











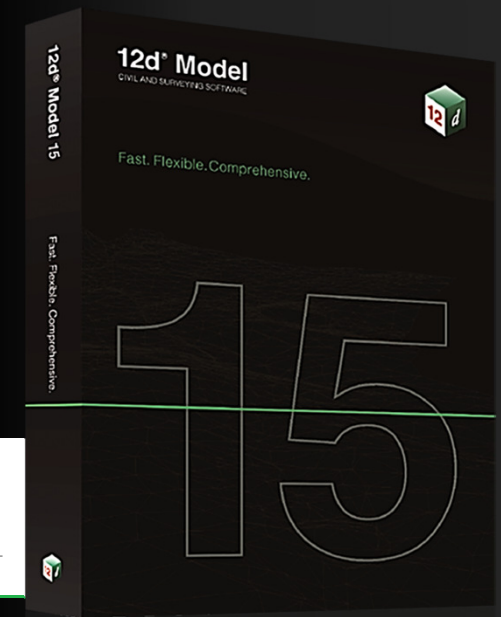


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12d[®] Model



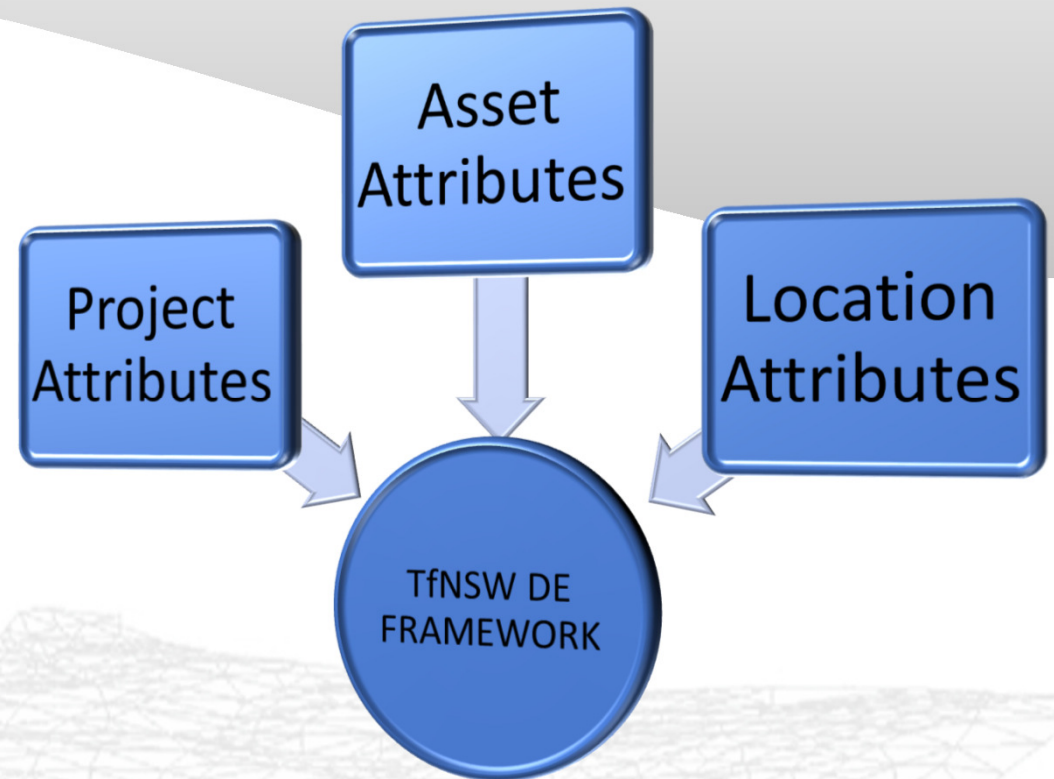
DE Framework

Defined Attributes
Published



DE Framework

Attributes



Road Pavement

Asset Attributes – apply to all pavements
 Different pavements have different attributes

Pavement Styles Manager

Defaults | **Pavement** | Kerbs | Verges

TYPE 2

Layer	Description	Layer Name	Depth	Attributes	Inner offset	Outer offset	Start slope 1v in	End slope 1v in	Colour	Edge Colour	End Colour	Tin	Active
1	Wearing Course AC10	WC (AC10)	0.05	26 attributes	0	0	optional	optional	vis rd bitumen	grey 086	grey 086	no	options
2	Spray Seal	SS (C170)	0.007	26 attributes	0	0	optional	optional	vis pavement green	green 136	green 136	no	options
3	Dense Graded Base	DGB	0.2	26 attributes	0	0	optional	optional	vis stone3	orange 81	orange 81	no	options
4	Dense Graded Subgrade	DGS20	0.3							orange 54	orange 54	no	options
5	optional											opti	options

```

attributes {
  text <IfcEntity> "IfcPavement"
  group {
    name "TFNSW_DE"
    attributes {
      group {
        name "TFNSW_Asset"
        attributes {
          text "TFNSW_MCLAssetID" "10003104"
          text "TFNSW_MCLAssetDesc" "Base Layer-Asphalt-Dense Grade-AC20"
          text "TFNSW_AssetDataStandard" "RAMS"
          text "TFNSW_AssetTypeCode" "AC"
          text "TFNSW_AssetCode" "PV.PLST.B.AC"
          text "TFNSW_ParentAssetCode" "PV.PLST.B"
          text "TFNSW_AssetDescription" "Asphalt"
          text "TFNSW_UniclassAssetCode" "Pr_35_31_05_03"
          text "TFNSW_UniclassAssetTitle" "Asphalt concrete (AC) base courses"
          text "Uniclass_EfCode" "EF_30_60_95"
          text "Uniclass_EfTitle" "Vehicular pavements"
          text "Uniclass_SsCode" "Ss_30_14_65"
          text "Uniclass_SsTitle" "Paving structure systems"
          text "Uniclass_PrCode" "Pr_35_31_05_03"
          text "Uniclass_PrTitle" "Asphalt concrete (AC) base courses"
          text "TFNSW_AssetTypeConfigCode" "DG"
          text "TFNSW_AssetTypeConfigDesc" "Dense Grade"
          text "TFNSW_PayItem" "R116P3.3"
          text "TFNSW_PayItemDesc" "20 mm Nominal Size"
          text "TFNSW_AssetDisciplineCode" "CV"
          text "TFNSW_AssetDisciplineDesc" "Civil"
          text "TFNSW_AssetSubDisciplineCode" "PV"
          text "TFNSW_AssetSubDisciplineDesc" "Pavement"
        }
      }
    }
  }
}
    
```

