

# BIM CoDE·SA

For the intelligent planning, designing, delivering, operating, maintaining, and renewal of buildings, campuses, hospitals, utilities, transport infrastructure, and public facilities across South Africa



Laying the foundation for the digital transformation of South Africa's built environment

# What is BIM?

**Building Information Modelling** is a collaborative digital process for creating and managing data throughout a construction project's lifecycle, from design to demolition. It covers both graphic and text based data used in the construction process that needs to be carried through to the operations.

It has most recently been referred to as **Better Information Management** - managing information digitally across a project's lifecycle to differentiate it from Building Information Modelling promoted by software vendors.

In practical terms it is intended to maximise the usefulness of information that is produced during a project's execution. Historically this information has had limited use besides the construction process, and even then between the different stakeholders. As a paper-centric industry, engineering and construction has produced large volumes of information that is cumbersome to manage, difficult to share, and is not easily transferable between the CAPEX and OPEX phases of an assets lifecycle. Digitisation has also resulted in electronic documents that are no different to the old paper documents in many projects.

BIM involves a carefully managed process of producing information that has maximum use throughout the lifecycle of an asset, from design to construction and into operations. It also ensures that projects produce useful information in a format that maximises the potential of people to cooperate to deliver and manage assets, maximising the return on investment and ensuring that other stakeholders and end users enjoy the best practical utility of the constructed or procured infrastructure, facility, plant or equipment.

# What is BIM CoDE•SA?

The aim of BIM CoDE•SA is to create a unified, collaborative, and policy-driven framework for adopting BIM in South Africa, ultimately improving efficiency, transparency, and value in the construction and infrastructure sectors.

In simple terms, its main goals are:

- 1. Develop a national BIM policy.** BIM CoDE•SA aims to create a formal national policy and roadmap for BIM adoption in South Africa. This policy would guide how digital construction and information management should be implemented across the industry.
- 2. Enable digital transformation of the built environment.** It seeks to lead South Africa toward a fully digital built environment, improving how infrastructure is planned, designed, constructed, and managed.
- 3. Promote collaboration across all stakeholders.** A key aim is to bring together all industry role players—government, engineers, architects, contractors, and others - to work collaboratively rather than in silos. Building on building information across the different disciplines throughout the project cycle.
- 4. Improve project delivery and lifecycle management.** By promoting BIM, the initiative aims to ensure:
  - better project efficiency;
  - delivery within time and budget;
  - improved integrity, quality and transparency of Building Information
  - effective asset management throughout the lifecycle.
- 5. Ensure inclusivity and broad adoption.** BIM CoDE•SA emphasises an inclusive approach, ensuring that digital transformation benefits the whole industry and does not avoid monopolies or exclusion of smaller players.



## Workshop 1

20 April 2023

**Initial alignment**

## Workshop 2

13 July 2023

**Policy, Process, Tech**

## Workshop 3

31 October 2023

**Calling Bullshit on BIM**

## Workshop 4

18 April 2024

**SANS19650 and National Annex**

## Workshop 5

9 October 2024

**Building the Machine**

## Workshop 6

18 March 2025

**Defining Information Requirements**

## Workshop 7

29 July 2025

**How to buy BIM**

[www.bimcommunity.africa/bimcodesa](http://www.bimcommunity.africa/bimcodesa)



# What is the focus of BIM CoDE•SA 8?

BIM is a multi-player game - each participant in the value chain must play a part in order for BIM to deliver on its promise.

In collaboration with SAAMA and HEFMA, we invite you to contribute to the following:

1. **Drive to Adopt** - guidelines for adoption and implementation of BIM.
2. **National Annex for SANS19650** (standard for managing information in construction and infrastructure projects).
3. **Procurement** - develop opportunities for the uses of Building Information during construction and post project completion with operations.

By attending, you:

1. Contribute to shaping South Africa's BIM framework.
2. Ensure asset and facilities management requirements are included.
3. Align industry standards with real operational needs.

