



Revizto Guidance Note

Version 3

Document Control

Version History

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Reviewers' Name

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Signed off by Approvers.

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1 Introduction

1.1 PURPOSE

The purpose of this document is to:

- Guide project teams in the setup, use and ongoing management of Revizto project sites.
- Provide guidance on how Revizto is used by KiwiRail for collaboration, communication and coordination throughout the design, construction, and commissioning phases.

1.2 AUDIENCE

KiwiRail has implemented Revizto as a platform to democratise information. Because of this the language and terminology used in this document is designed for a wide audience. The document however does describe the use of technical tools within the platform that would be used by different practitioners to varying levels depending on a person's role on the project. Key roles who will engage with Revizto include but are not limited to:

- KiwiRail project team members
- Project delivery team members, including consultants and contractors.
- Key stakeholders, for example asset management, operations etc.

1.3 OVERVIEW

Revizto is KiwiRail's chosen digital collaboration platform and is being implemented across capital projects. Revizto adds significant value to KiwiRail capital projects by streamlining design coordination and construction processes, including both formal and informal reviews of information. The Revizto environment represents an aggregation of information and data that will pass through the lifecycle in a tangible form. Issues raised during the design process, including safety in design, will pass through to construction teams. Similarly, the issues raised in construction along with design issues will pass into operations as part of the as-built process, to reduce the likelihood of information and knowledge being lost.

As with the Common Data Environment (CDE), there will be only one master project collaboration environment, Revizto, at any one time managing one version of the truth on a project.

KiwiRail requires project delivery team to follow the procedures and guidelines set out in this document.

2 Framework Documents

Version 5 of the DE Framework is segmented into a suite of documents. This enables specific technical information to be covered in a specific document, for the right audience.

The following diagram and table convey the suite of the framework documentation.