Editing pavement [TYPE 2] Click Set or Cancel to

text <TYPE 2> ok

Ok

Finish Help

Road Pavement

Asset Attribute

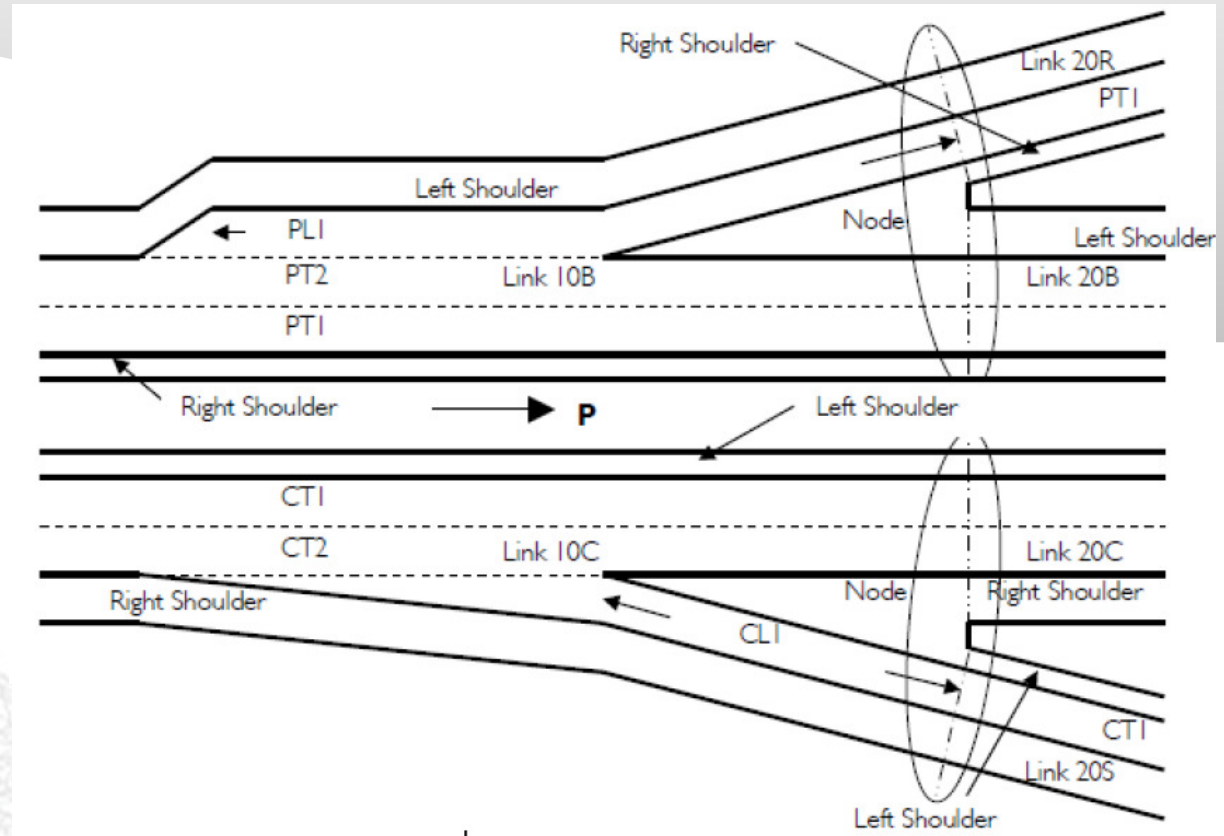
The screenshot displays a 3D perspective view of a road pavement structure with various layers in different colors (red, purple, yellow). A 'String Attributes' dialog box is open, showing a tree view on the left and a table of attributes on the right. The tree view shows a hierarchy: [Top] > DE > T1NSW_DE > T1NSW_Asset. The table lists 12 attributes for the selected 'T1NSW_Asset' group.

Attribute	Type	Value
1 T1NSW_MCLAssetID	Text	10003104
2 T1NSW_MCLAssetDesc	Text	Base Layer-Asphalt-Dense Grade-
3 T1NSW_AssetDataStandard	Text	RAMS
4 T1NSW_AssetTypeCode	Text	AC
5 T1NSW_AssetCode	Text	PV.PLST.B.AC
6 T1NSW_ParentAssetCode	Text	PV.PLST.B
7 T1NSW_AssetDescription	Text	Asphalt
8 T1NSW_UniclassAssetCode	Text	Pr_35_31_05_03
9 T1NSW_UniclassAssetTitle	Text	Asphalt concrete (AC) base course
10 Uniclass_EfCode	Text	EF_30_60_95
11 Uniclass_EfTitle	Text	Vehicular pavements
12 Uniclass_SsCode	Text	Ss_30_14_65



Road Pavement

Location Attributes



Road Pavement

Project Attributes –
apply to all objects

The screenshot displays two windows from the 12d software interface. The left window is titled 'TNSW/TNSW_BIM_V2.1' and contains a 'Set Project Attributes' dialog box. The right window is titled 'Perspective OpenGL 3D' and shows a 3D perspective view of a road pavement model with a grid and various colored lines.

