

MetaBIM: Unlocking the power of your BIM data

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Why do we need to develop the MetaBIM?

Infrastructure
> Infrastructure planning
> Projects and programs
> Infrastructure industry
> Infrastructure Industry Steering Committee
> Building Information Modelling (BIM)
> Infrastructure productivity and workforce
> Governance and resources

Building Information Modelling (BIM)

Building Information Modelling (BIM) benefits government and industry by boosting innovation, productivity, and competitiveness in the construction industry.

Transitioning from paper-based plans to digital ones will deliver significant benefits during the design, construction and, most significantly, the operational phase of a project's life.

Queensland was one of the first states to develop a coordinated whole-of-government approach to BIM following the release of the [Digital Enablement for Queensland Infrastructure - Principles for BIM implementation](#) (248 KB) in 2018.

More recently, the 2022 State Infrastructure Strategy committed to review the *Digital Enablement for Queensland Infrastructure - Principles for BIM implementation* policy to ensure Queensland continues to lead the way.

BIM is being used on major projects across Queensland including Cross River Rail. Since 1 July 2019, all Queensland Government construction projects with a value of \$50 million or more are required to use BIM from the early planning phase.

The following agencies have developed plans on how they will progressively build their BIM capability and embed its use into their normal project delivery processes:

- Cross River Rail Delivery Authority
- Department of Education
- Department of Housing, Local Government, Planning and Public Works
- Department of Health
- Department of Transport and Main Roads
- Queensland Corrective Services
- Sunwater

Data Structure & Level of Information Needs (LOIN)

The Digital Engineering Framework

Since the launch of the Digital Engineering (DE) Framework in September 2018, there have been a series of releases, adding additional capabilities and updating key documents to reflect lessons learned on pilot projects.

The DE Framework will continue to develop new capabilities, whilst working closely with projects as they embrace new digital ways of working.

Victorian Digital Asset Strategy

The Victorian Digital Asset Strategy sets out a whole-of-government strategy for digitising construction.

Together we can use digital engineering to develop and maintain cost-effective, innovative and value-adding assets for all Victorians for decades to come.

The Victorian Digital Asset Strategy (VDAS) is a step change in the way Victorian Government departments and agencies plan, deliver, operate and maintain the assets they manage on behalf of the people of Victoria.

Victoria is excited to lead the way in developing contemporary and

Office of Projects Victoria

[Office of Projects Victoria homepage](#)

[Victoria's major projects delivery](#) ▾

[OPV training programs](#) ▾

Why do we need to develop the MetaBIM?

Current solutions

Highly dependent on designers, requires extensive coordination, and lacks flexibility.



Strive to fulfill these BIM data requirements through the use of *3D design software*

Costly, challenges with data exchange, and limited flexibility.



Checking



Classification & Property Editing

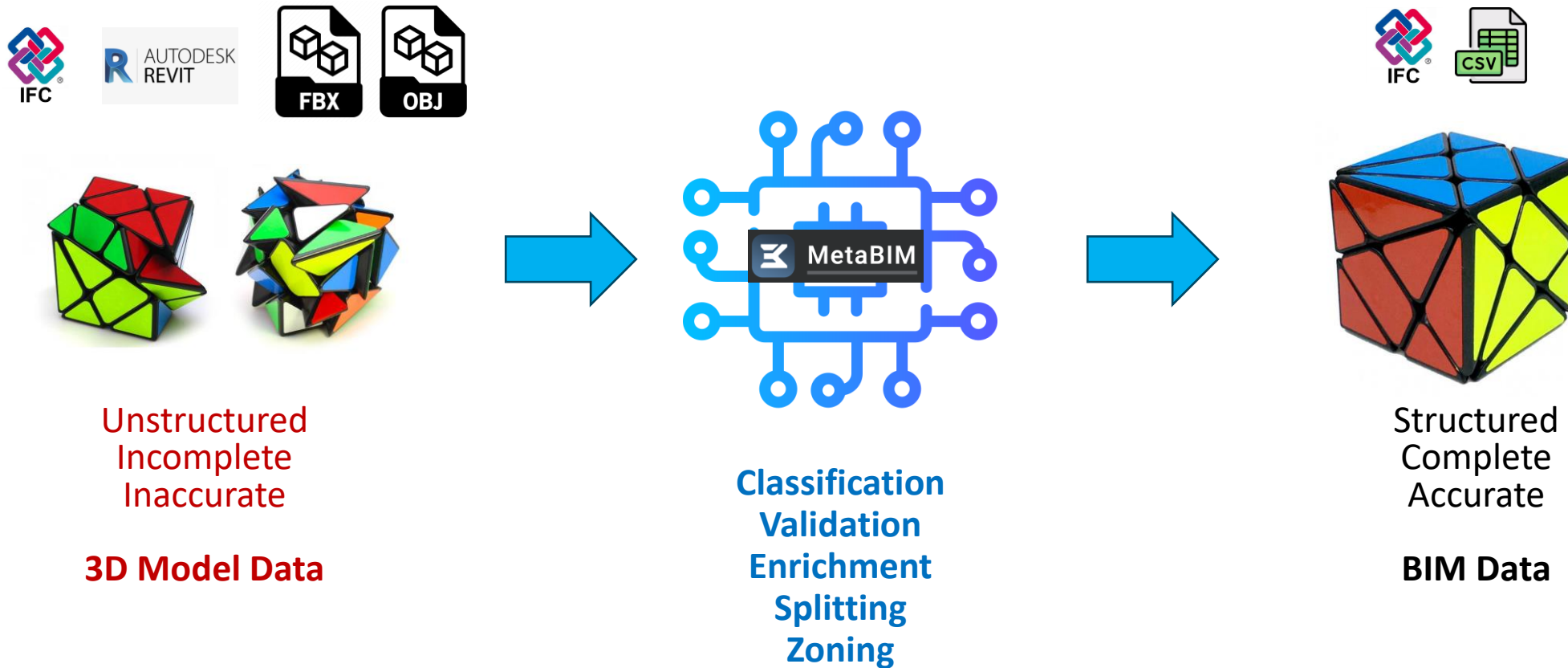


Splitting & Zoning

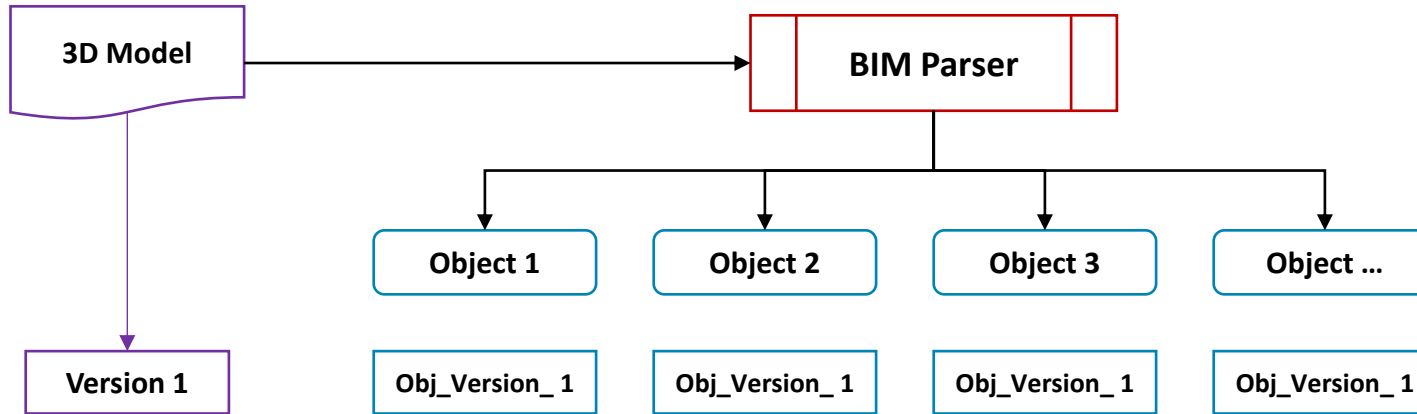
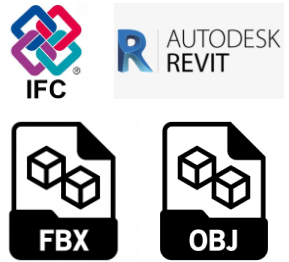
Strive to meet these BIM data requirements by sequentially utilising *multiple 3D BIM tools*.

