scheduling</p> <p>Linking the 3D model to the project schedule, allowing users to visualize the construction process over time</p>
5D	<p>Cost / Cost Management</p> <p>Integrates the 3D model and 4D schedule with cost data, allowing for more accurate cost estimation</p>
AIR	<p>Asset Information Requirements</p> <p>This defines the information that is required, and the managerial and technical aspects of producing this information, for the operation of an asset to meet the OIR (The British Standards Institution, 2023).</p>
BEP	<p>BIM Execution Plan</p> <p>This specifies the delivery plan which will be undertaken by the delivery team as a response to the received tender documentation. It includes, amongst other things, who is responsible for providing information, as well as who will be undertaking which responsibilities within the delivery team (The British Standards Institution, 2023).</p>
BIM	<p>Building Information Modelling</p> <p>Use of a shared digital representation of a built asset to facilitate design, construction, and operation process to form a reliable basis for decisions.</p>
CDE	<p>Common Data Environment</p> <p>A workflow to control the single source of information for any given project or asset. Used to manage the collection and dissemination of all relevant approved project/ asset information. Used in combination with a digital storage solution, information is shared collaboratively in a logical and accessible way to help all key parties readily gain access to information, use consistent naming conventions, avoid duplication, and retain ownership (The British Standards Institution, 2023).</p>
CITA	<p>Construction IT Alliance</p> <p>A professional network in Ireland that promotes the use of technology and digital solutions in the construction industry</p>
CWMF	<p>Capital Works Management Framework</p> <p>Is the Irish suite of standardised contracts and guidance for public construction. It aims to improve cost certainty, delivery timelines, and value for money.</p>

DPER	Department of Public Expenditure and Reform
EIR	Exchange Information Requirements This specifies the information that is required related to a specific appointment (contract). It includes responsibility, timescales, format and level of information need of the project information, consisting of the relevant information requirements from the OIRs, AIRs and PIRs (The British Standards Institution, 2023).
EU	European Union
IM	Information Management (according to ISO 19650) Information management is the process by which organisations, with appropriate security controls, specify, procure, assure, store, present, and exploit information to perform core business. ISO 19650 is a series of international standards that provide guidance for managing information throughout the lifecycle of buildings and other construction projects using Building Information Modelling.
IMI	Information Management Initiative
ISO	International Organization for Standardization An independent, non-governmental, international standard development organization providing common standards among different countries.
LOIN	Level of Information Need A concept that defines the amount of information required at different stages of a project to meet the needs of various stakeholders
NBS	National Building Specification A UK-based business providing construction specification information used by architects, engineers and other building professionals to describe the materials, standards and workmanship of a construction project
NDP	National Development Plan
NRA	National Roads Authority
NRO	National Roads Office
OGP	Office of Government Procurement The OGP sets national policy and serves as the central purchasing body for Ireland's public sector, delivering value for money, transparency, and sustainable, efficient procurement solutions.
OIR	Organisational Information Requirements This specifies what information is required to achieve an organisations strategic objectives in relation to business operation, asset management, portfolio planning etc. The OIR may be developed from an ISO 55001 asset management system (The British Standards Institution, 2023).

PEP	Project Execution Plan
PIR	Project Information Requirements This specifies the information that is required related to a specific project, consisting of the relevant information from the OIRs and AIRs (The British Standards Institution, 2023).
RPA	Railway Procurement Agency
TII	Transport Infrastructure Ireland



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