Set Project Attributes Dialog:

Set Project Attributes	
Tab 1 Tab 2	
BIM Schema Specification	DMS-FT-516 V2.1
Project And Contract Name	GREEN STREET
Project Contract Code	ABC - 321
Contracted Organisation Code	CIMIC
Contracted Organisation Name	CIMIC
Design Company Code	EXDS
Design Company Name	EXTRA DIMENSION SOLUTIONS
Co-ordinate System	GDA2020MGA56
Project Milestone Description	Concept Design Development
State Description	CLIENT SHARED
Suitability Description	FOR REVIEW AND COMMENT
Document Number	12345
Document Title	Road Pavement Design
Discipline Code	CV
Sub-discipline Code	PA
TNSW Asset Location ID	-
TNSW Parent Asset Location ID	-
Project Asset Location ID	-
Parent Project Asset Location ID	-
Asset Location Code	unknown
Parent Asset Location Code	unknown
Asset Location Description	unknown
Uniclass Asset Location Code	unknown
Uniclass Asset Location Title	unknown

Select Choice Dialog:

- NOT FOR SHARING
- FOR COORDINATION
- FOR INFORMATION
- FOR REVIEW AND COMMENT
- FOR STAGE APPROVAL
- AEO CERTIFIED
- FOR COSTING
- FOR TENDER
- FOR CONTRACTOR DESIGN
- FOR MANUFACTURE/PROCUREMENT
- NOTE SUBMISSION WITH NO FURTHER COMMENTS
- NOTE SUBMISSION WITH FURTHER COMMENTS
- TFNSW CONFIRMED
- FOR CONSTRUCTION

Road Pavement

Project Attributes

The screenshot displays the 12d software interface. The main window is titled 'Perspective OpenGL 3D' and shows a 3D perspective view of a road pavement model. The model consists of a grid of colored lines (red, green, blue, purple) representing the road structure. A 'String Attributes' dialog box is open in the foreground, showing a tree view of the model's structure and a table of attributes for the selected 'TfNSW_Project' object.

String Attributes Dialog Box:

Name: Apply/Trimesh/PAV MC10->DGS20-R-CT2-MC10

Group name: TfNSW_Project

Tree View:

- [Top]
- DE
 - apply_mtf_details
 - geometry
 - TfNSW_DE
 - TfNSW_Location
 - TfNSW_Asset
 - TfNSW_Project**

Attributes Table:

Attribute	Type	Value
1 TfNSW_BIMSchemaSpec	Text	DMS-FT-516 V2.1
2 TfNSW_ProjectAndContractName	Text	GREEN STREET
3 TfNSW_ProjectContractCode	Text	ABC - 321
4 TfNSW_ContractOrgCode	Text	CIMIC
5 TfNSW_ContractOrgName	Text	CIMIC
6 tbDesignCompCode	Text	EXDS
7 tbDesignCompName	Text	EXTRA DIMENSION
8 tbCoordSys	Text	GDA2020MGA56
9 TfNSW_ProjectMilestoneDesc	Text	Concept Design De
10 TfNSW_StateDesc	Text	CLIENT SHARED
11 TfNSW_SuitabilityDesc	Text	FOR REVIEW AND C
12 TfNSW_DocumentNo	Text	12345