This is a rare opportunity to influence policy, not just follow it.



# Who benefits from BIM?

BIM benefits the full asset lifecycle, not only the design team. It improves how information is created, checked, shared and used, which means better decisions during planning, delivery, handover and operations.

1. **Asset owners** – better information supports stronger operational, maintenance and investment decisions.
2. **Operators and facilities managers** – reliable asset and equipment information improves maintenance, planning and day-to-day operations.
3. **Designers** – coordinated information improves collaboration, reduces rework and strengthens design quality.
4. **Contractors** – clearer information improves accuracy, reduces errors and supports more efficient delivery on site.
5. **Financiers and funders** – greater confidence comes from better-defined scope, clearer risk visibility and virtual testing before construction.
6. **The public** – better-managed asset information supports more transparent infrastructure delivery, upkeep and service provision.

BIM creates value when each participant contributes to a shared information model that serves the next stage of the lifecycle. The result is not only a better project outcome, but a more useful asset after handover.

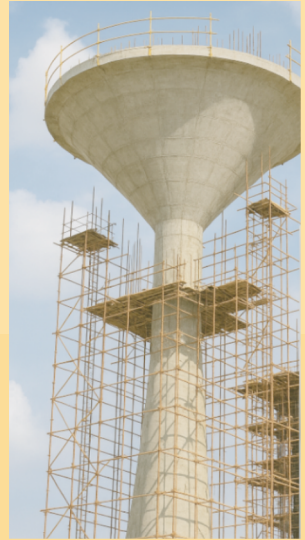
When BIM is done well, projects using BIM methods tend to outperform those that rely on fragmented and disconnected information practices.

# Why BIM? - a tale of two municipalities and key takeaways

The municipality of "Nowhereyouknow" commissions a new water tower to improve pressure for an expanding township. The consulting engineer delivers PDF drawings via email. The architect submits renders, and the contractor receives a printed copy of the tender drawings during the site handover.

Six months into construction, the contractor discovers that the reinforcement details for the tower shaft conflict with the embedded starter bars shown on an outdated foundation drawing. The structural engineer is on leave, the updated drawings are buried in an email thread, and the clerk of works is left guessing which version to follow. No one has a consolidated model, and information lives in different silos - emails, desktops, Dropbox folders. Site instructions are handwritten.

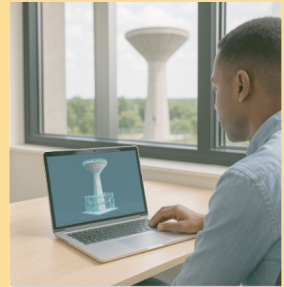
When the project is finally handed over, the municipality receives a stack of documents: as-builts in PDF, warranties in hard copy, and no asset register. Six months later, when the telemetry pump fails, the maintenance team cannot identify the part number without physically climbing the tower.



A nearby municipality also develops a water tower, but they are adopting a digital delivery strategy that follows BIM methodologies. They've developed a standardised Employer's Information Requirements (EIR) template with support from a digital advisor, and appoint a BIM coordinator within the consulting team. During design, the consultant team works in a shared Common Data Environment (CDE).

The 3D model of the tower includes LOD 300 geometry with embedded asset tags for pumps, ladders, access hatches, and valves. The project manager, quantity surveyor, and contractor all access a coordinated model using Navisworks and BIM 360. Clash detection is run before going to the site. Drawings are extracted directly from the federated model. During construction, the resident engineer uses a tablet to view the latest model, and all RFIs and technical queries are logged and tracked in the CDE.

At handover, the client receives a structured set of documentation, and a tagged, verified as-built Revit model. The asset manager imports the model into their maintenance planning system. When the telemetry system needs replacement two years later, the maintenance team retrieves the asset code, datasheet, and supplier info in minutes.



**This hypothetical story of the two towers illustrates why we advocate BIM for project delivery.** The first tower was executed well enough, in line with conventional best practice... in a paper-centric world. In this paper-centric paradigm, information is static, single use and difficult to share and coordinate. Yet we default to such project execution methods. We struggle to coordinate, we lose information, we waste time and resources with inaccurate and uncoordinated baseline data.