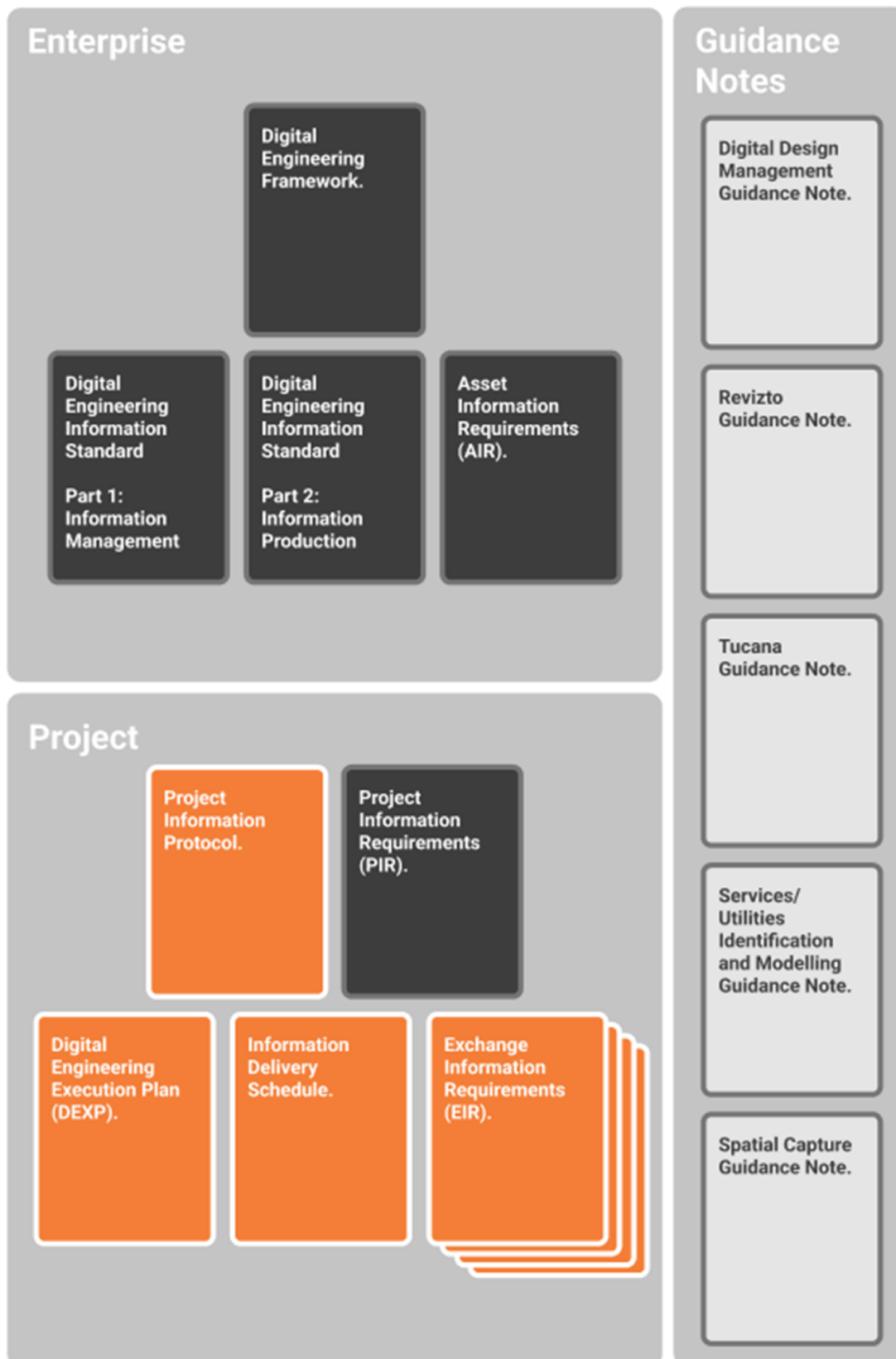


Figure 1: Digital Engineering Document Structure

Table 1: Digital Engineering Documentation

Table 2: Digital Engineering Documentation

Document	Purpose
Enterprise	
Digital Engineering Framework	To outline KiwiRail's DE vision and overarching objectives. To provide guidance as to where specific detail can be found in other documentation.
Digital Engineering Information Standard – Part 1 (Management)	Outlines the process of how information is managed and consumed within the context of a project.
Digital Engineering Information Standard – Part 2 (Technical)	Outlines the details of how information should be produced by an author to meet KiwiRail's information requirements.
Asset Information Requirements	Outlines all the possible asset types, and their associated attribution requirements.
Project	
Project Information Protocol	Provides additional clauses which enable the scope of Digital Engineering to be amended to the contract.
Project Information Requirements (PIR)	Includes general project information, including scope, stakeholders, and high-level delivery milestones. Outline the overarching project specific digital initiatives for implementation on the project. PIR explain the information needed to answer or inform high-level strategic objectives within the appointing party in relation to a particular built asset project. PIR are identified from both the project management process and the asset management process. (extract from ISO)
Exchange Information Requirements (EIR)	Breaks down the overarching project objectives in the Project Information Requirements into the requirements of each engagement within a project at a detailed level. Details the expectations of information delivery against the project milestones. EIR set out managerial, commercial, and technical aspects of producing project information. The managerial and commercial aspects should include the information standard and the production methods and procedures to be implemented by the delivery team. (extract from ISO)
Information Delivery Plan (IDP)	Details the level of information need, required against asset data dictionary classifications, throughout the project lifecycle. Specifies the types of asset classifications expected throughout the scope of the project. Outlines an exhaustive list of digital artifacts required for project close out.
Guidance Notes	
Digital Design Management Guidance Note	Outlines how the DE tools & processes of KiwiRail's DE Framework can be embedded within the design phase of a capital project to support & enable design management fundamentals.
Revizto Guidance Note	How KiwiRail standardise the use of Revizto across the KiwiRail projects portfolio.
Tucana Guidance Note	Supplementary document which covers off the correct usage of the CDE, including details of the background processes for those wanting additional detail.
Subsurface Utilities Identification and Modelling Guidance Note	How to identify, model and transmit subsurface utility information to KiwiRail within a project.
Spatial Capture Framework	Outlines how spatial information is to be captured, created, referenced, and controlled.
Resources	
Construction Delivery Matrix (CDM)	Helps to facilitate a discussion between the designers and contractors around which piece of information can be used for pricing and construction setout.

Minimum Data Requirements	Helps to facilitate specifying the minimum asset data requirements for capture during the project's lifecycle, and who's responsibility it is to provide this information.
Asset Information Exchange Template	Helps to facilitate the Asset Information Exchange process between suppliers and DE team.
Scan Register	Scan register template to provide KiwiRail with details around the captured scan / survey data.

3 Revizto Overview

Revizto is a cloud-based visual collaboration software which allows the project team to manage project issues, and to continuously share and communicate the Project Information Model including the 3D models and 2D drawing files throughout the project lifecycle.

Revizto is divided into four collaboration working spaces that are interconnected:

- **2D Environment** - This is where the project team review 2D drawing files and communicate issues and/or design enquiries.
- **3D Environment** - This is where the project team navigate through the 3D design models, review, and communicate issues and/or design enquiries.
- **Issue Tracker** - This is where all the project issues are managed and can be configured with specific Information about a particular issue.
- **Clash Automation**. – This is where the appointed party’s DE Lead will produce rule-based clash tests within Revizto

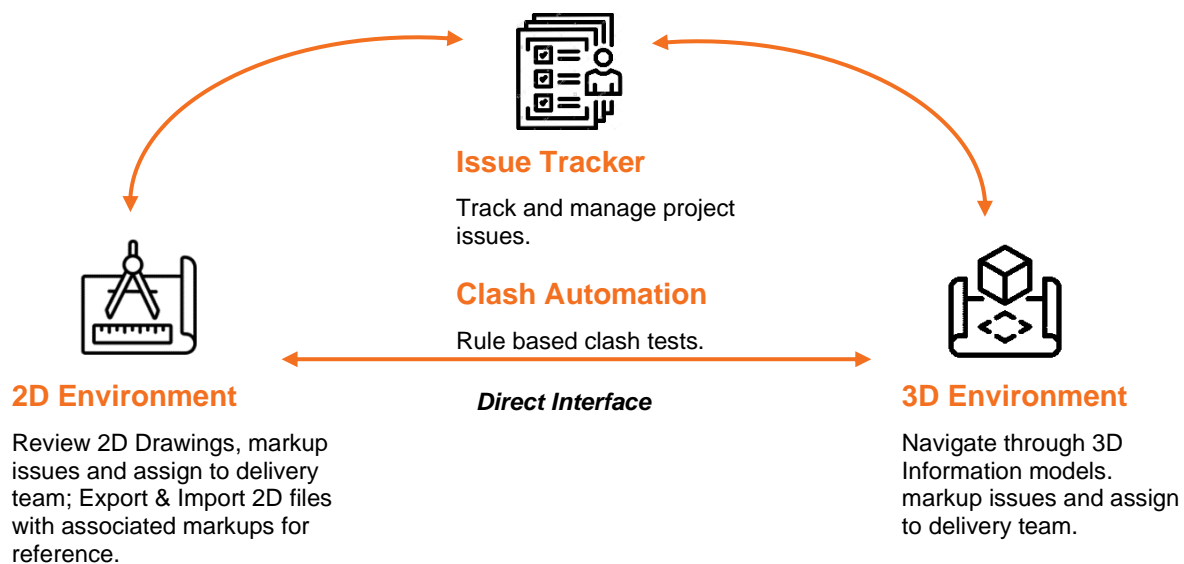


Figure 2 Revizto Collaboration Workflow

4 Project Set Up

KiwiRail will be responsible for the configuration, establishment, and management of a Revizto project site, unless agreed otherwise within the projects Exchange Information Requirements (EIR).

This section outlines Revizto licence management, access roles and permission levels.

4.1 USER MANAGEMENT

Licences can be provided by KiwiRail and should not be considered as a barrier to the successful implementation of project’s collaboration environment.

The designated KiwiRail Digital Engineer for the project will issue a Revizto License Request Form to be distributed among the supplier’s task team. This form will facilitate access for users to the respective project they are engaged in. Throughout the project duration, if a user possesses a KiwiRail license but remains inactive within the Revizto environment, the license may be reassigned to another user. Should the user still require access, they are encouraged to complete the Revizto License Request Form to initiate reactivation. The Revizto License Request Form is available a [here](#).

For any additional Revizto inquiries, please contact your assigned KiwiRail Digital Engineer or reach out to the Digital Engineering Support Mailbox at <mailto:de.support@kiwirail.co.nz>

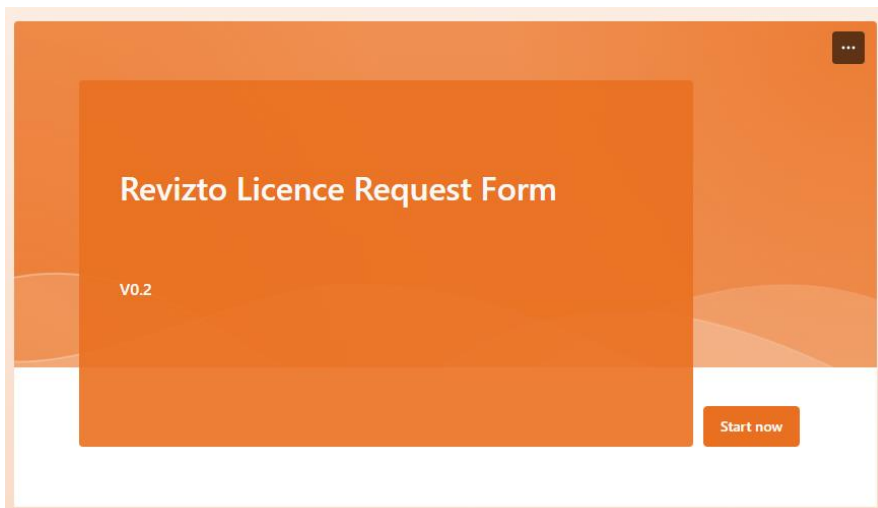


Figure 3 Revizto Licence Request Form

4.2 ACCESS ROLES AND PERMISSION LEVELS

The following table outlines the access permission levels defined in Revizto for different project roles.