Buttons: Pick, Ok, Apply, Refresh, Finish, Help



Road Pavement

Attribute Toolbox

Map File – Add Attributes based on ‘Name’ of Entity

Attribute Manipulator – Concatenate Attributes and more

Meta Connex – Add *and Validate* Attributes based on Business Rules



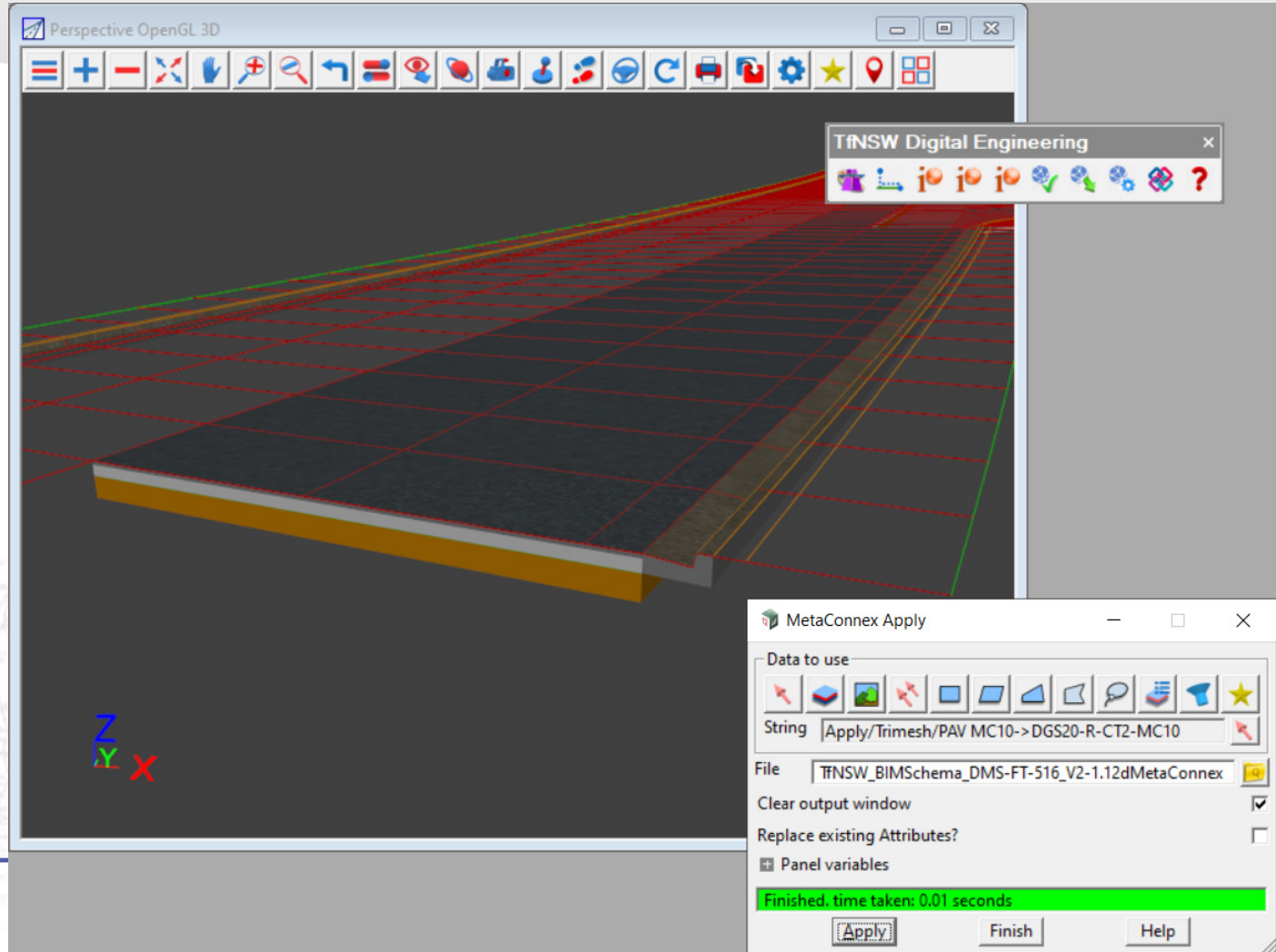


12d Model

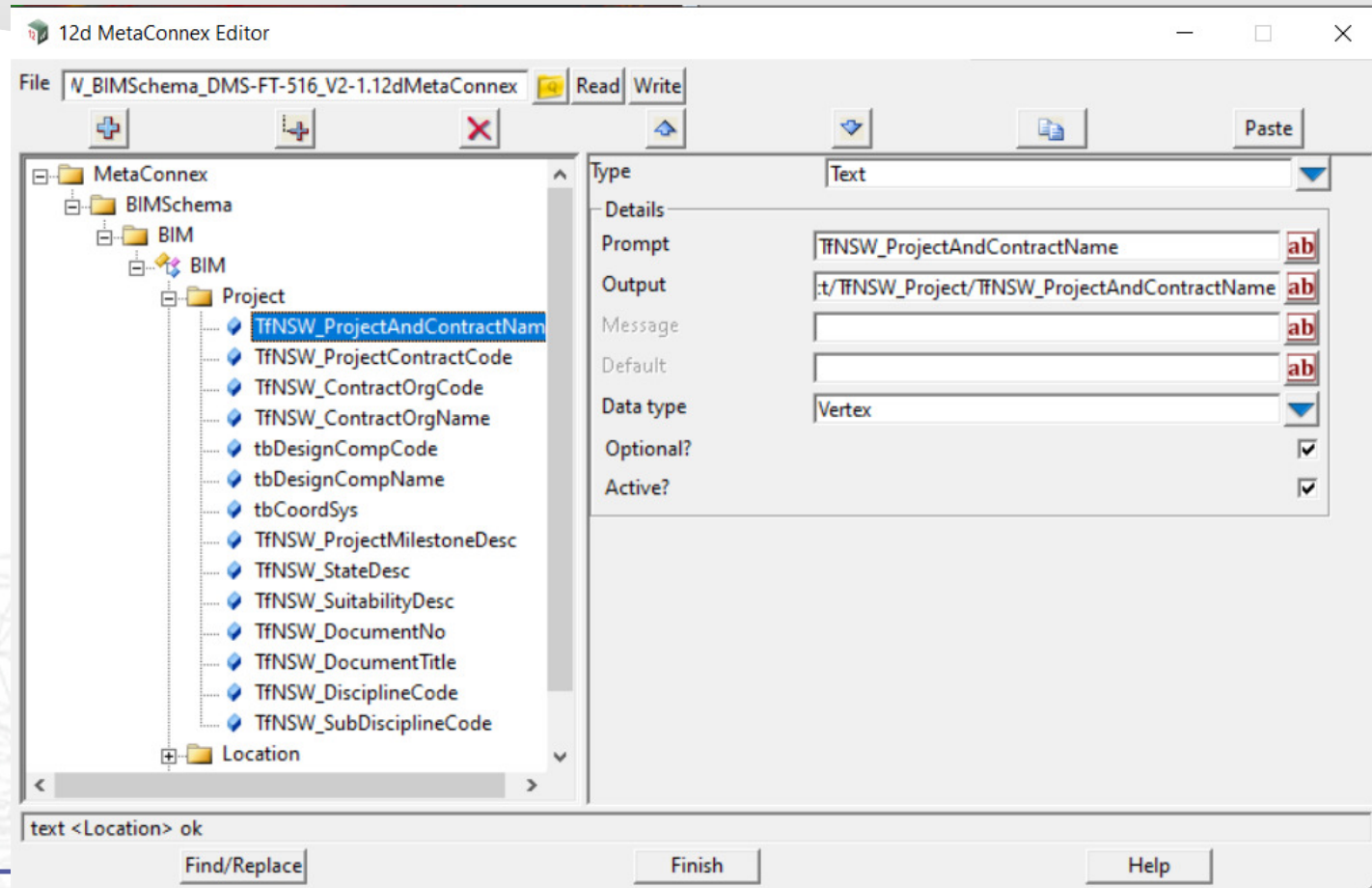


Road Pavement

MetaConnex
Apply Business Rules



MetaConnex Business Rules





* Attributes

Hide source

	TfNSW_ProjectAndContractName	TfNSW_ProjectContractCode	TfNSW_ContractOrgCode	TfNSW_ContractOrgName	tbDesignCompCode	tbDesignCompName	tbCoordSys	TfNSW_ProjectMilestoneDesc
1	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
2	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
3	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
4	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
5	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
6	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
7	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development
8	GREEN STREET	ABC - 321	CIMIC	CIMIC	EXDS	EXTRA DIMENSION SOLUTIONS	GDA2020MGA56	Concept Design Development