Yet, there is a better way... you guessed it - BIM.

# What does it take to deliver BIM?

BIM does not happen through software alone. It requires a deliberate commitment to information-led project delivery, with **clear expectations, defined roles and coordinated effort** from all participants.

Agreement across the lifecycle – participants must adopt an information-centric approach to project delivery.

1. **A clear project plan** – BIM depends on coordinated effort and disciplined follow-through by the whole team.
2. **Early information requirements** – outcomes and deliverables must be defined at the start, not left until later.
3. **Capable participants** – teams need appropriate skills, digital literacy, tools and a willingness to work differently.
4. **A practical mindset** – BIM adoption does not happen overnight, but it is achievable through steady and deliberate implementation.

BIM delivery succeeds when teams plan properly, understand their roles and apply agreed methods consistently. Full maturity is not required at the outset. What is required is a deliberate start, practical capability development and steady improvement over time.

# Can we afford not to BIM?

The short answer is “No”. Many infrastructure and asset management challenges in South Africa are not only technical or financial problems. They are also information problems.

- Records are missing, incomplete or outdated.
- Knowledge is lost when people leave or retire.
- Data sits in disconnected silos, limiting analysis and decision-making.
- Poor information quality increases risk, delay and waste across the asset lifecycle.

Without better information practices, the industry will continue to repeat avoidable mistakes. BIM provides a structured way to improve information quality, continuity and usefulness across projects and operations.



# What do we need to get right in South Africa?

South Africa does not need to copy others blindly, but it does need a consistent national approach. The aim is to create enough clarity and alignment for BIM to be specified, delivered and managed with confidence across the industry.

A South African BIM National Annex to the SANS19650 Standard – this provides local interpretation and guidance to support consistent implementation, including classification standards.

1. Clear BIM requirements in procurement – tender documents must define required information, responsibilities and expected outcomes from the outset.
2. Alignment between clients, consultants, contractors and operators – expectations must be consistent across the delivery chain.

If these foundations are not in place, BIM remains optional, uneven and poorly understood. If they are in place, the industry can move from isolated efforts to repeatable and scalable practice.



# What will it take?

Progress will depend on a collective effort. No single organisation can move the industry forward alone, and no part of the value chain can stand aside and expect the benefits to appear.

Institutional ownership – every organisation must take responsibility for its role in improving industry practice.

Commitment to learning – capability must be developed through training, practice and experience.

Participation in shaping the National Annex – industry input is needed to make local guidance practical and credible.

1. **A shared vision** – progress depends on alignment around common goals and long-term benefit.
2. **The payoff from BIM is collective.** It grows as more participants align their methods, expectations and information practices. This requires patience, cooperation and a clear sense of shared purpose.



# What do we need from you?

This workshop is not only about awareness. It is about action. The industry will move forward only if individuals and organisations decide how they will contribute in practical terms.

- **Engage seriously with the topic** – decide what role you and your organisation will play.
- **Share knowledge** – encourage discussion, learning and wider understanding of BIM.
- **Start or strengthen your BIM journey** – invest in training, advisory support, people, systems and tools.
- **Take the next practical step** – begin with what is achievable, then build from there.

The most useful contribution is not perfection. It is participation. Progress starts when people move from interest to action and begin improving the way they deliver and manage information.

## What if you don't?

There is a cost to inaction. Organisations that delay BIM adoption may still continue to work, but they will do so with increasing inefficiency and decreasing relevance in a changing market.

- You will fall further behind global practice.
- You will find it harder to participate in modern project environments.
- You will lose competitiveness against more coordinated and information-driven firms.
- You will struggle to meet rising expectations from clients and partners.