Table 3 Access Roles and Permissions

Roles	Project Team	Access Role	Permission level
Digital Engineering Specialists	Appointing Party (KiwiRail)	Administrator	Full permission to enable project setup and administration
Project managers	Appointing Party (KiwiRail)	KR Project Manager	<p>Issue Tracker</p> <ul style="list-style-type: none"> Review, create, modify, and comment on issues. Resolve & close issues. Create and apply tags. <p>Export</p> <ul style="list-style-type: none"> Export sheets to PDF Export EXE & IFC <p>Model Content</p> <ul style="list-style-type: none"> Add/edit viewpoints. Edit 2D. <p>Clash Automation</p> <ul style="list-style-type: none"> View public clash tests.
External project managers / discipline leads	Appointed Party	External discipline lead / project manager	<p>Issue Tracker</p> <ul style="list-style-type: none"> Review, create, modify, and comment on issues. Resolve issues. Create and apply tags. <p>Export</p> <ul style="list-style-type: none"> Export sheets to PDF Export EXE & IFC <p>Model Content</p> <ul style="list-style-type: none"> Add/edit viewpoints. Edit 2D. <p>Clash Automation</p>

Roles	Project Team	Access Role	Permission level
			<ul style="list-style-type: none"> View public clash tests.
External project Digital Engineer	Lead appointed Party. Or Appointed Party (Delivery team)	External BIM Lead	<p>Issue Tracker</p> <ul style="list-style-type: none"> Review, create, modify, and comment on issues. Resolve issues. Create and apply tags. <p>Export</p> <ul style="list-style-type: none"> Export sheets to PDF Export EXE & IFC <p>Model Content</p> <ul style="list-style-type: none"> Add/edit viewpoints. Edit & append 2d and 3d. Manage shared search sets. Manage shared favourite properties. Manage and assign custom properties. Manage shared appearance templates. <p>Clash Automation</p> <ul style="list-style-type: none"> Clash administrator Create clash tests. View public clash tests.
Modeller (KR & External)	Appointing Party / Lead appointed Party Or Appointed Party (Delivery team)	Modeller	<p>Issue Tracker</p> <ul style="list-style-type: none"> Review, create, modify, and comment on issues. Create and apply tags. <p>Export</p> <ul style="list-style-type: none"> Export sheets to PDF Export EXE & IFC <p>Model Content</p> <ul style="list-style-type: none"> Add/edit viewpoints. Edit & append 2d and 3d. Manage shared search sets. Manage shared favourite properties. Manage and assign custom properties.
Engineers, Architects, Designers	Appointed Party (Delivery team)	Collaborator	<p>Issue Tracker</p> <ul style="list-style-type: none"> Review, create, modify, and comment on issues. <p>Export</p> <ul style="list-style-type: none"> Export sheets to PDF Export EXE & IFC <p>Model Content</p> <ul style="list-style-type: none"> Edit 2d

Roles	Project Team	Access Role	Permission level
Project stakeholders	External to project delivery	Viewer	Issue Tracker <ul style="list-style-type: none"> View public issues. Export <ul style="list-style-type: none"> Export sheets to PDF

Note: The licence information for each project team member, can be accessed through the Revizto workspace, ws.revizto.com.

1. Login at Revizto workspace
2. Select your License, then select 'License info' from the "Tools" drop down list.

5 Information Management

5.1 PROJECT AND ASSET INFORMATION MODELS

As outlined in the DE Framework there are two types of information models created during the asset delivery phase, being the Project and Asset information models. The term model in this case refers to 3D geometric representations, as well as attributes, and documentation.

Revizto is a fundamental tool used to develop the Project Information Model (PIM) and the Asset Information Model (AIM). PIM and AIM information will be stored in the project's CDE and coordinated in Revizto.

5.2 REVIZTO COORDINATION

Revizto democratises project information that is often only available to practitioners with specialised authoring software. This enables graphical information both 3D and 2D to be used live in coordination workshops and meetings with issues raised tagged directly to a visual representation.

Coordination completed in Revizto shall include but is not limited to the following areas:

- General design coordination
- Clash detection
- Safety in Design (SiD) workshops
- Design reviews
- Multi discipline coordination workshops
- Constructability reviews

5.3 FILE EXCHANGE WORKFLOW

The below diagram illustrates the required file exchange workflow structure for sharing Information through the collaboration environment, Revizto. During the design process, the PIM is required to be initially uploaded to the CDE, Tucana on the agreed date and frequency, and prior to sharing the data in Revizto. This is to allow KiwiRail to review and approve the received information prior to sharing the data with the wider project team.

To enable efficiencies, and where appropriate, tasks teams may share information directly into Revizto from their authoring software, such as Revit or Civil3D. If this workflow is adopted on a project, all information must be uploaded to Tucana at agreed milestones prior to direct sharing in Revizto.