MetaBIM

MetaBIM is designed in-house from the ground up to be fully customisable.



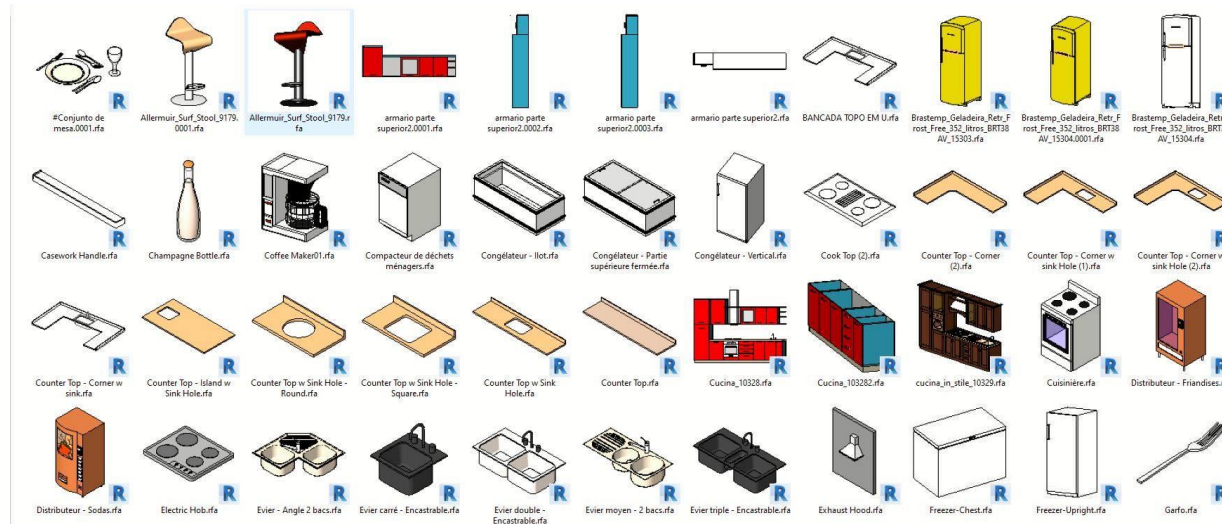
MetaBIM: Data Parser



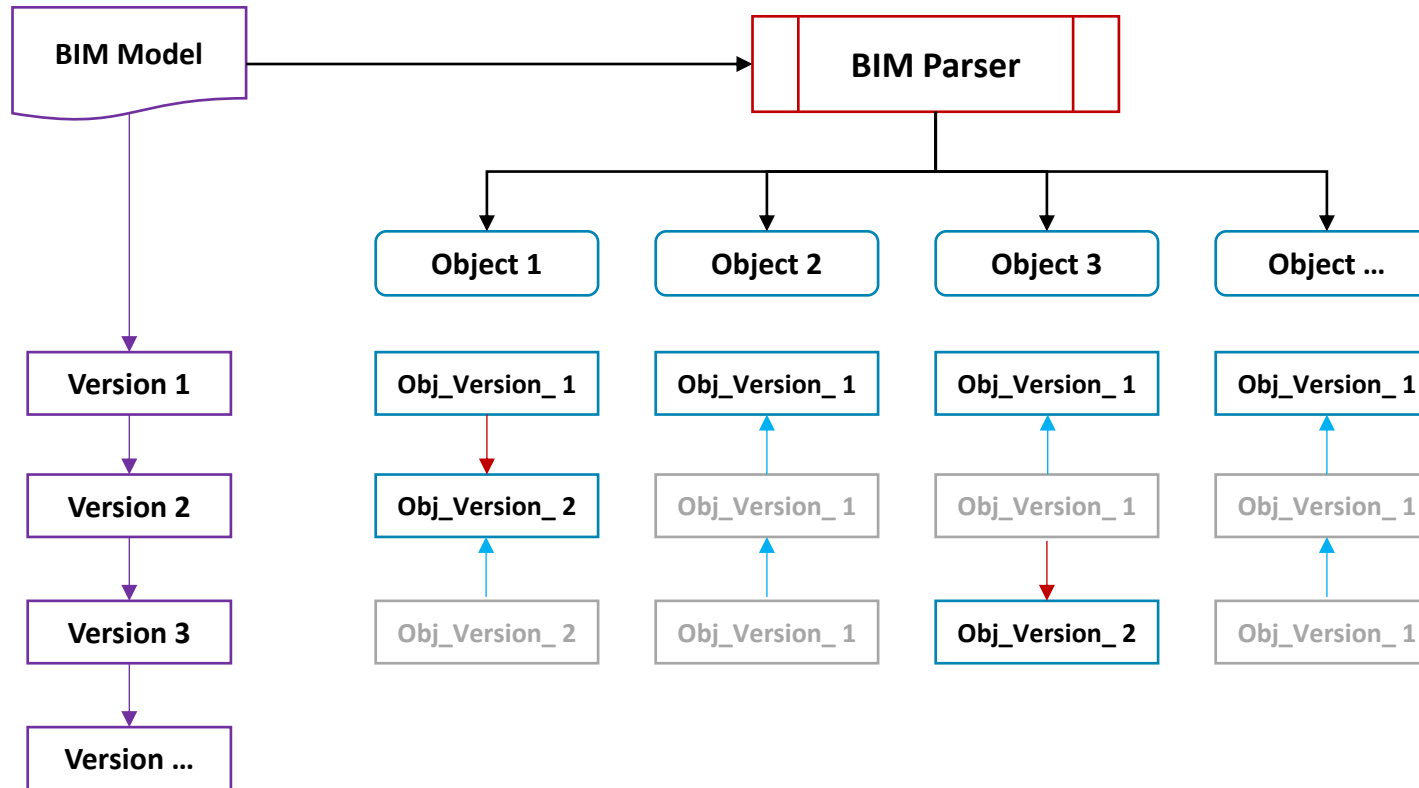
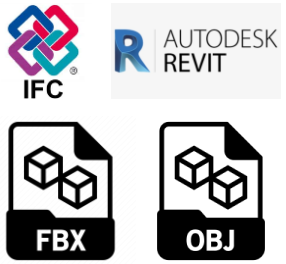
Database