BIM is increasingly becoming part of normal industry practice. Organisations do not need to do everything at once, but they do need to begin. **Waiting makes future transition harder, not easier.**



## BIM in Practice - a hypothetical case study

This short story presents a simple, practical example of how a project can move from inception to operation while applying the principles of BIM in a manner aligned with ISO 19650. It is not intended to be a detailed technical case study. Its purpose is to illustrate, in accessible terms, how information can be planned, produced, coordinated, delivered, and used across the project lifecycle to support better outcomes. The example follows a small rural water supply project, but the underlying principles are relevant to many different types of infrastructure and building projects.

Readers should note that BIM, in this context, is not primarily about software, modelling platforms, or digital visualisation. These tools may support the process, but they are not the central idea. **The central idea is the deliberate management of information: identifying what information is needed, who needs it, when it is needed, how it should be structured, and how it will support decision-making during design, construction, handover, and operations.** ISO 19650 provides a framework for this process by treating information as a planned and managed project deliverable, rather than as a by-product of technical work.

As you read the story, consider how these principles relate to your own role in project delivery. Whether you work in planning, design, procurement, construction, operations, or asset management, you influence the way information is requested, created, checked, shared, and used. The value of BIM depends on these contributions being intentional and coordinated. This example is therefore offered as a prompt for reflection: how might similar practices be applied in your projects, and what practical steps can you take to support more consistent adoption of BIM and better information management in your area of responsibility?

# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 1. Problem statement / need identification

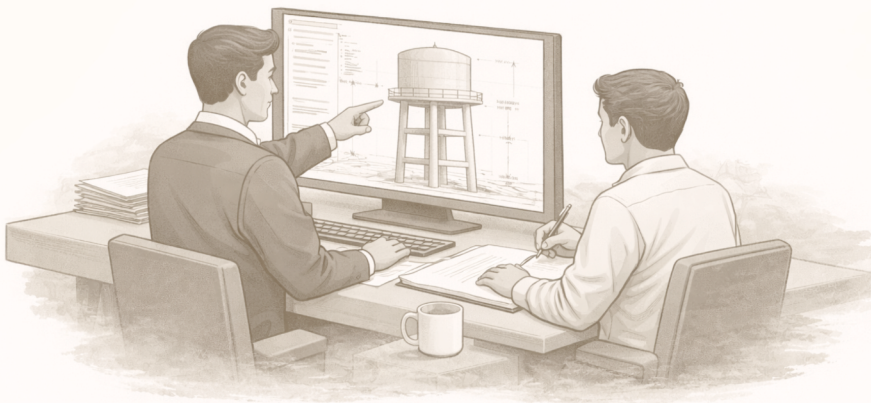
A rural village is experiencing an unreliable and inadequate water supply. The community requires access to basic water services delivered in a sustainable manner. In response, the provincial administration identifies the need for a water supply intervention and records the project on its infrastructure programme. At this early stage, the appointing party defines the purpose of the project in outcome terms: reliable water delivery, sustainable operation, and maintainable infrastructure. In ISO 19650 terms, this is the point at which the project need is recognised and the basis is created for defining the information that will be required to support decision-making, delivery, handover, and future operation.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 2. Planning / information requirements and concept selection

An initial planning process is undertaken to identify possible interventions and select a preferred solution. In this case, the preferred option comprises groundwater abstraction and the construction of a water tower to provide pressurised water to the village. At this stage, the planning work addresses not only the technical concept, but also the information strategy for the project. The provincial administration, together with the municipality that will ultimately operate the asset, engages to determine what information will be needed for maintenance and operations, the format in which that information must be delivered, and the structure required to support effective use after handover. This includes agreement on asset hierarchies, naming conventions, classification principles, information exchange requirements, and the data fields needed to support incorporation into the municipal asset register and operational systems. Surveys are commissioned to collect landform and elevation data, while geotechnical investigations are undertaken to support foundation design and quantity calculations. All information is stored in a common data environment so that it is available from a single, controlled source. In ISO 19650 terms, this phase reflects the appointing party's early definition of information requirements and exchange needs, aligned to the intended operational use of the asset.