Refreshed

Set Refresh Finish Help



12d Model



EXTRA DIMENSION SOLUTIONS

* Attributes

Hide source

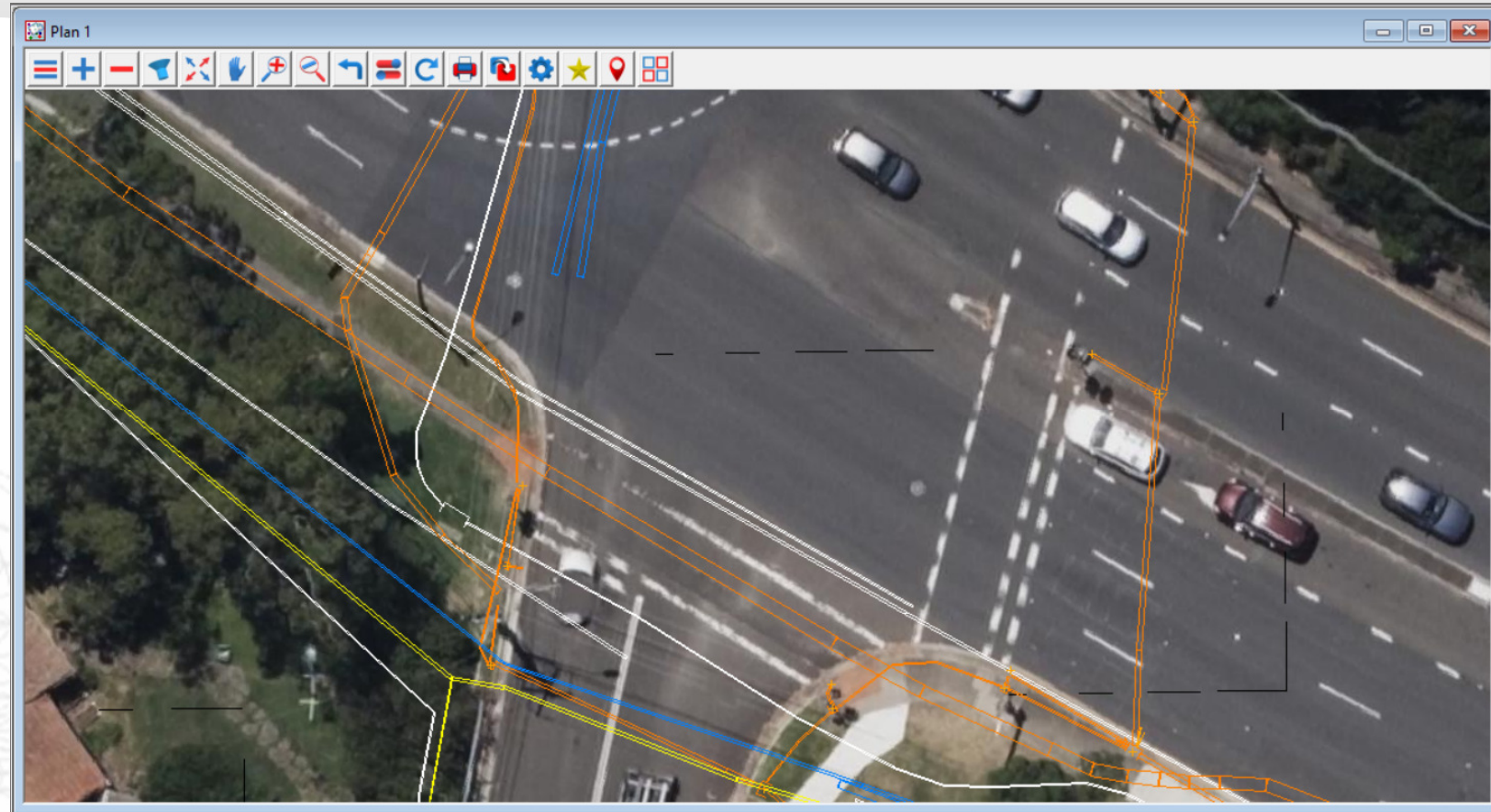
	TfNSW_ParentAssetLocationCode	TfNSW_AssetLocationDesc	TfNSW_UniclassAssetLocationCode	TfNSW_UniclassAssetLocationTitle	TfNSW_WorkZoneCode	TfNSW_WorkZoneName	Uniclass_CoCode	Uniclass_CoTitle	Un
1	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
2	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
3	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
4	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
5	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
6	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
7	optional	optional	optional	optional	optional	optional	52.15	PAVEMENT	52.
8	unknown	unknown	unknown	unknown	optional	optional	52.15	PAVEMENT	52.