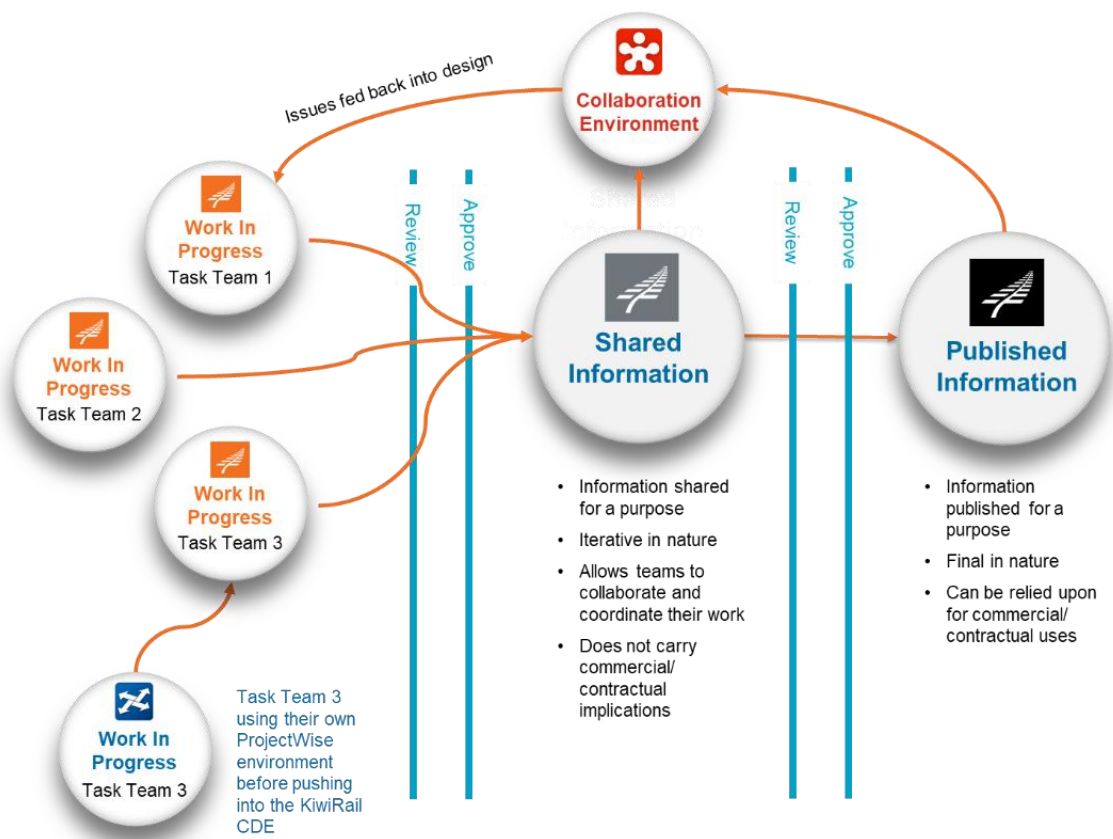
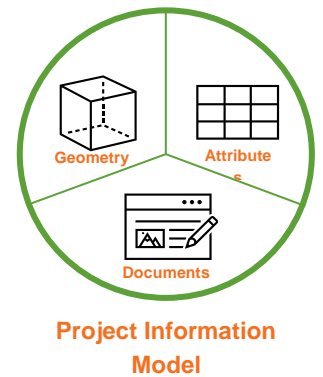


Figure 4: Project Collaboration - File Exchange Workflow

6 File Management

6.1 3D MODEL FILES

The Revizto 3D environment allows the project team to share, review and communicate the 3D model files throughout the design and construction process. All stage gate deliverables pushed to Revizto must first be transitioned into the Shared status within the KiwiRail CDE (Tucana), along with a model deceleration form at the agreed date and frequency as highlighted in the projects DEXP. The model deceleration form shall include the following:

- Model file name and revision
- File extension
- Date of issue
- The model information suitability (e.g., S2 for information, S4 for review)
- Short summary of major changes made since the last revision in a bullet point format.

The latest model files which are uploaded to Revizto can be found through the Object Tree dialog in the Revizto 3D environment as shown in figure 2. For the model federation strategy and file naming convention standard, refer to the Digital Engineering Information Standard, Part 2, and the project Digital Engineering Execution Plan (DEXP).

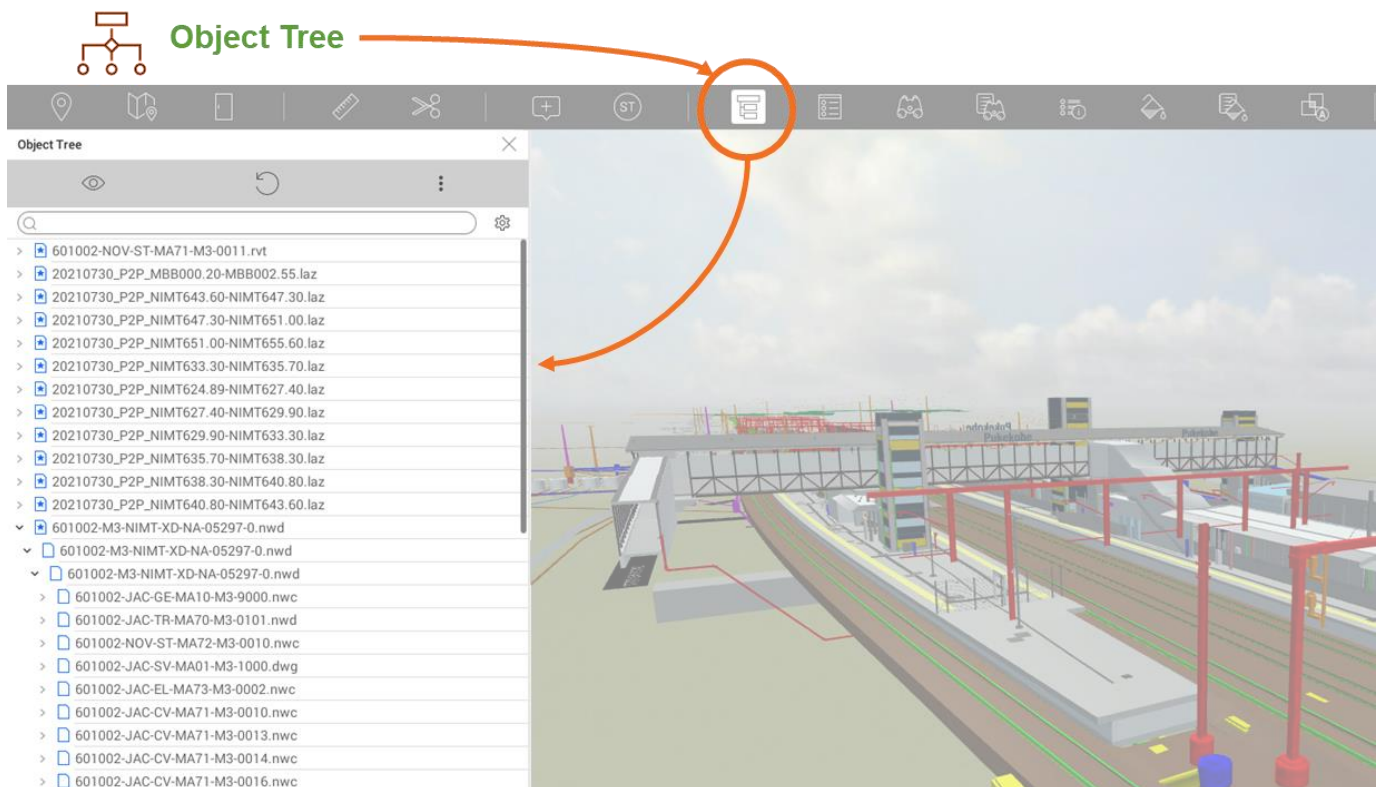


Figure 5: Revizto 3D Environment – Object Tree

6.2 2D DRAWING FILE MANAGEMENT

All drawings are to be uploaded to the project Revizto environment in PDF format, with the exception of drawings authored within a software where 2D drawings can be dynamically linked to the 3D model, which is outlined in Section 6.2.1 below. All PDF files should be sourced from the project CDE, Tucana and manually uploaded to Revizto.