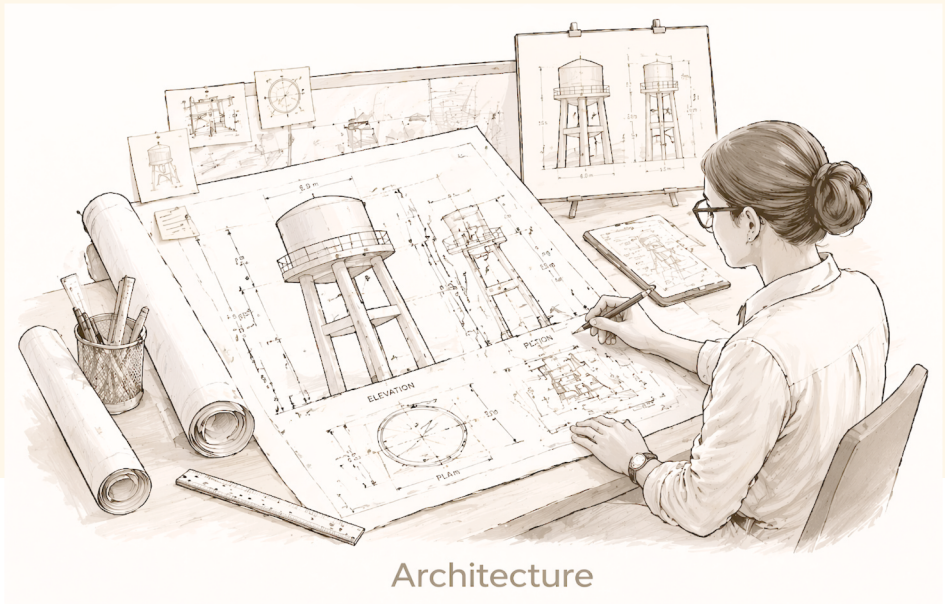


Planning

# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 3. Architecture / concept communication and information planning baseline

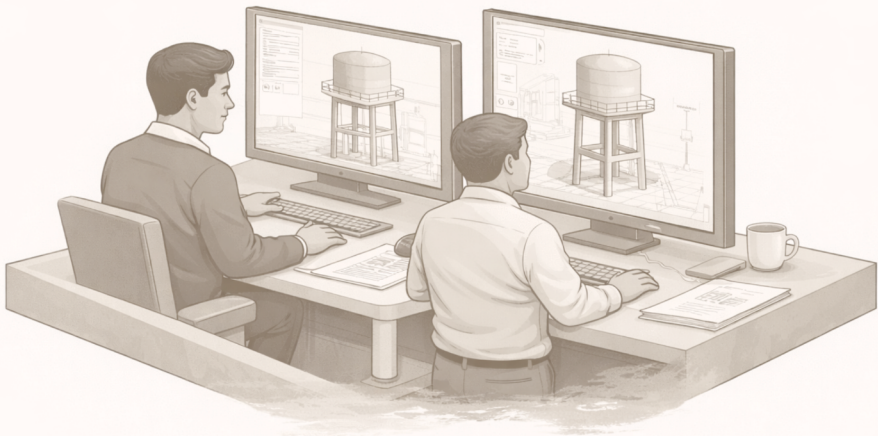
The preferred solution is then developed further with the involvement of the community, and an architect translates the high-level concept into a form that can be presented, understood, and discussed. Graphical representations are used to support communication with the community and provide a clear baseline concept for the engineering teams. These concept materials are stored in the common data environment so that all parties involved in planning, communication, and stakeholder engagement can access the latest approved information. At this stage, the previously defined information requirements are also translated into practical delivery instructions for the project team. The architect and project leaders confirm what information is to be produced, by whom, at what level of detail, at what stage, and for what purpose. In ISO 19650 terms, this reflects the conversion of the appointing party's needs into a clear information delivery framework that can guide the appointed parties during production.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 4. Engineering / coordinated information production