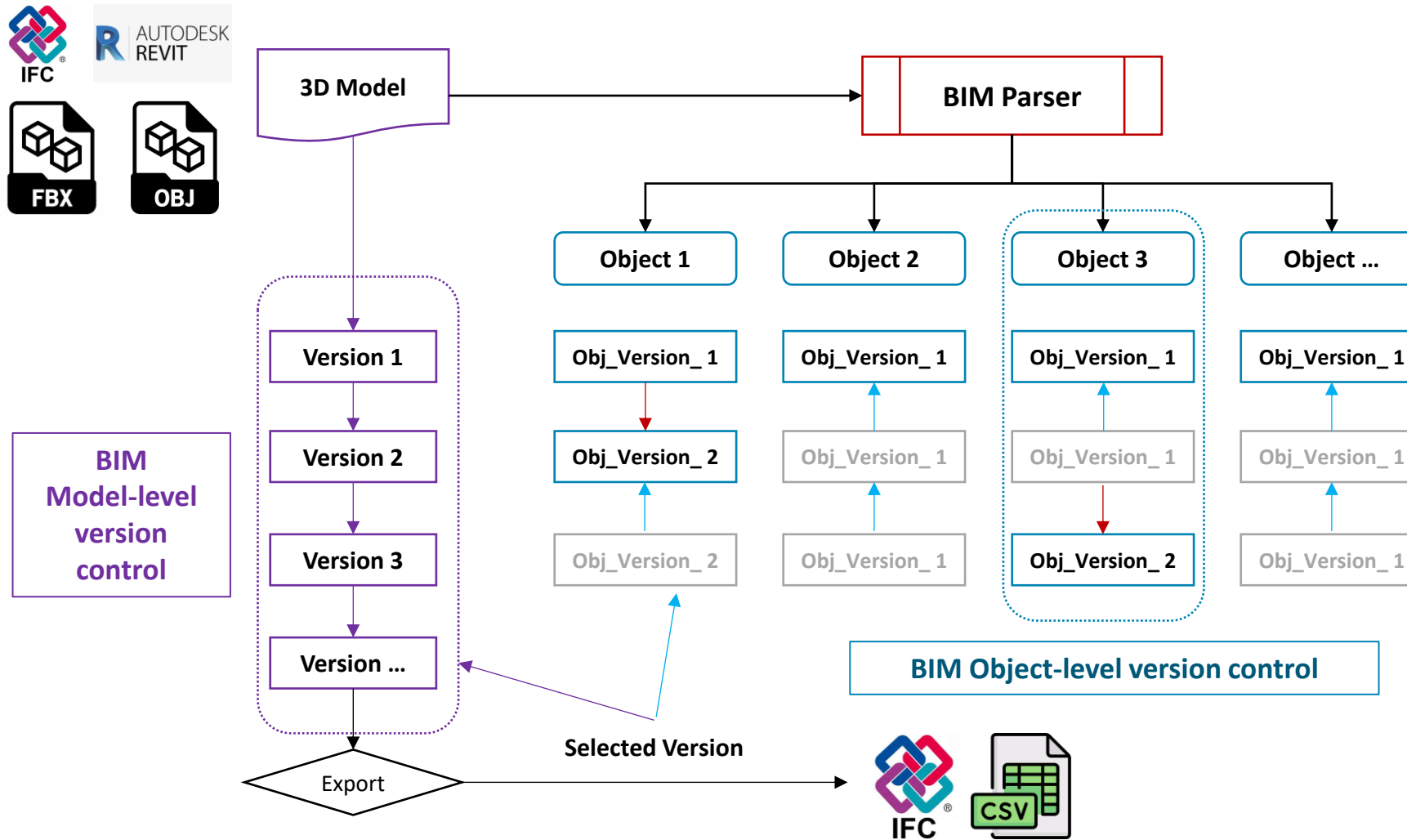
Document



MetaBIM: Data Parser



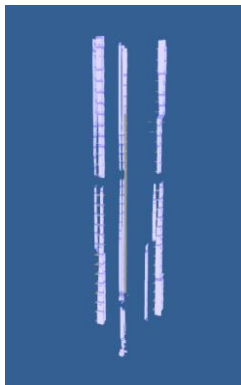
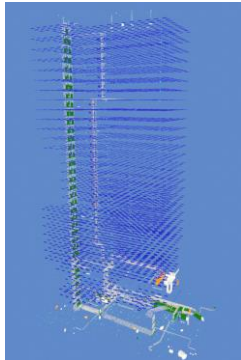
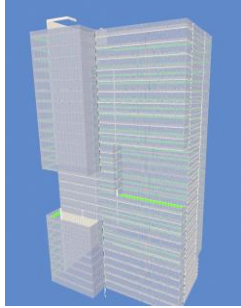
MetaBIM: Data Parser



Great efficiency in:

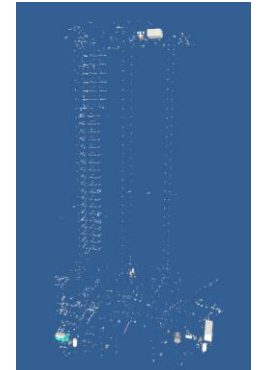
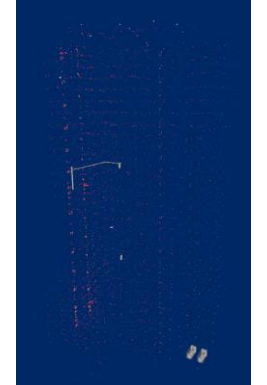
- Storage
- Query
- Comparison
- Auditing