Refreshed

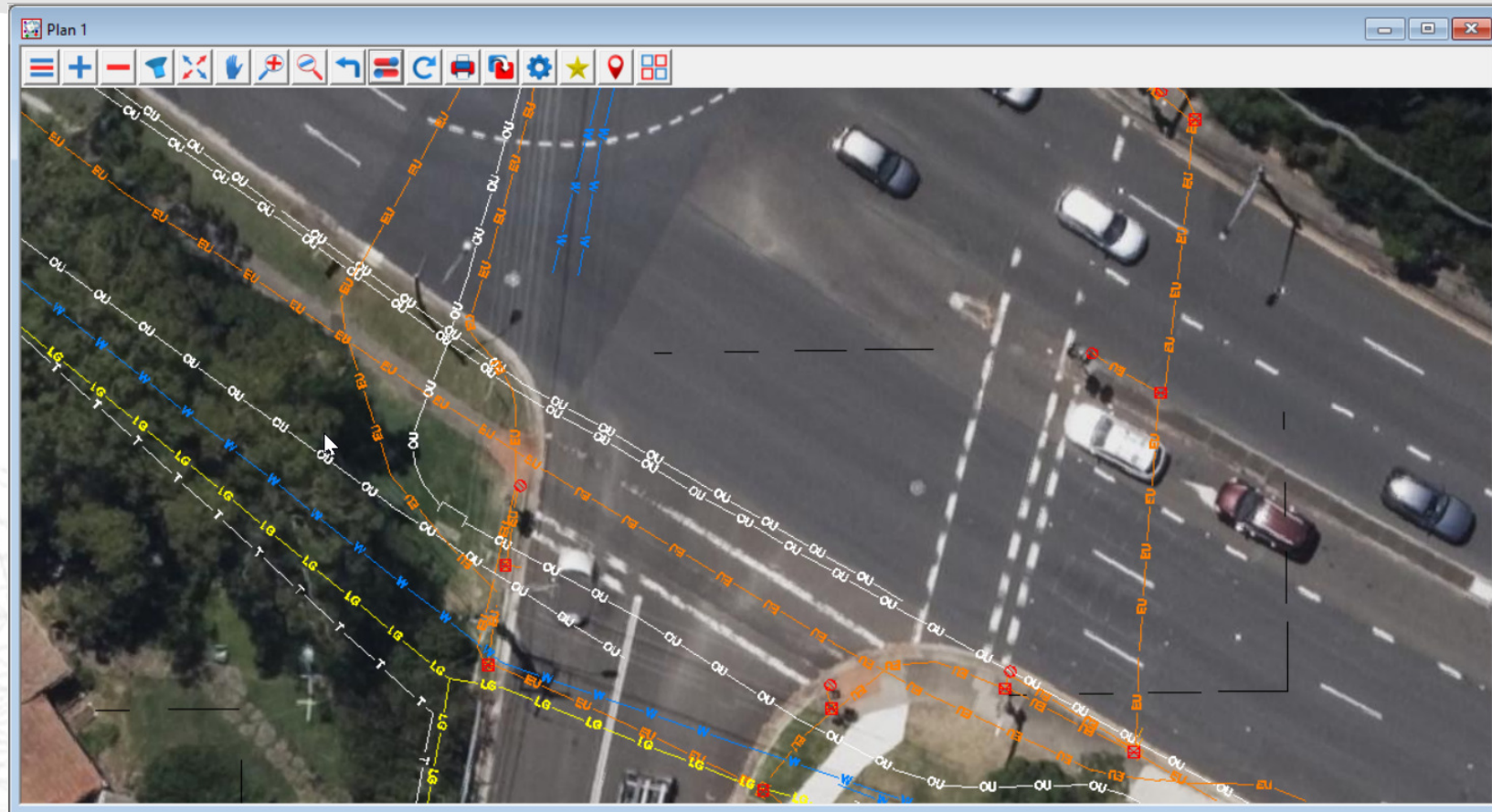
Services

Existing Services



Services

Existing Services





12d Model



Services

Existing Services

The screenshot shows the 12d Model software interface. The main window displays a plan view of a road with various utility lines overlaid in different colors (orange, blue, yellow, white). A 'String Attributes' dialog box is open in the foreground, showing the following data:

Attribute	Type	Value
1 string_no	Text	4
2 QualityLevel	Text	B
3 Depth	Text	2.0
4 DepthLocation	Text	Top of Pipe
5 Configuration	Text	1x1
6 PipeDiameter	Text	0.3
7 CulvBankWidth	Text	--
8 CulvBankHeight	Text	--
9 AssetSubType	Text	Potable
10 AssetType	Text	Water
11 AssetFeature	Text	Pipe
12 AssetOwner	Text	Sydney Water

The dialog box also shows the Name field set to 'UTILITY WATER->WM' and the Group name set to '[Top]'. The 'String' tab is selected, and the '[Top]' attribute is highlighted in the list. The status bar at the bottom of the dialog indicates '"[Top]" selected' and includes buttons for 'Pick', 'Ok', 'Apply', 'Refresh', 'Finish', and 'Help'.