The following steps should be taken to ensure that PDF files uploaded to Revizto are completed in a way that allows the retention of drawing intelligence:

1. After downloading the PDFs from the CDE, drawings need to be renamed in the following structure, preferably using automation extracted from the drawing title block.

DRAWING NUMBER - DRAWING TITLE [REVISION]

E.G. 811300-KR-CV-MA70-M2-0001 – GENERAL ARRANGEMENT [P01]

2. During the upload process, the uploader should ensure that all drawings within the set are correctly detected to ensure that any new revisions of drawings will automatically connect.

When drawings are uploaded with the correct file name, the following intelligence of the drawing can be retained:

- Any new drawing with the same drawing number as an existing drawing will be superseded.
- Any issues or markups from the superseded drawing will remain with the new drawing version.
- Facilitates the function of the drawing comparison tool.
- Any geospatial/model overlay positioning will remain.
- Supports improved searching functionality.

6.2.1 Folder Structure

The 2D drawings exported to Revizto, must be organized, and allocated in an appropriate folder. An example of this is illustrated in figure 3.

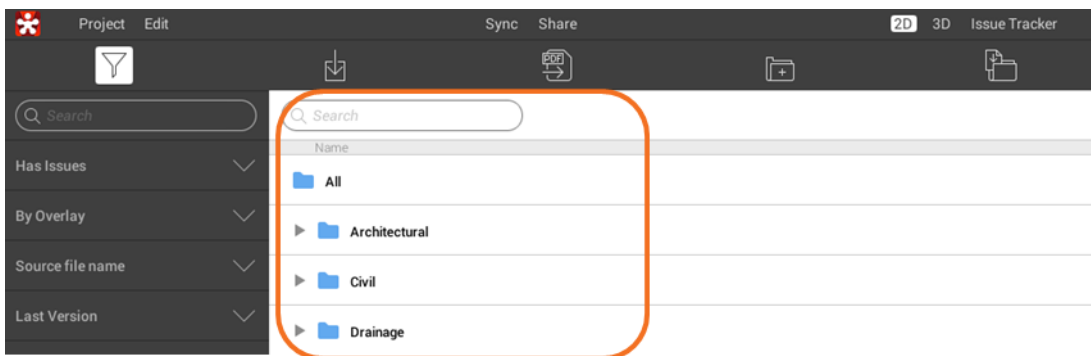


Figure 6 Revizto 2D Environment - Drawing folder structure

6.2.2 Dynamic linking of 2D and 3D Overview

Where the model authoring software allows it, the dynamic linking of 2D and 3D information should be utilised in Revizto. This enables greater coordination and transparency in the reliability of information used (both 2D and 3D) in construction.

The below diagram conveys the link between the environments.

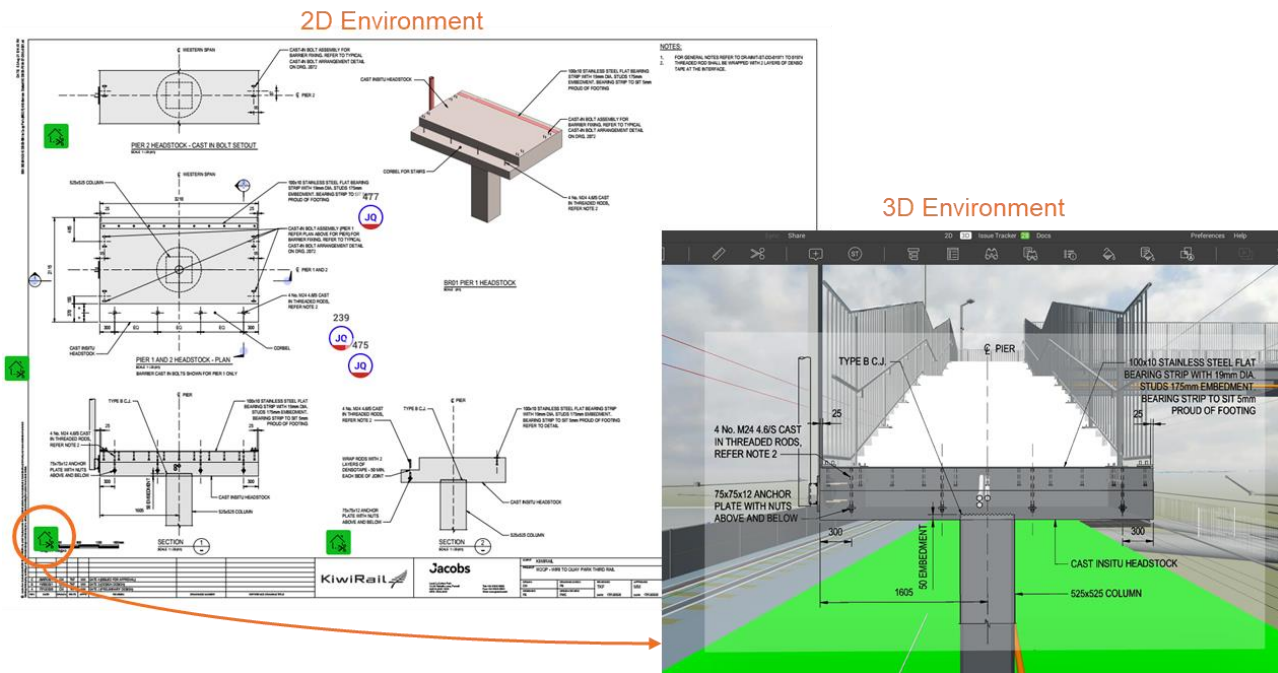


Figure 7 2D overlay on 3D model.

During the design phase of a project, models are updated in Revizto at an agreed frequency and as highlighted in the projects DEXP (typically fortnightly) however drawing deliverables are completed at the end of a design phase. To keep a dynamic a connection between the iterative model updates and the static drawings the following workflow has been developed.








- **Coordinate only export** – Drawings are exported from the model authoring software to Revizto enabling the “export sheet coordinates only function”. This will push blank drawing sheets to Revizto however they will have the coordinates and positioning embedded into the sheet.
- **Export to PDF** – Drawings are to be exported from the model as PDFs following the naming convention outlined in 6.2. Drawings are to be uploaded to Revizto as per section 6.2. The PDF drawings will replace the empty sheets created from the coordinate only export.
- **Federated model updates** – The models can be uploaded iteratively as per the agreed frequency and the static drawings will link to the 3D model as shown in figure 4.