MetaBIM: Data Parser Performance

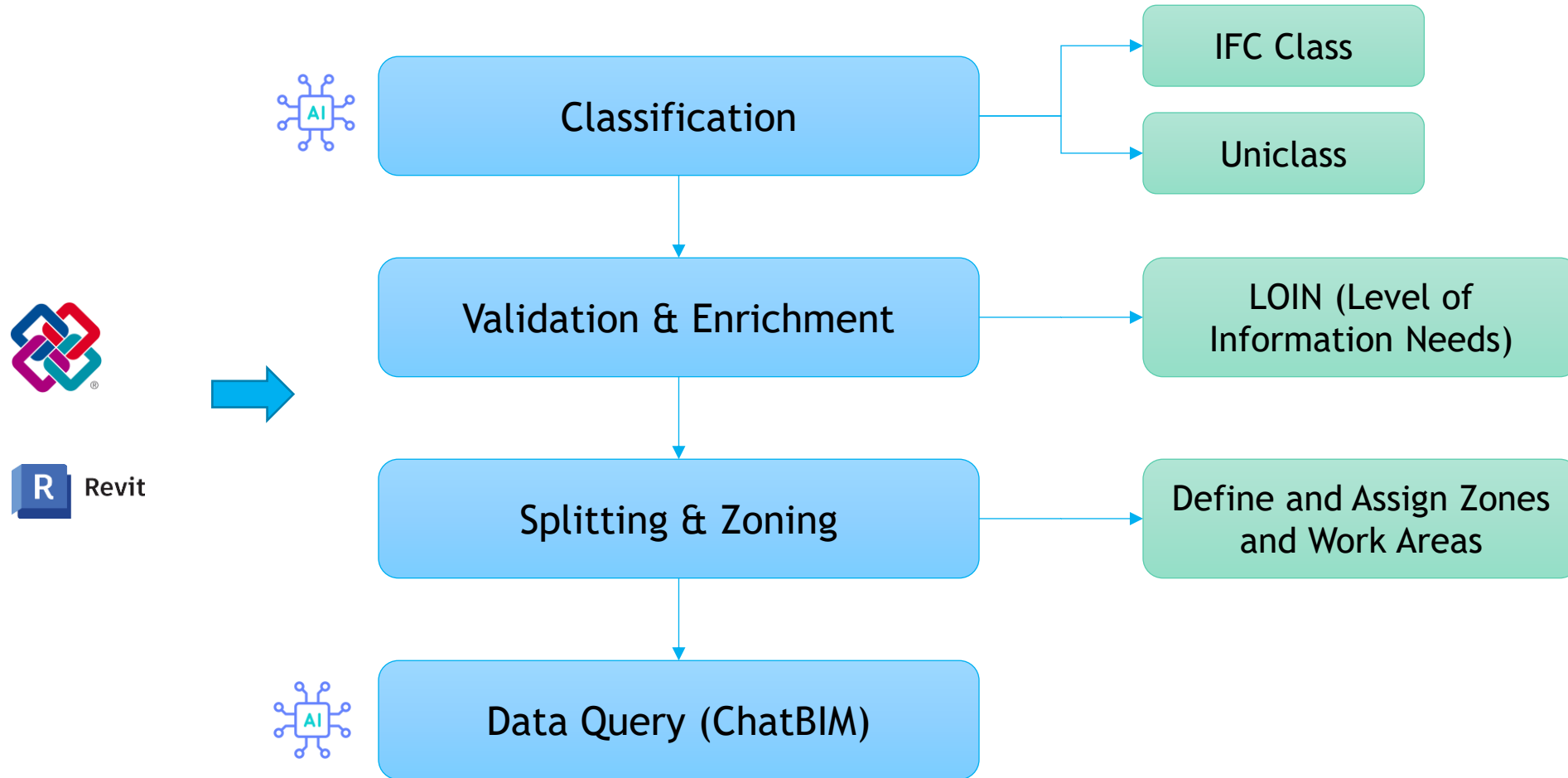


BIM Models	Revit Model Size (MB)	IFC Size Optimised (MB)	Tree Size (MB)	IFC Elements	BIM Objects	Triangles/Vertices (Million)
Architecture	578	40.8	67.1	125,935	25,378	3.1/6.8
Electrical	40.8	37.4	33.1	54,052	12,715	9.6/16.5
Fire Protection	113	66.5	71.4	47,209	15,213	36/46.2
Hydronic	93.9	128	58.5	27,201	9,081	19.2/26.7
Mechanical	110	7.35	8.89	8,954	2,937	0.22/0.3
Structural	99.7	28.1	16.1	11,263	3,821	1.1/1.6

Model Conversion (Second)	Hierarchy Building (Second)	Parser (Second)	Total Server Processing Time (Second)	First Loading Time (Second)	Reloading Time (Second)	Download Time (Second)
15	152	17	184	34	6	2-6
41	35	6	82	7	2	2-6
51	411	7	469	11	2	2-6
271	128	4	403	3	1	2-6
122	12	4	138	4	1	2-6
44	6	1	51	7	1	2-6



MetaBIM: Processor



MetaBIM: Classification

The screenshot displays the MetaBIM web interface. At the top left, the MetaBIM logo and a 'trial' badge are visible, along with a 'Back' button. The top right shows the user profile 'MetaBIM' with the email 'info@metabim.com.au'. The main dashboard features three summary cards: 'Active Model' with a count of 2 and a 'Refresh Project' button; 'Processed Versions' with a count of 2; and 'Data usage' at 125MB. A 'New Model' form is located on the right, with a 'Model Name' input field and a 'Create' button. Below these are 'My Models' and a 'Model' details panel. The 'My Models' section shows two model cards: 'Structural' (last updated 2024-05-27 10:53, 1312 elements) and 'Architectural' (last updated 2024-06-03 15:57, 6321 elements). The 'Model' panel for the selected 'Structural' model shows options to 'Open', 'Archive', or 'Upload'. It lists the model as 'Snowdon Towers Sample Structural.lfc' (IFC 4.0, 24MB, updated 2024-05-27 10:57). A notification at the bottom of the panel states '1311 updates has been made.' (2024-05-27 10:54) with 'Build', 'Clear', and 'Load' buttons.

MetaBIM trial ← Back MetaBIM info@metabim.com.au

Snowdon Towers EX
Last Update: 03-06-2024 15:57

Active Model
2
Refresh Project

Processed Versions
2

Data usage
125MB

New Model
Model Name _____
Create

My Models

Structural
2024-05-27 10:53
Loaded Elements: 1312
Version
0, Snowdon Towers Sample Stru

Architectural
2024-06-03 15:57
Elements: 6321
Version
0, Snowdon Towers Sample Arc

Model

Open Archive Upload

IFC 3D Model Point Cloud Image Document

IFC 4.0 Snowdon Towers Sample Structural.lfc
104e367662fe4381a54029696c008b19 2024-05-27 10:57 24MB

Version Export Collaboration Setting

1311 updates has been made.
2024-05-27 10:54 Build Clear Load

MetaBIM: Validation & Enrichment



IfcWall	
Properties	Values
GlobalId	~
Uniclass	Level 3 classification
Status	New, Existing, Demolish, Temporary
FireRating	~
AcousticRating	[30, 50]
Combustible	TRUE, FALSE
IsExternal	TRUE, FALSE
LoadBearing	TRUE, FALSE
ExtendToStructure	TRUE, FALSE
ThermalTransmittance	[0, 100] W/(m ² ·K)
FireExit	TRUE, FALSE
SelfClosing	TRUE, FALSE
SmokeStop	TRUE, FALSE
Compartmentation	TRUE, FALSE
IfcColumn	
Properties	Values
GlobalId	~
Uniclass	Level 3 classification
Status	New, Existing, Demolish, Temporary
Slope	[0, 90] degree
FireRating	~
IsExternal	TRUE, FALSE
LoadBearing	TRUE, FALSE
ThermalTransmittance	[0, 100] W/(m ² ·K)

MetaBIM: Validation & Enrichment

The screenshot displays the MetaBIM web interface. At the top left, there is a 'MetaBIM trial' logo and a 'Back' button. At the top right, a user profile for 'MetaBIM info@metabim.com.au' is visible. The main dashboard features three summary cards: 'Active Model' with a count of 3 and a 'Refresh Project' button; 'Processed Versions' with a count of 3; and 'Data usage' showing 71MB. To the right is a 'New Model' form with a 'Model Name' input field and a 'Create' button. Below these is a 'My Models' section with three model cards: 'Structure' (2023-09-07 16:51, Processing 51%), 'Architecture' (2023-09-07 16:51, Elements: 5754), and 'Mechanical' (2023-09-07 16:52, Elements: 6396). On the right side, a 'Model' details panel shows options for 'Open', 'Archive', and 'Upload'. It lists a model named 'rst_advanced_sample_project-RV-Structure...' with a version of 'IFC 4.0', a timestamp of '2023-09-07 16:58', and a size of '8MB'. At the bottom of this panel, a notification states '1548 updates has been made.' with a timestamp of '2023-09-07 16:55' and buttons for 'Build', 'Clear', and 'Load'.

MetaBIM: Splitting

The screenshot displays the MetaBIM software interface. At the top left, the MetaBIM logo and a 'Back' button are visible. At the top right, there is a user profile icon and the text 'MetaBIM info@metabim.com.au'. The main interface is divided into two primary sections: a left-hand navigation pane and a central 3D model view.

The left-hand pane, titled 'BIM Structure', contains a search bar with the placeholder text 'Search a name or ID' and an 'Advanced' filter icon. Below the search bar is a table with the following columns: 'Spatial', 'Object', 'IFC Class', and 'Un'. The table lists various building elements, each with a checked checkbox and a small cube icon. The elements are categorized into several groups:

- Basic Wall:Concrete 18"-935924 through 18"-936763
- Floor:Concrete 12"-935200 through 12"-935216
- Basic Wall:Concrete 18"-936762 through 18"-936763
- W Shapes:W18x55:765115
- Basic Wall:Concrete 12"-586648 through 12"-586803
- W Shapes:W18x55:631696 through 664019
- Structural Beam System:Structural Framing (indicated by a dropdown arrow and a '8' in a box)
- LH-Series Bar Joist:18LH04:664155 through 664159

Below the table, there are four filter buttons: 'IFC Class', 'Uni Class', 'Zone', and 'Validation'. The central 3D model view shows a perspective view of a building's structural frame, including walls, floors, and a grid of beams and joists. At the bottom of the 3D view, there is a toolbar with various navigation and manipulation icons.