12d[®] Model



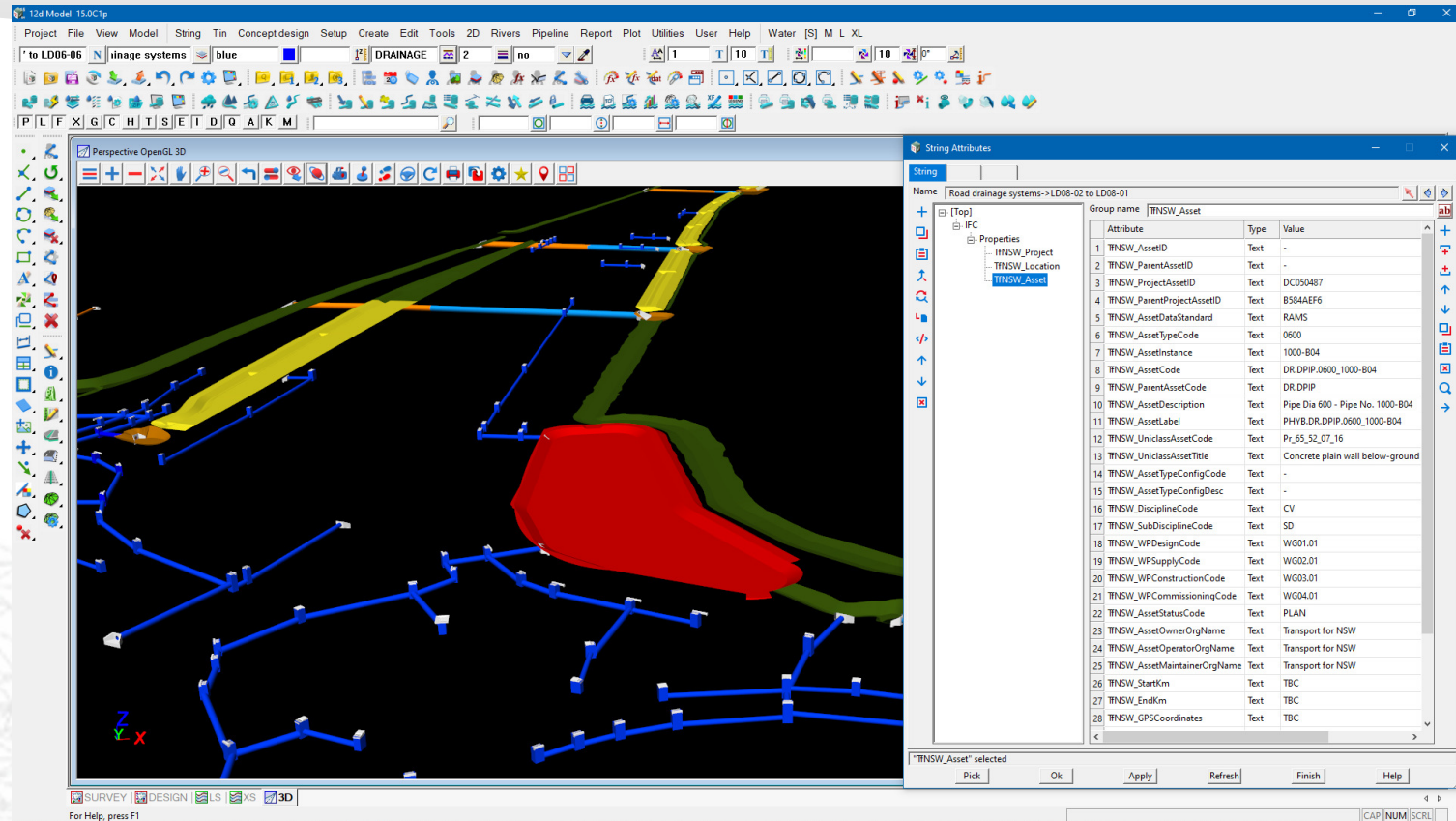
Services

Existing Services

The screenshot shows the 12d Model software interface. The main window is titled 'Perspective OpenGL 3D' and displays a 3D model of a utility network with various colored lines representing different services. A 'String Attributes' dialog box is open, showing the following data:

Attribute	Type	Value
1 string_no	Text	4
2 QualityLevel	Text	B
3 Depth	Text	2.0
4 DepthLocation	Text	Top of Pipe
5 Configuration	Text	1x1
6 PipeDiameter	Text	0.3
7 CulvBankWidth	Text	--
8 CulvBankHeight	Text	--
9 AssetSubType	Text	Potable
10 AssetType	Text	Water
11 AssetFeature	Text	Pipe
12 AssetOwner	Text	Sydney Water

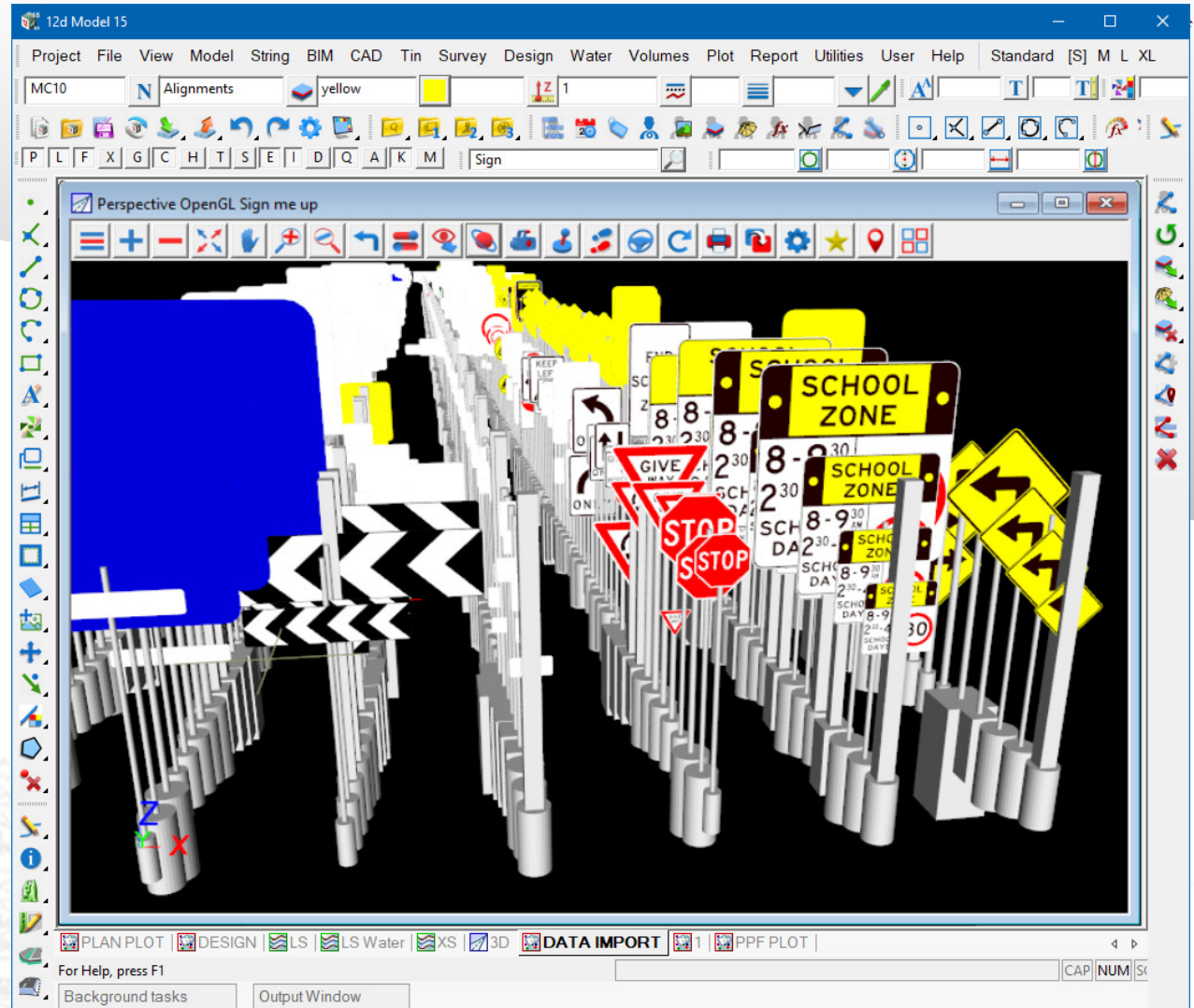
Stormwater Drainage



The screenshot displays the 12d Model software interface. The main window shows a 3D perspective view of a stormwater drainage system with blue pipes and a red catchment area. A 'String Attributes' window is open on the right, showing a table of attributes for a selected 'TNSW_Asset'.