A multidisciplinary engineering team, comprising structural, mechanical, electrical, geotechnical, hydraulic, and civil disciplines, works collaboratively to design the water supply scheme. Information is produced and shared through the common data environment using pre-agreed processes, naming conventions, and approval workflows established during planning. Regular coordination and design review activities are undertaken to ensure that all parts of the design fit together into a coherent and constructible solution. The scheme is represented using a combination of two-dimensional drawings and three-dimensional models, enabling disciplines to assess dimensional coordination and technical compatibility. The design information includes not only geometry, but also the key attributes required for procurement, construction, handover, and operations, such as materials, component types, identifiers, asset codes, and performance data. These attributes are checked against the information requirements defined earlier, ensuring that the design is not only technically sound but also information-compliant. In ISO 19650 terms, this phase demonstrates collaborative production of information within a managed information container structure and under an agreed information standard.

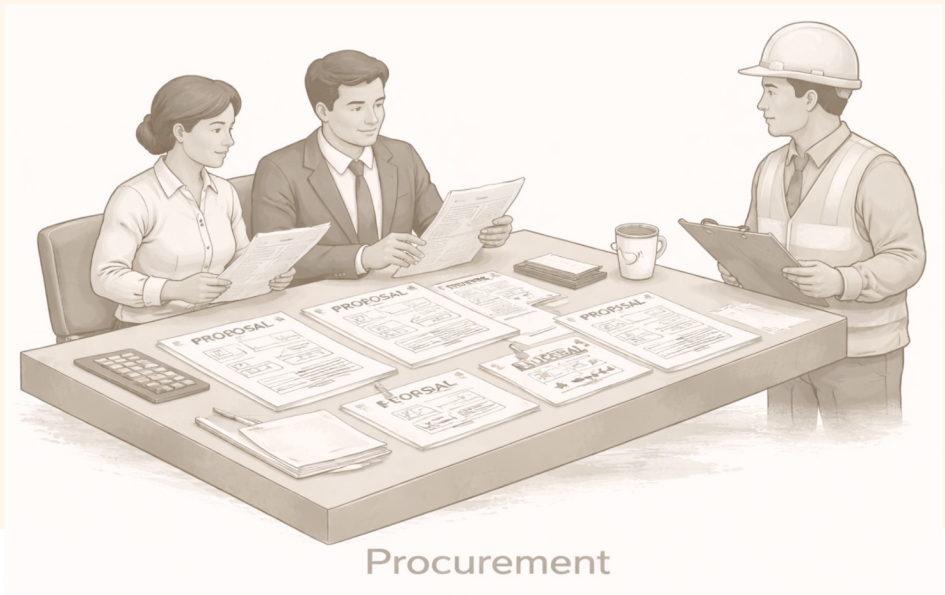


Engineering

# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 5. Procurement / appointment with information obligations

The project is issued to the open market so that suitably qualified contractors can submit tenders. The tender documents include technical specifications, drawings, bills of quantities, and contract conditions, together with information requirements that clearly define what construction and handover information must be produced, in what format, and at what points during the project. Three-dimensional models may also be included as supplementary reference material to support pricing and construction planning. The procurement process does not assess only the contractor's ability to build the asset, but also its ability to generate, manage, and deliver information in accordance with the agreed standards, naming conventions, asset structures, and exchange requirements. In ISO 19650 terms, this phase reflects the appointment of parties against both delivery capability and information management capability.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 6. Construction / delivery and progressive information capture

Once appointed, the contractor commences construction of the water supply scheme. Alongside the physical works, a detailed construction record is assembled, including test results, inspection records, quality assurance documentation, updated drawings, installation records, and developing as-built schematics. This information is carefully catalogued, named, reviewed, and stored in the common data environment in accordance with the agreed information management process. During construction, changes are often required in response to site conditions, geotechnical realities, and unforeseen constraints. These changes are controlled through formal change processes and incorporated into the project record so that the information remains aligned with what is physically being built. In ISO 19650 terms, this phase illustrates controlled information production, review, approval, and sharing during delivery, with the common data environment serving as the authoritative source of current project information.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 7. Commissioning and handover / transition to operational information