It should be noted that this is a new process to the industry and the workflow might vary depending on the model authoring software used. The KiwiRail Digital Engineering team will support where the workflow requires more or different steps to enable the 2D and 3D dynamic link.

7 Viewpoints

Viewpoints are used to direct teams to points of interest within the 3D environment. These can be configured within a folder structure, and for KiwiRail projects the following viewpoint structure will be implemented:

Table 4 Revizto Viewpoints

Type	Title	Description
	Home	The home view for the whole project.
	Chainage	<p>This folder will contain viewpoints looking up the alignment (with 0km behind) for each km along the alignment. Where a project contains multiple lines (or alignments) then subfolders will be used to identify the line (e.g., NIMT). Projects without alignment data may exclude this folder (e.g., vertical building projects).</p> <p>Creation and management of viewpoints within this folder will be the responsibility of the KiwiRail DE Team.</p>
	Stations	<p>This folder will contain viewpoints for each railway station along a linear alignment. As with chainage this may contain a nested folder structure to identify different lines.</p> <p>Creation and management of viewpoints within this folder will be the responsibility of the KiwiRail DE Team.</p>
	Task Team [n]	<p>These folders will be assigned based on the task team configuration from the CDE. Creation and management of viewpoints within this folder will be the responsibility of the task team members.</p> <p>For large/complex projects with multiple delivery and task teams this folder structure may be nested. The decision for this will be made in agreement with the KiwiRail digital engineering team.</p>
	Signal sighting	Where main line alignment work is included in the project scope this folder will include viewpoints for signal sighting to each signal head. Viewpoints will be positioned by the design team, in consultation with the signals engineer, based on the line speed.
	Existing State	<p>This viewpoint will feature all existing condition data (e.g., underground services, point clouds, photogrammetry meshes) and will provide a view of the project site in its pre-project state, with all other data hidden from view.</p> <p>Creation and management this viewpoint will be the responsibility of the KiwiRail DE Team.</p>
	Current State	This viewpoint will feature as-constructed geometric data provided during monthly “as-built” data drops, with all other data hidden from view. It is intended to give the most up to date representation of the project.

		Creation and management this viewpoint will be the responsibility of the KiwiRail DE Team.
	Future State	<p>This viewpoint will feature design models, and other geometric data that will remain/exist on completion of the project, with all other data hidden from view.</p> <p>Creation and management this viewpoint will be the responsibility of the KiwiRail DE Team.</p>

8 Map Navigation

Map tool in Revizto enables users to navigate through the project from a bird's eye view making it easier to understand where they are within the model. From this view users can double click to be teleported to an alternative location. The map tool also allows users to view the 3D environment from different 'levels' which are traditionally based on floor levels within a building.

The map tool can be accessed from the toolbar in the 3D view, as well as within the mark-up view in the issue tracker.

In order to maximise the functionality of this tool model authors must ensure that rooms and grids are exported to Revizto from the authoring file (where applicable) as illustrated in figure 7.

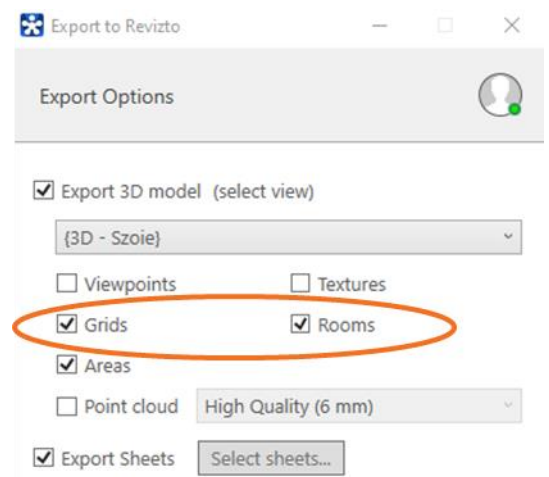


Figure 8 Export to Revizto dialog box

9 Issue Tracking and Communication

The issue tracker environment within Revizto is the single source of truth for all coordination issues identified on a project. Issues are identified in either the 2D or 3D environment. Metadata is then assigned to the issue. This enables a data driven approach to managing coordination on the project. With a consistent approach to how metadata is applied, KiwiRail are able to draw insights into the state of the project, and across its portfolio, at a given time.