MetaBIM: Zoning

The screenshot displays the MetaBIM software interface. At the top left, the MetaBIM logo and a 'Back' button are visible. At the top right, there is a user profile icon and the text 'MetaBIM info@metabim.com.au'. The main area is divided into two panes. The left pane, titled 'BIM Structure', contains a search bar and a table of elements. The right pane shows a 3D perspective view of a building's structural frame, including columns, beams, and floor slabs. At the bottom of the interface, there is a toolbar with various navigation and manipulation icons.

MetaBIM Structure Table:

Spatial	Object	IFC Class	Un
<input checked="" type="checkbox"/>	Basic Wall:Concrete 24"	935927	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	935924	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	935925	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	935922	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	935923	
<input checked="" type="checkbox"/>	Floor:Concrete 12"	935200	
<input checked="" type="checkbox"/>	Floor:Concrete 12"	935208	
<input checked="" type="checkbox"/>	Floor:Concrete 12"	935216	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	936762	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 18"	936763	
<input checked="" type="checkbox"/>	W Shapes:W18x55	765115	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 12"	586648	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 12"	586570	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 12"	586801	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 12"	586802	
<input checked="" type="checkbox"/>	Basic Wall:Concrete 12"	586803	
<input checked="" type="checkbox"/>	W Shapes:W18x55	631696	
<input checked="" type="checkbox"/>	W Shapes:W18x55	664895	
<input checked="" type="checkbox"/>	W Shapes:W18x55	664896	
<input checked="" type="checkbox"/>	W Shapes:W18x55	665215	
<input checked="" type="checkbox"/>	W Shapes:W18x55	664019	
<input checked="" type="checkbox"/>	Structural Beam System:Structural Framing		8
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664155	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664154	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664153	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664152	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664157	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664156	
<input checked="" type="checkbox"/>	LH-Series Bar Joist:18LH04	664151	

MetaBIM: Data Query (ChatBIM)

The screenshot displays the MetaBIM web interface for a project named "Snowdon Towers EX". At the top left, there is a "MetaBIM trial" logo and a "Back" button. At the top right, a user profile for "MetaBIM" with the email "info@metabim.com.au" is shown. The main dashboard features four key metrics: "Active Model" (2), "Processed Versions" (2), "Data usage" (125MB), and a "New Model" creation form. Below these are "My Models" and a detailed view of the current model.

MetaBIM trial ← Back **MetaBIM** info@metabim.com.au

Snowdon Towers EX

Last Update: 03-06-2024 15:57

- Active Model**: 2 (Refresh Project)
- Processed Versions**: 2
- Data usage**: 125MB

New Model

Model Name: _____
Create

My Models

Model Name	Category	Last Update	Loaded Elements	Version
Structural	Structural	2024-05-27 10:53	1312	0, Snowdon Towers Sample Stru
Architectural	Architectural	2024-06-03 15:57	6321	0, Snowdon Towers Sample Arc

Model Details: Snowdon Towers Sample Architectural.ifc

Model Name: Snowdon Towers Sample Architectural.ifc
File ID: 81a07dc7d0ea4bc6bffd4f478394426
Created: 2024-06-03 17:18
Size: 101MB

Version History:

Update Message	Timestamp	Action
6321 updates has been made.	2024-06-03 16:03	Build, Clear, Load
6321 updates has been made.	2024-06-03 16:20	
6321 updates has been made.	2024-06-03 16:43	
6321 updates has been made.	2024-06-03 17:10	

MetaBIM: Infrastructure Example (based on QTMR Bridge BIM Requirement)

The screenshot displays the MetaBIM software interface. On the left, the 'BIM Structure' tree is expanded to show a hierarchy of elements for the 'Western Road Bridge - 51311'. The tree includes levels for 'Zone', 'Validation', and 'Custom', with specific elements like 'AA', 'A', 'B', 'PP', 'F', 'CP', 'S1', 'P1', 'S2', 'P2', 'S3', 'P3', 'S4', and 'P4'. The 'Uni Class' for the selected element is 'Pile:A19_1:535892'. On the right, the 'Properties' panel is open, showing 'Design Information' and 'As-Con Information' for the selected element. The 3D model in the center shows a perspective view of several bridge piers with a blue highlight on one of them. The bottom of the interface features a toolbar with various navigation and editing tools.

MetaBIM trial ← Back **MetaBIM** info@metabim.com.au

BIM Structure

Search a name or ID Advanced

Zone Validation Custom

Western Road Bridge - 51311 10

AA 3

A 3

B 1

PP 8

51311-AA-B-PP-01-A

Pile:A19_1:535892

51311-AA-B-PP-02-A

51311-AA-B-PP-03-A

51311-AA-B-PP-04-A

51311-AA-B-PP-05-A

51311-AA-B-PP-06-A

51311-AA-B-PP-07-A

51311-AA-B-PP-08-A

F 1

CP 4

51311-AA-F-CP-01-A

51311-AA-F-CP-02-A

51311-AA-F-CP-03-A

51311-AA-F-CP-04-A

S1 4

P1 3

S2 4

P2 3

S3 4

P3 3

S4 4

P4 3

Properties:

Design Information

Full BIM Object Code 51311-AA-B-PP-01-A

Concrete Class S40/20

Concrete Quantity (m3) - Design 15

Element Depth 1m

Element Length 6.5m

Element Width 1.5m

Exposure Classification B2

Minimum Cover 60

Model is certified issued for construction (RPEQ) Typical Bottom Longitudinal Reinforcement '7274

Typical Ligature Profile 16S and 12EX

Typical Top Longitudinal Reinforcement 24NH lapped with 24F

As-Con Information

Full BIM Object Code 51311-AA-B-PP-01-A

Average 28 Day Compressive Strength (MPa) 55.9

Concrete Quantity (m3) - As-Con 15.5

Contractor Lot Number HS 02

Date Poured 03-08-2024

Headstock Soffit Level 161.209

Model is certified as-constructed (Name + Signature Accreditation) DK Lillee Reg Surv 3322

Number of NCR's 2

Number of RFI's 3

Asset Management

Why EasyCarbon?

Current Solutions for Building & Infrastructure Construction A1-A5 Carbon Calculation



**Material-Oriented
Carbon Calculation**

Difficult Integration with Costing and Scheduling

Since project management often uses element-based frameworks for cost estimation and scheduling, material-oriented carbon calculations can be challenging to integrate with these processes. This disconnect can lead to inefficiencies in aligning carbon assessments with project budgets and timelines.

Inefficiencies in Optimisation

Optimising carbon reductions across a project is more challenging when calculations are material-based. It becomes difficult to identify which building elements are the best targets for carbon reduction strategies, leading to less effective sustainability efforts.

Why EasyCarbon?

Inspired by Life Cycle Costing (LCC), we aim to develop an ***Elemental-based*** carbon calculation method fully integrated with **BIM** (i.e. MetaBIM).

Better Integration with Cost Estimation

Element-based carbon calculations align well with existing cost estimation practices that use elemental cost unit rates. This alignment allows for a more integrated approach to managing both carbon impact and project costs, facilitating more effective decision-making throughout the project lifecycle.

Targeted Carbon Reduction

By breaking down carbon calculations by element, it becomes easier to identify which components of a building or infrastructure project offer the most significant opportunities for carbon reduction. This targeted approach enables more strategic sustainability initiatives and more efficient use of resources.