Attribute	Type	Value
TNSW_AssetID	Text	-
TNSW_ParentAssetID	Text	-
TNSW_ProjectAssetID	Text	DC050487
TNSW_ParentProjectAssetID	Text	B584AEF6
TNSW_AssetDataStandard	Text	RAMS
TNSW_AssetTypeCode	Text	0600
TNSW_AssetInstance	Text	1000-B04
TNSW_AssetCode	Text	DR.DPIP.0600_1000-B04
TNSW_ParentAssetCode	Text	DR.DPIP
TNSW_AssetDescription	Text	Pipe Dia 600 - Pipe No. 1000-B04
TNSW_AssetLabel	Text	PHVB.DR.DPIP.0600_1000-B04
TNSW_UniclassAssetCode	Text	Pr_65_52_07_16
TNSW_UniclassAssetTitle	Text	Concrete plain wall below-ground
TNSW_AssetTypeConfigCode	Text	-
TNSW_AssetTypeConfigDesc	Text	-
TNSW_DisciplineCode	Text	CV
TNSW_SubDisciplineCode	Text	SD
TNSW_VPDDesignCode	Text	WG01.01
TNSW_WPSupplyCode	Text	WG02.01
TNSW_WPCConstructionCode	Text	WG03.01
TNSW_WPCCommissioningCode	Text	WG04.01
TNSW_AssetStatusCode	Text	PLAN
TNSW_AssetOwnerOrgName	Text	Transport for NSW
TNSW_AssetOperatorOrgName	Text	Transport for NSW
TNSW_AssetMaintainerOrgName	Text	Transport for NSW
TNSW_StartKm	Text	TBC
TNSW_EndKm	Text	TBC
TNSW_GPSCoordinates	Text	TBC

Road Signs





12d Model

Federation

IFC

- 12d Model likes 4x3 -

The screenshot shows the BIMvision 2.28.0 software interface. The main window displays a 3D model of a pavement structure in green. The interface includes a menu bar (FILE, VIEW, OBJECTS, SECTIONS, MEASUREMENT, CHANGES, PLUGINS), a toolbar with various view and camera controls, and a right-hand panel with an IFC structure tree and a Properties table.

IFC structure tree:

Active	Type	Name	Description
<input checked="" type="checkbox"/>	Project	TfNSW_Demo_Design	
<input checked="" type="checkbox"/>	Site	Default Site	Description of Default ...
<input checked="" type="checkbox"/>	Building	Apply/Trimesh/PAV_MC10	Description of Apply/T...
<input checked="" type="checkbox"/>	Infrastructure		
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-R-CT2-MC10	12d Trimesh

Properties table:

Name	Value	Unit
TfNSW_Project		
tbCoordSys	GDA2020MGA56	
tbDesignCompCode	DC1	
tbDesignCompName	DESIGN COMPANY	
TfNSW_BIMSchemaSpec	DMS-FT-516 V2.1	
TfNSW_ContractOrgCode	EXDS	
TfNSW_ContractOrgName	EXTRA DIMENSION SOLUTIONS	
TfNSW_DisciplineCode	CV	
TfNSW_DocumentNo	unknown	
TfNSW_DocumentTitle	unknown	
TfNSW_ProjectAndContractName	DEMO	

The bottom status bar shows the current view: TfNSW_Demo_Design (pavement_MC10.ifc) - Default Site - Apply/Trimesh/PAV_MC10 - Infrastructure - DGS20-L-PT1-MC10 - 190 m 0.00 s 0.4



12d Model

Federation

IFC

The screenshot displays the BIMvision 2.28.0 software interface. The main window shows a 3D perspective view of a pavement structure with various layers and materials. The interface includes a menu bar (FILE, VIEW, OBJECTS, SECTIONS, MEASUREMENT, CHANGES, PLUGINS) and a toolbar with various tools like 'Reset zoom', 'Default', 'Top', 'Front', 'Right', 'Back', 'Left', 'Rotate left', 'Rotate right', 'Object color', 'Options', 'Minimap', 'Storey slide', 'Reset', 'Offsets', and 'See also'. The 'VIEW' tab is active, showing '3D' and '2D' view options.

The 'IFC structure' tree on the right side of the interface is expanded to show the following structure:

Active	Type	Name	Description
<input checked="" type="checkbox"/>	Project	TRNSW_Demo_Design	
<input checked="" type="checkbox"/>	Site	Default Site	Description of Default ...
<input checked="" type="checkbox"/>	Building	Apply/Trimesh/PAV_MC10	Description of Apply/T...
<input checked="" type="checkbox"/>	Infrastructure		
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-L-PT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-R-CT1-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	WC_(AC14)-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	B_(AC20)-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	LCS-R-CT2-MC10	12d Trimesh
<input checked="" type="checkbox"/>	IfcPavement	DGS20-R-CT2-MC10	12d Trimesh

The 'Properties' panel at the bottom right shows the following data for the selected 'DGS20-L-PT1-MC10' element:

Name	Value	Unit
TRNSW_AssetCode	PV.PLST.B.AC	
TRNSW_AssetDataStandard	RAMS	
TRNSW_AssetDescription	Asphalt	
TRNSW_AssetDisciplineCode	CV	
TRNSW_AssetDisciplineDesc	Civil	
TRNSW_AssetID	-	
TRNSW_AssetSubDisciplineCode	PV	
TRNSW_AssetSubDisciplineDesc	Pavement	
TRNSW_AssetTypeCode	AC	
TRNSW_AssetTypeConfigCode	DG	

The status bar at the bottom indicates the current element is 'DGS20-L-PT1-MC10' with a length of 182 m, a time of 0.00 s, and a scale of 0.4.