At project completion, the infrastructure is commissioned and handed over to the municipality together with the digital construction record. This handover includes up-to-date specifications, material properties, parts lists, operations and maintenance manuals, supplier data, equipment schedules, and final as-built information structured in accordance with the requirements defined at the start of the project. The information is transferred electronically through the common data environment and then incorporated into the municipality's filing system, asset register, and enterprise asset management environment. Because the required asset identifiers, naming conventions, hierarchies, and information fields were defined during the planning phase, the municipality is able to receive and ingest the handover information in a usable form rather than having to rework it after delivery. In ISO 19650 terms, this phase represents the structured transfer of verified project information into asset information for operational use.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 8. Maintenance / use of asset information in operation

After handover, the water supply scheme is maintained in accordance with the municipality's asset care strategy and maintenance schedule. Technicians use the handed-over information to identify installed components, confirm technical specifications, source replacement parts, and plan maintenance interventions. When faults occur, the maintenance team can refer to accurate as-built records and associated manuals to diagnose issues and respond efficiently. As maintenance activities lead to replacement of parts, equipment upgrades, or configuration changes, the operational information is updated so that the digital record continues to reflect the physical asset. In ISO 19650 terms, this demonstrates the value of the asset information model in use and the continuing management of information through the operational phase of the asset lifecycle.



# From Need to Water: A Practical BIM Journey Through the Project Lifecycle

## 9. Outcome / information-enabled service delivery

The project delivers a functioning and reliable water supply to the community. Its success depends not only on the physical completion of the infrastructure, but also on the fact that the required information was planned early, produced in a controlled manner, and transferred in a form that supports operations and maintenance. The municipality is therefore able to use the information directly in its management systems and day-to-day asset care activities. This is the practical value of the ISO 19650 approach: information is treated as a planned deliverable throughout the project lifecycle, enabling better delivery, smoother handover, and more effective long-term operation of the asset.



## Call to Action

This simple story shows that the value of BIM does not lie in producing models for their own sake. **Its value lies in improving the way information is defined, created, checked, exchanged, and used across the lifecycle of an asset. When this is done deliberately, projects are more coherent during delivery, handover becomes more useful, and operators are better equipped to manage infrastructure once it enters service.** The example of a rural water supply scheme is modest, but the principle is widely applicable. The same disciplined approach to information management can support the planning, delivery, operation, maintenance, and renewal of campuses, hospitals, utilities, transport infrastructure, and public facilities across South Africa.

For delegates from the South African Asset Management Association, the Higher Education Facilities Management Association, and the wider industry, the message is straightforward. BIM should not be viewed as a specialist design exercise or a software-led initiative owned only by technical teams. It should be recognised as a practical means of improving asset information so that owners, operators, and maintainers can make better decisions throughout the life of an asset. This requires stronger alignment between project delivery teams and those responsible for operations, maintenance, asset registers, and long-term stewardship. If operational needs are not identified early and translated into project information requirements, opportunities are lost and the handover remains weak.

The call to action is therefore clear.

- Asset owners, facilities managers, consultants, contractors, and operators should work together to make information management a deliberate part of project delivery from the beginning.
- Define what information will be needed in operation. Specify it clearly. Structure it consistently. Check it during delivery. Receive it in a form that can be used. Build the organisational capability, standards, and habits needed to support this approach on every project, not only on exceptional ones.

If South Africa is to improve the performance and resilience of its infrastructure and facilities, then the industry must move beyond talking about BIM and begin applying its principles in a practical, disciplined, and repeatable way.





# BIM CoDE•SA

Laying the foundation for the digital transformation  
of South Africa's built environment



CoDE•SA Workshops (1 - 7)

[www.bimcommunity.africa/bimcodesa](http://www.bimcommunity.africa/bimcodesa)

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