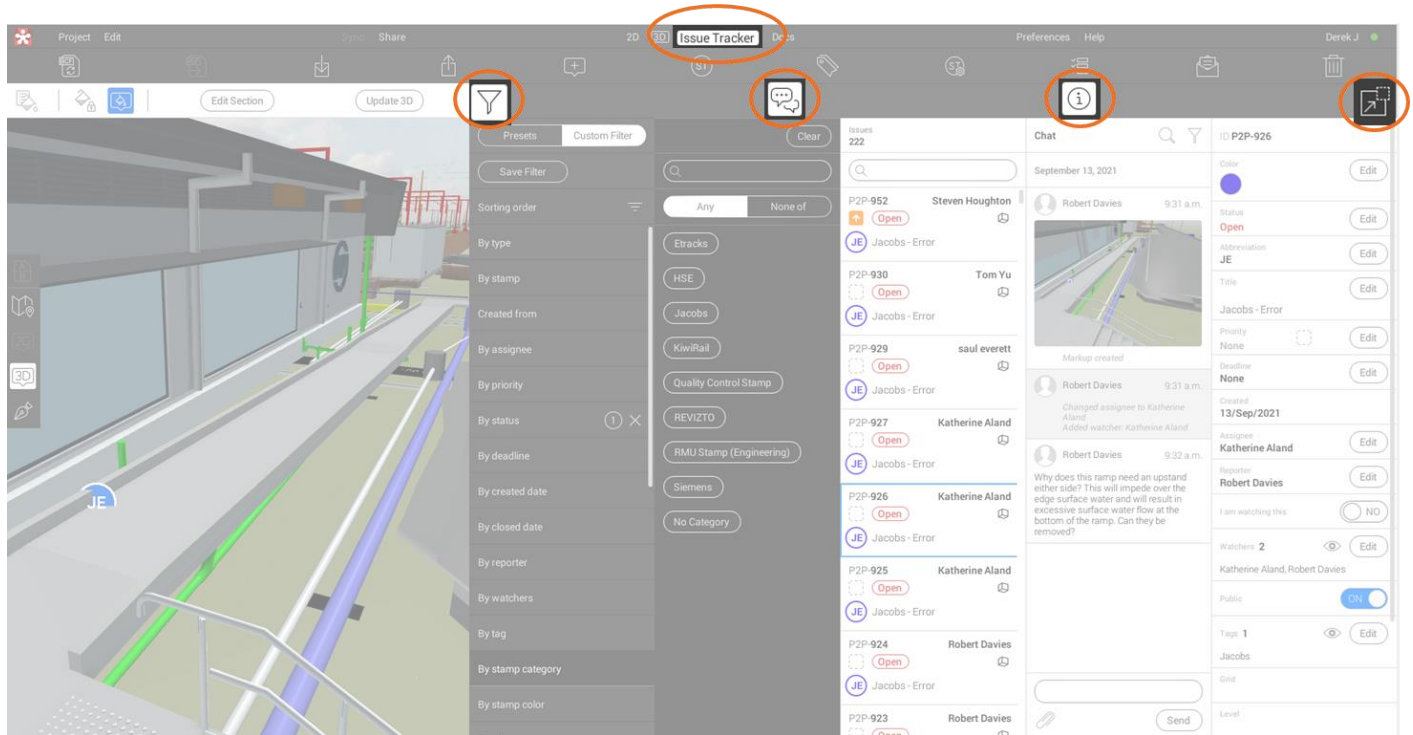


Figure 9 Revizto Issue Tracking Environment



Issue Filtering – This allows you to filter issues within different meta data fields, for example by stamp, by tag etc.



Chat – This contains all comments made against an issue by different project members and can be considered the golden thread for the issue.



Issue Metadata – This contains the meta data associated to the issue as outlined in section 9.3



Minimise / Maximise – This enables you to minimise / maximise all of the issue tracking tabs

9.1 PROJECT ISSUE TYPES

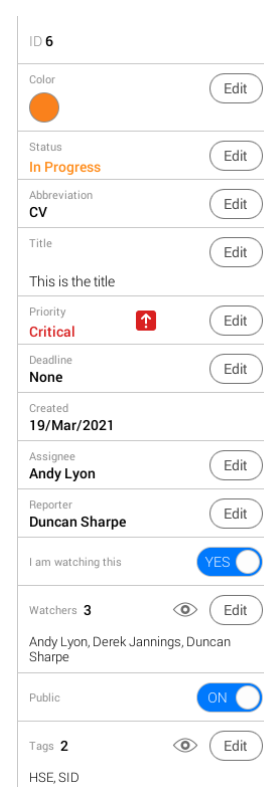
An issue can be created in Revizto for anything a project team member needs to coordinate, communicate, or collaborate with another project member. The word issue can often have a negative connotation associated with it, however in the context of collaboration environments on KiwiRail projects it should be thought of as an important topic or problem for debate or discussion that needs to be resolved.

At a high level there are two key types of issues that should be generated within Revizto, these are:

- Automated clash detection issues: These are rule-based issues established within Revizto, such as conflicts between sleepers and underground services. They can involve both hard clashes and clearance checks, as specified in the KiwiRail Information Standard Part 2 and the project's Digital Engineering Execution Plan (DEXP). Using Revizto to carry out these automated clash checks is

KiwiRail's preferred method, However, if a supplier opts for alternative automated clash detection methods, such as Navisworks, and intends to sync these clashes with Revizto, approval from KiwiRail's DE team is necessary.

- All other issues: These are issues created directly in Revizto and can be for any number of reasons but ultimately require something to be coordinated or communicated with another team member in a collaborative way. Examples of this include:
 - A team member reviewing the model identifies a design element that may not be practical in the onsite context. The team member responsible for the project will generate an issue within the model, assign it to the relevant team member for coordination, and include the necessary metadata in the issue.
 - Revizto is used in a Safety in Design (SiD) workshop to provide visual context of the project. SiD risks are recorded as issues in Revizto during the workshop to be resolved at a future date.



9.2 STAMPS

There are two ways in which an issue can be raised in Revizto, either by “creating an issue” or by “placing a stamp”. All KiwiRail projects are configured to prevent plain issues from being created and regardless of the tool used within the software to create the issue you are required to select a stamp when creating an issue.

Stamps are prefilled issues with three/two-letter prefix visible both in the 3D and 2D Environment. The intent of using stamps is to create efficiencies and streamline the project team communication workflows.

Stamps are created and managed by Kiwirail Digital Engineering team. The below table illustrates a set of pre-defined stamps which will be included in a Revizto project site prior to initiating the design collaboration process.

Stamp category	Stamp Label	Description
Disciplines (assigned to discipline lead)		Two letter prefix discipline code as per KiwiRail Information standard
Health, Safety and Environment (HSE)		Three letter prefix. Includes safety issues E.g., Safety in Design (SID),
Estimating		Three letter prefix. Includes estimating quarries e.g., Traffic/Transport query (ETE)
Digital Engineering		Three letter prefix. Includes DE queries and modelling issues

Creating stamps enable the project team to filter through stamps in different categories through the Revizto issue tracker, in order to prioritize or look for a particular issue.

9.3 ISSUE METADATA

When creating or exporting issues to Revizto, the following information about each of the issues reported within the issue tracking environment must contain the following information as a minimum:

- Issue title – This is automatically generated from the issue stamp used to create the issue (for issue stamp description, however where possible it should be updated to a title that provides more context of the issue (refer section 9.1.2)
- Issue status – Open, In-progress, or Closed issues

- Issue Priority – Blocker, Major, Minor, or Trivial (Refer to section 9.2.1 for issue priority description)
- Issue Assignee – Who is responsible for the issue?
- Issue Reporter – Who is the reporter of the issue, and the date the issue was created? Note: This information is automatically generated
- Issue Watchers – People who need to track the issue.
- Issue Tags – Organise and address specific issues.
- Whether it is a public or private issue.

9.3.1 Issue priority Description

The Issue priority level is defined as per the options outlined in the below table. It is designed to notify the issue assignee, and the issue watchers how urgent a particular issue may be. The response time for the issues raised in Revizto will be within the timeline set out in the table below for each issue priority level defined.






Priority Level	Description	Response Time
Blocker 	Issues that are blocking the design and/or construction work and affecting the project critical path.	Within 48 hours
Critical 	Issues that are considered critical to the design and construction process.	Within 1 week
Major 	Issues that are considered important to the design and construction process.	Within 2-3 weeks
Minor 	Issues that, while considered important to the correctness of the model, will generally be changing on a regular basis throughout the design and construction phase. Minor Issues requiring further design input during detailed design will be elevated to Major.	As agreed in alignment with project deliverables
Trivial 	Not important to the design and construction process, but it is required to be resolved.	As agreed in alignment with project deliverables

Figure 10 Issue Priority

9.3.2 Issue Tags

Tags are used on KiwiRail projects for two purposes: to allow cross-project insights, and to provide further filtering of specific issues. Tags can be project and discipline specific and should be assigned to issues when they are created. Where stamps contain pre-defined tags, these must not be modified or removed as these have been set to be consistent across the KiwiRail capital projects portfolio. This consistency allows KiwiRail to create cross-project reporting dashboards, for example all Safety in Design stamps will contain the SiD tag to allow KiwiRail to track the risk profile of this issue type.