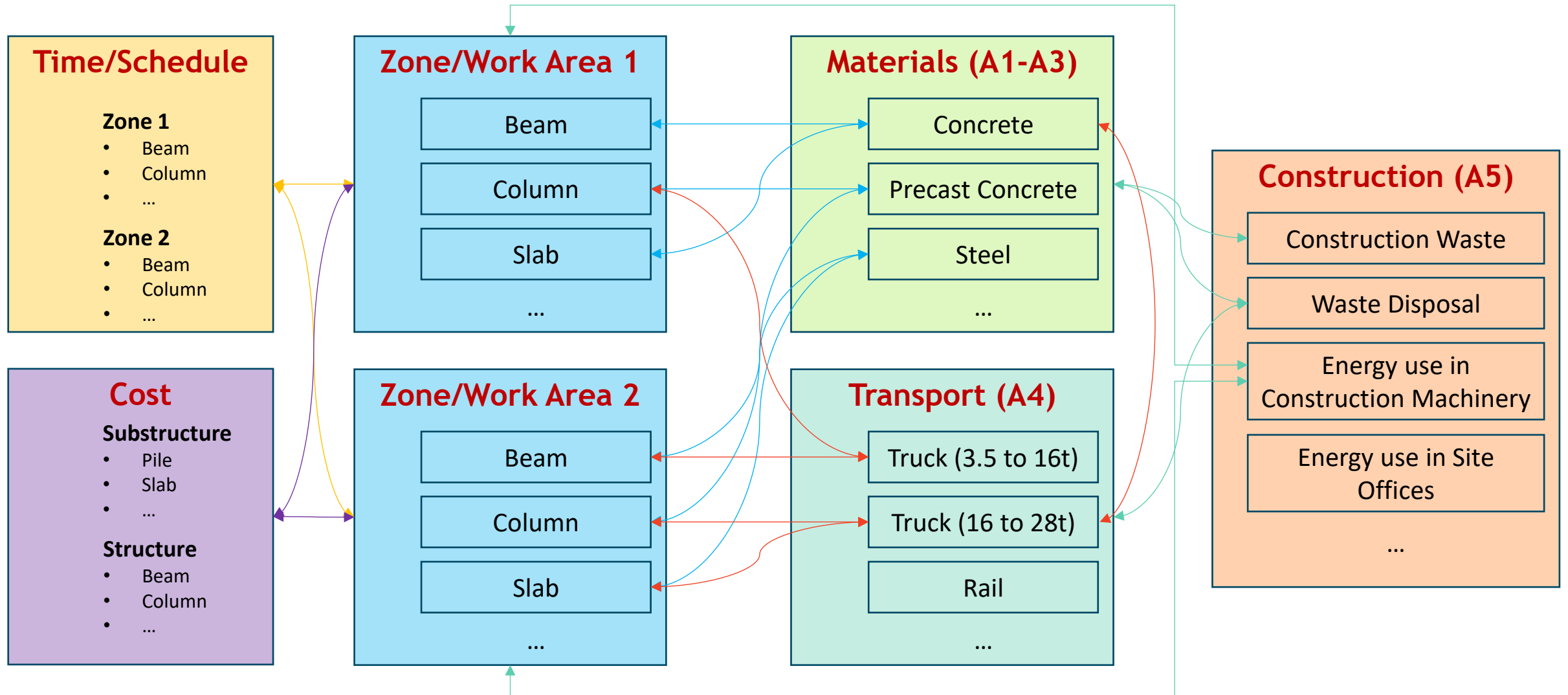
Alignment with Project Management Practices:

Element-based calculations can be more easily integrated into project management tools and practices, such as Building Information Modelling (BIM) and lifecycle cost analysis. This alignment helps streamline the process of monitoring and controlling carbon emissions alongside other key project metrics like cost and time.

Facilitates Comparative Analysis

Element-based approaches allow for better comparative analysis between different design options or construction methods, as they provide a clear understanding of the carbon impact associated with specific building elements. This can be especially valuable in the early stages of project planning when making decisions about design and material selection.

EasyCarbon: Integration of Space, Time, Cost, and Carbon (A1-A3, A4, and A5)



EasyCarbon: Material Mapping (EPiC or AusLCI Database)

The screenshot displays the EasyCarbon software interface for material mapping. The main window is titled "MetaBIM" and shows a "BIM Structure" panel on the left with a list of objects, including "M_Concrete-Round-Column:450mm:122501" through "122531". The central area features two overlapping windows: "EPiC Library 2019" and "AusLCI Emission Factors V1.42". The "EPiC Library" window lists various concrete materials, with "Concrete 20 MPa" selected. The "AusLCI Emission Factors" window shows a tree view of materials, with "Concrete" expanded to show "concrete 20 MPa 30% GGBFS, at batching plant" selected. A "Unit" dialog box is also open, showing "Climate change - total kg CO2 e" with a value of 260.73486. The right side of the interface shows a "Properties" panel for the selected object, including fields for "ObjectPlacement", "Tag", "PredefinedType", "Pset_ColumnCommon", "Pset_EnvironmentalImpactIndicators", "Pset_ReinforcementBarPitchOfColumn", "Materials", and "Types".

MetaBIM info@metabim.com.au

BIM Structure

Search a name or ID

Spatial	Object	IFC Class	Un
✓	M_Concrete-Round-Column:450mm:122501		
✓	M_Concrete-Round-Column:450mm:122545		
✓	M_Concrete-Round-Column:450mm:122544		
✓	M_Concrete-Round-Column:450mm:122525		
✓	M_Concrete-Round-Column:450mm:122524		
✓	M_Concrete-Round-Column:450mm:122548		
✓	M_Concrete-Round-Column:450mm:122514		
✓	M_Concrete-Round-Column:450mm:122512		
✓	M_Concrete-Round-Column:450mm:122537		
✓	M_Concrete-Round-Column:450mm:122536		
✓	M_Concrete-Round-Column:450mm:122517		
✓	M_Concrete-Round-Column:450mm:122542		
✓	M_Concrete-Round-Column:450mm:122516		
✓	M_Concrete-Round-Column:450mm:122507		
✓	M_Concrete-Round-Column:450mm:122541		
✓	M_Concrete-Round-Column:450mm:122506		
✓	M_Concrete-Round-Column:450mm:122505		
✓	M_Concrete-Round-Column:450mm:122504		
✓	M_Concrete-Round-Column:450mm:122529		
✓	M_Concrete-Round-Column:450mm:122511		
✓	M_Concrete-Round-Column:450mm:122528		
✓	M_Concrete-Round-Column:450mm:122510		
✓	M_Concrete-Round-Column:450mm:122509		
✓	M_Concrete-Round-Column:450mm:122508		
✓	M_Concrete-Round-Column:450mm:122498		
✓	M_Concrete-Round-Column:450mm:122497		
✓	M_Concrete-Round-Column:450mm:122496		
✓	M_Concrete-Round-Column:450mm:122503		
✓	M_Concrete-Round-Column:450mm:122521		

EPiC Library 2019

Search a name or ID

- Autoclaved aerated concrete (AAC)
- AAC block - 600 × 200 × 100 mm
- AAC block - 600 × 200 × 150 mm
- AAC block - 600 × 200 × 200 mm
- Concrete 20 MPa**
- Concrete 20 MPa - 30% fly ash
- Concrete 20 MPa - 30% GGBFS
- Concrete 25 MPa
- Concrete 25 MPa - 30% fly ash
- Concrete 25 MPa - 30% GGBFS
- Concrete 32 MPa
- Concrete 32 MPa - 30% fly ash
- Concrete 32 MPa - 30% GGBFS
- Concrete 40 MPa
- Concrete 40 MPa - 30% fly ash
- Concrete 40 MPa - 30% GGBFS

AusLCI Emission Factors V1.42

Search a name or ID

- Energy
- Material
 - Aggregates and sand
 - Brick and tiles
 - Bricks
 - Coatings
 - Coatings & Fillers
 - Concrete and cement
 - Cementitious material
 - Concrete**
 - concrete 20 MPa 30% fly ash, at batching plant
 - concrete 20 MPa 30% GGBFS, at batching plant
 - concrete 20 MPa, at batching plant
 - concrete 25 MPa 30% fly ash, at batching plant
 - concrete 25 MPa 30% GGBFS, at batching plant
 - concrete 25 MPa, at batching plant
 - concrete 32 MPa 30% fly ash, at batching plant
 - concrete 32 MPa 30% GGBFS, at batching plant
 - concrete 32 MPa, at batching plant
 - concrete 40 MPa 30% fly ash, at batching plant
 - concrete 40 MPa, at batching plant
 - concrete 50 MPa 30% fly ash, at batching plant
 - concrete 50 MPa 30% GGBFS, at batching plant

Unit

- m3
- Climate change - CN kg CO2 e
 - 274.63667
- Climate change - CN (Infr Excl)
 - 260.7085
- Climate change - total kg CO2 e
 - 274.62664
- Climate change - total (Infr Excl)
 - 260.73486
- Climate change - fossil
 - 274.63667
- Climate change - fossil (Infr Excl)
 - 260.7085
- Climate change - biogenic kg CO2 e
 - 0.09671594

OK Apply Cancel

Properties:

ObjectPlacement: 9201.9994415955207 22635.06138

Tag: 122541

PredefinedType: COLUMN

Pset_ColumnCommon

Id: 3LcH4WnFLIkKcGRVC\$0ohc

Reference: 450mm

IsExternal: false

LoadBearing: true

Pset_EnvironmentalImpactIndicators

Id: 0prjPshRP85G6S\$Ez4kSD

Reference: 450mm

Pset_ReinforcementBarPitchOfColumn

Id: 1I2n74m5tYL316u5I18DrG

Reference: 450mm

Materials

Id: IfcMaterial_140

Concrete - Cast-in-Place

Concrete - 28 MPa

Types

type: IfcColumnType

id: 18YHwga450Mw4F_6M5t_8M

Name: M_Concrete-Round-Column:450mm

Tag: 122395

PredefinedType: COLUMN

Sustainability

EasyCarbon: Link with MetaBIM Project

Carbon Emission Report

T3 Warehouse North Melb
f03799b2c83b4f0c99e2c90adc343341

Darkspede

03-09-2024 20:40

Model Information

IFC 4.0

Design, Transport, Construction

50.2

39.2

Geo-Information

WSG84

Assets & Database

AusLCI 1.42

MetaBIM Linked

Design(A1-A3) Transport(A4) Construction(A5) Dashboard Settings

27-08-2024 v1

Planned Actual

Item Name	Elements	Material	Unit	Weight (T)	Volume	Emission Factor (Kg Co2e)	Emission (T Co2e)
Workarea A-01	215	-	-	18.53	7720	-	53.80
Beam	126	Steel, Converter	M3	1.08	450	4.414435	4.77
Column	48	Concrete 20 Mpa 30% Fly Ash	M3	7.68	3200	2.56338	19.69
Pile	36	Concrete 20 Mpa 30% Fly Ash	M3	6.24	2600	2.56338	16.00
Plate	1	Concrete 40 Mpa 30% Ggbfs	M3	0.30	126	3.781979	1.14
Slab	2	Concrete 40 Mpa 30% Ggbfs	M3	0.35	144	3.781979	1.31
Wall	2	Concrete 40 Mpa 30% Ggbfs	M3	2.88	1200	3.781979	10.89
Workarea A-02	151	-	-	15.50	6458	-	45.75
Beam	88	Steel, Converter	M3	0.93	388	4.414435	4.11
Column	36	Concrete 20 Mpa 30% Fly Ash	M3	5.76	2400	2.56338	14.77
Pile	22	Concrete 20 Mpa 30% Fly Ash	M3	5.28	2200	2.56338	13.53
Plate	1	Concrete 40 Mpa 30% Ggbfs	M3	0.30	126	3.781979	1.14
Slab	2	Concrete 40 Mpa 30% Ggbfs	M3	0.35	144	3.781979	1.31
Wall	2	Concrete 40 Mpa 30% Ggbfs	M3	2.88	1200	3.781979	10.89
Workarea A-03	146	-	-	11.97	4988	-	32.41
Beam	88	Steel, Converter	M3	0.93	388	4.414435	4.11
Column	36	Concrete 20 Mpa 30% Fly Ash	M3	5.76	2400	2.56338	14.77
Pile	22	Concrete 20 Mpa 30% Fly Ash	M3	5.28	2200	2.56338	13.53
Workarea C-02	62	-	-	4.82	2012	-	13.27
Beam	24	Steel, Converter	M3	0.48	202	4.414435	2.14
Column	20	Concrete 20 Mpa 30% Fly Ash	M3	2.42	1010	2.56338	6.21
Pile	18	Concrete 20 Mpa 30% Fly Ash	M3	1.92	800	2.56338	4.92
Overall	598	-	-	53.24	22188	-	151.45

Link With MetaBIM Project

Export

EasyCarbon: Element View in MetaBIM

The screenshot displays the MetaBIM software interface. At the top left, the MetaBIM logo and 'trial' version are visible, along with a 'Back' button. The main interface is divided into several sections:

- Search and Filter:** A search bar with the text 'Search a name or ID' and an 'Advanced' filter button.
- BIM Structure Tree:** A tree view showing the hierarchy of the BIM structure. The 'IfcBeam' class is selected, showing 375 elements. The tree includes 'rst_advanced_sample_project-RV-Structure' and 'IfcBeam'.
- 3D Model:** A 3D visualization of the BIM structure, showing a grid of beams and columns. Three workarea zones are highlighted: 'Workarea A-01', 'Workarea A-02', and 'Workarea A-03'. 'Workarea D-01' is also visible.
- Zone Selection Panel:** A panel on the right side of the interface, titled 'Zone', with a close button. It contains a list of zones with checkboxes for selection:

Zone	Select
Workarea A-01	<input checked="" type="checkbox"/>
Workarea A-02	<input checked="" type="checkbox"/>
Workarea A-03	<input checked="" type="checkbox"/>
Workarea C-02	<input type="checkbox"/>
Workarea D-01	<input checked="" type="checkbox"/>
- Element Selection Panel:** A panel on the right side of the interface, titled 'Workarea D-01 [23]', with a close button. It contains a list of elements with checkboxes for selection:

Elements	Select
M_Concrete-Round-Column:450mm:151688	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151687	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151682	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151683	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151680	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151681	<input checked="" type="checkbox"/>
M_Concrete-Round-Column:450mm:151630	<input checked="" type="checkbox"/>
- Navigation and Tools:** A toolbar at the bottom of the interface with various icons for navigation and editing. A 'Remote Cmd On' indicator is visible above the toolbar.

EasyCarbon: Transportation

Carbon Emission Report

T3 Warehouse North Melb
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Darkspede

03-09-2024 20:40

Model Information

IFC 4.0

Design, Transport, Construction

50.2

39.2

Geo-Information

WSG84

-37.7945821, 144.9373748

17.2

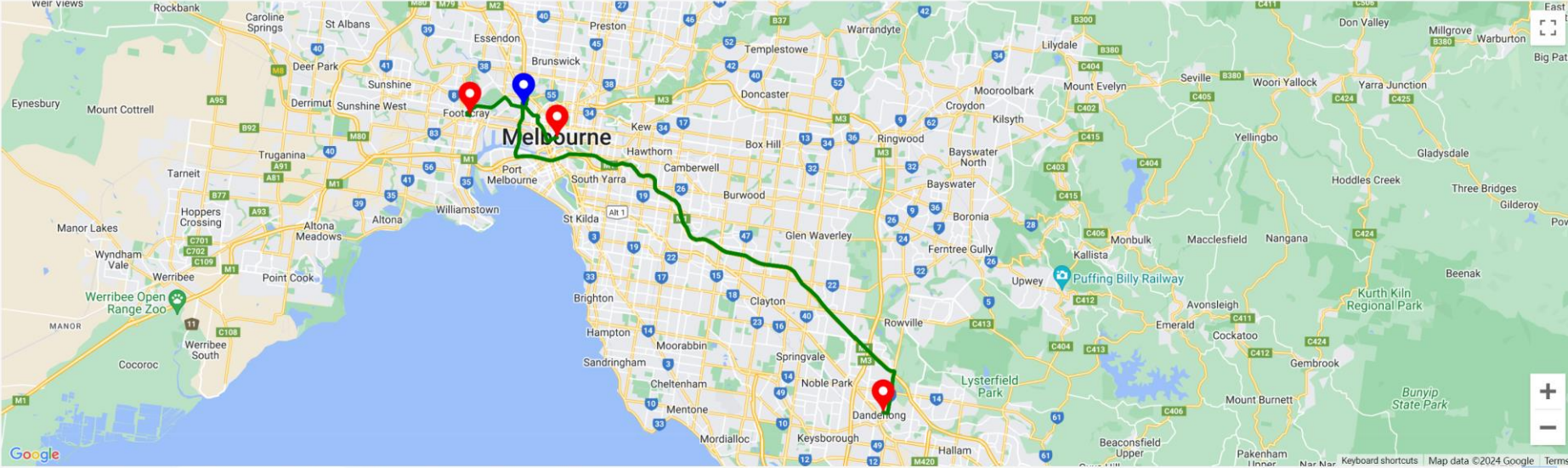
Assets & Database

AusLCI[1.42]

Linked Bim Project:

[Link With MetaBIM Project](#)

[Export](#)



Map navigation: Design(A1-A3) | **Transport(A4)** | Construction(A5) | Dashboard | Settings

27-08-2024 v1

Material/Product	Supplier	Quantity (T)	Distance (Km)	Transportation	Emission Factor (Kg / Km)	Emission (Kg)
Concrete 20 Mpa 30% Fly Ash	-	1060/1060	177	-	-	29646
Concrete	Melbourne Concrete Supplies	640	15	Road	28.8	18432.00
Concrete Blocks	Southwest Building Materials	420	162	Road	26.7	11214.00
Concrete 40 Mpa 30% Ggbfs	-	750/750	177	-	-	21188.4
Concrete	Melbourne Concrete Supplies	554	15	Road	28.8	15955.20
Concrete Blocks	Southwest Building Materials	196	162	Road	26.7	5233.20
Steel, Converter	-	72/72	331	-	-	1297.44
Steel Rebars	South East Construction Materials	72	331	Road	18.02	1297.44
Overall	-	1882	685	-	-	52131.84

Planned | Actual

EasyCarbon: Transportation (Service Provider Database)

The screenshot displays the EasyCarbon software interface. On the left, a sidebar contains project information for 'T3 Warehouse North Melb' and a list of materials under 'Assets & Database'. The main area features a map of Melbourne with a green route and a blue location pin. An 'Edit' dialog box is open, showing a search for 'concrete' and a list of suppliers and materials. At the bottom, a table shows emission factors and emissions for various materials.

Carbon Emission Report

T3 Warehouse North Melb
103799b2c83b4f0c99e2c30adc343341

Darkspede
03-09-2024 20:40

Model Information

- IFC 4.0
- Design, Transport, Construction
- 50.2
- 39.2

Geo-Information

- WSG84
- 37.7945821, 144.9373748
- 27-08-2024 v1

Assets & Database

- AusLCI[1.42]
- Linked Bim Project:

Material/Product

Material/Product	Supplier	Quantity	Unit	Category	Emission Factor (Kg / Km)	Emission (Kg)
Concrete 20 Mpa 30% Fly Ash					-	29646
Concrete					28.8	18432.00
Concrete Blocks	Southwest Building Materials	420	162	Road	26.7	11214.00
Concrete 40 Mpa 30% Ggbfs		750/750	177		-	21188.4
Steel, Converter		72/72	331		-	1297.44
Overall						52131.84

Edit

concrete

- Melbourne Concrete Supplies | 123 Collins St, Melbourne, VIC 3000, Australia
 - Concrete
 - Asphalt
 - Metal Beam
- Western Builders Supply | 789 Footscray Rd, Footscray, VIC 3011, Australia
 - Reinforced Concrete
- Southwest Building Materials | 99 Geelong Rd, Footscray, VIC 3011, Australia
 - Concrete Blocks
- Western Concrete Suppliers | 412 Ballarat Rd, Sunshine, VIC 3020, Australia
 - Precast Concrete

Cancel Save

Planned Actual

EasyCarbon: Construction

Carbon Emission Report
✕

T3 Warehouse North Melb
f03799b2c83b4f0c99e2c90adc343341

✕ Design(A1-A3)
🚚 Transport(A4)
🏗️ **Construction(A5)**
📊 Dashboard
⚙️ Settings

⌵

Model Information

📅 03-09-2024 20:40

📄 IFC 4.0

📁 Design, Transport, Construction

📊 50.2

📊 39.2

Geo-Information

🌐 WSG84

📍 -37.7945821, 144.9373748

📊 17.2

Assets & Database

📄 AusLCI[1.42]

📁 Linked Bim Project:

🔗 Link With MetaBIM Project

📄 Export

⚡ Energy Use Emissions

Energy Use	Quantity	Unit	Emission Factor	Emission	Evidence/Source/Comment
Electricity use, on-site total	50000	MWh	960 Kg CO2e	20 t CO2e	-
Diesel consumption for site vehicles	10	kL	2849 Kg CO2e	26.8 t CO2e	-
Diesel consumption for stationary plant end equipment	5	kL	2849 Kg CO2e	13.4 t CO2e	-
Diesel consumption for mobile plant end equipment	15	kL	2849 Kg CO2e	40.2 t CO2e	-
Total of other fuels consumed	2	kL	2849 Kg CO2e	5.36 t CO2e	-

🗑️ Waste Related Emissions

Construction and Demolition Waste	Landfill	Quantity	Unit	Transportation	Emission Factor	Emission	Evidence/Source/Comment
Concrete	Altona North Landfill Site	1000	Ton	Road	0.12 Kg CO2e/km	2400 kg CO2e	-
Masonry	Altona North Landfill Site	500	Ton	Road	0.12 Kg CO2e/km	1200 kg CO2e	-
Glass	ESG Deer Park Clean Fill Tip Site	50	Ton	Road	0.12 Kg CO2e/km	370 kg CO2e	-
Metal	ESG Deer Park Clean Fill Tip Site	100	Ton	Road	0.12 Kg CO2e/km	710 kg CO2e	-
Timber	Altona North Landfill Site	200	Ton	Road	0.12 Kg CO2e/km	480 kg CO2e	-
Vegetation	ESG Deer Park Clean Fill Tip Site	300	Ton	Road	0.12 Kg CO2e/km	1330 kg CO2e	-
Mixed waste	Altona North Landfill Site	350	Ton	Road	0.12 Kg CO2e/km	840 kg CO2e	-

Pilot Program with TfNSW (David Kelly)

WSU/TfNSW industry digital accelerator project (three months):

Focus on the Common Data Model (CDM) and data transformation according to the TfNSW Carbon & Cost Management Technical Guidance, to automate carbon estimation as part of cost estimation.

Next SBEnrc Project: AI-based Granular Carbon Accounting in building and infrastructure