When working in the Revizto Issue tracker, the issue tag enables the project team to communicate and extract specific information from the project by creating a filter around the tag and present in an organized fashion.

Under the issue tracker, the tag tool can be accessed at the centre right of the toolbar, as illustrated in the below snapshot:

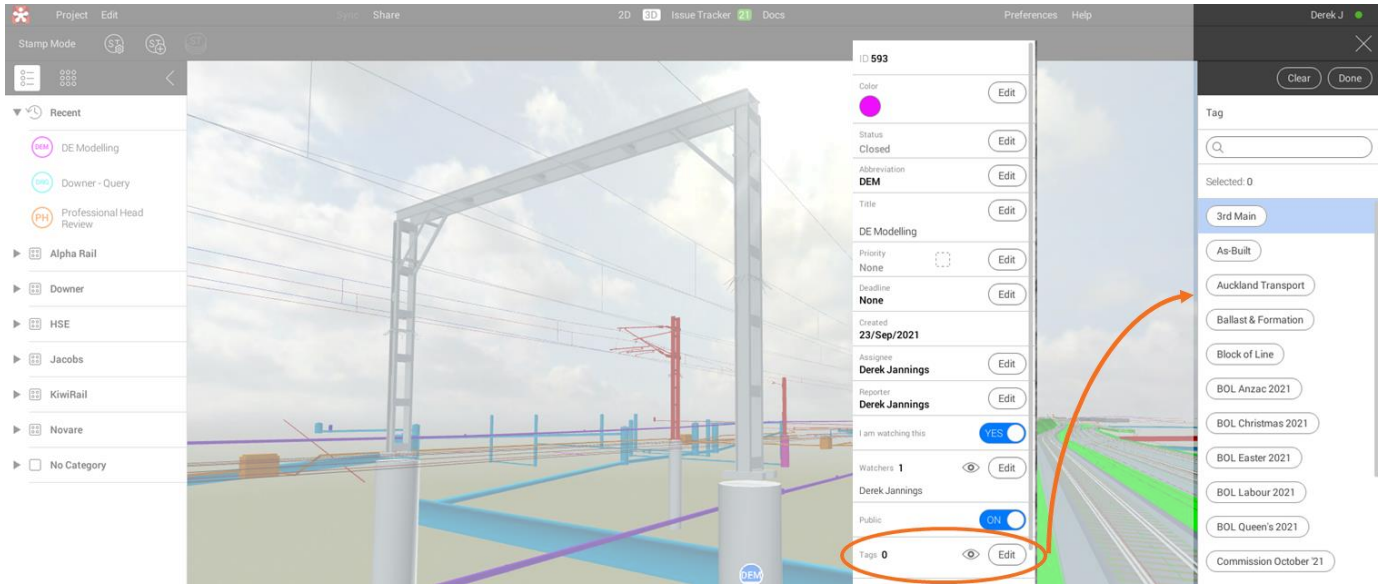


Figure 11 Adding tags to an issue.

When the toolbar is selected, Revizto will reveal all the custom tags that have been created in the project. Each tag created has the ability to associate itself with several issues in the project and further filter those issues for tracking. For example, if a set of issues in the project collaboration environment is required to be communicated through the coordination meetings and be easily filtered through the list of project issues, a specific tag is created and assigned to those specific issues individually. The naming convention for issue tags shall be logical and consistent with other tags which may exist in the tag toolbar.

This process will create efficiency in communication and allows the project team members to clearly understand the issues and capture an increased value in the conversation.

10 Search Sets

Search sets are a way to group models or model elements into specific categories in the 3D environment. This enables users of all experience levels a simplified way to search and filter models. Users can easily isolate or hide models based on the search set grouping. Search sets can also be used in the clash automation function in Revizto.

Collaborative environments democratise 3D information for a wider project audience and search sets are a key tool within Revizto to enable this. KiwiRail views search sets as a way to enable people to easily navigate and decipher 3D information.

10.1 SEARCH SETS STRUCTURE

As KiwiRail’s Digital Engineering Framework aligns with the ISO19650 Information Management standard, this is considered when structuring search sets in Revizto, and supports a consistent approach to how we manage information across our portfolio of capital projects. This also creates a consistent experience for users both internally and externally who deliver or engage with capital projects KiwiRail delivers.

As a minimum, projects should have a **Project Information Model (PIM)** folder and an **Asset Information Model (AIM)** folder. Within the PIM there should also be a Design Intent Model folder and Existing Conditions Model Folder. The AIM will provide search sets for viewing as-built models which are developed on the project. An example of this is shown in Figure 10.

Depending on the size and scale of the project, the need for granularity of different search set folders will differ. This should be agreed in the implementation phase of the project and outlined in the Digital Engineering Execution Plan (DEXP).

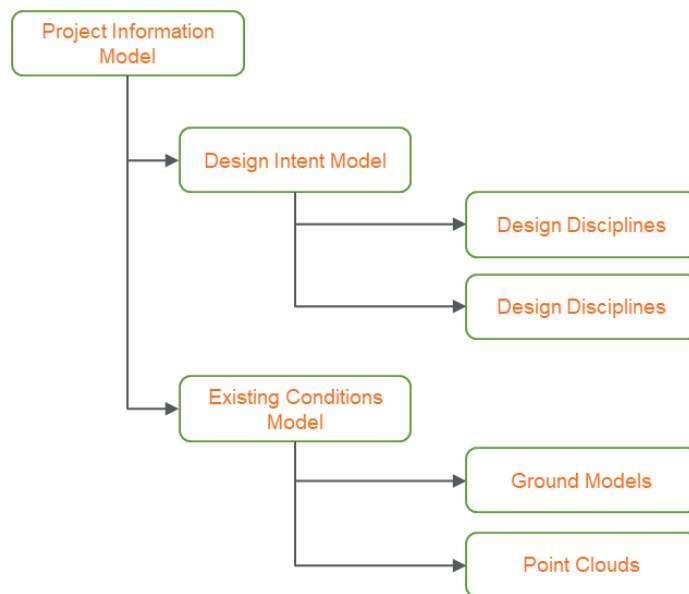


Figure 12 3D Environment - Search Sets breakdown example

11 Properties

The 3D object properties dialog in Revizto, as shown in figure 11, allows the project team to select a 3D object and review the information associated with that object within the 3D environment. The delivery team use the property palate to:

- When an object is selected in the 3D environment, search for specific information in that object properties pane.
- Generate a search based on property selection.
- Add custom properties to object inside the Revizto project and allow those properties to be used for various types of search sets, filtering, data export, etc.
- Create sets of favourite properties with logical and consistent naming convention. These properties are used by everyone who is involved in the project and only need to see the object metadata which are important to them.

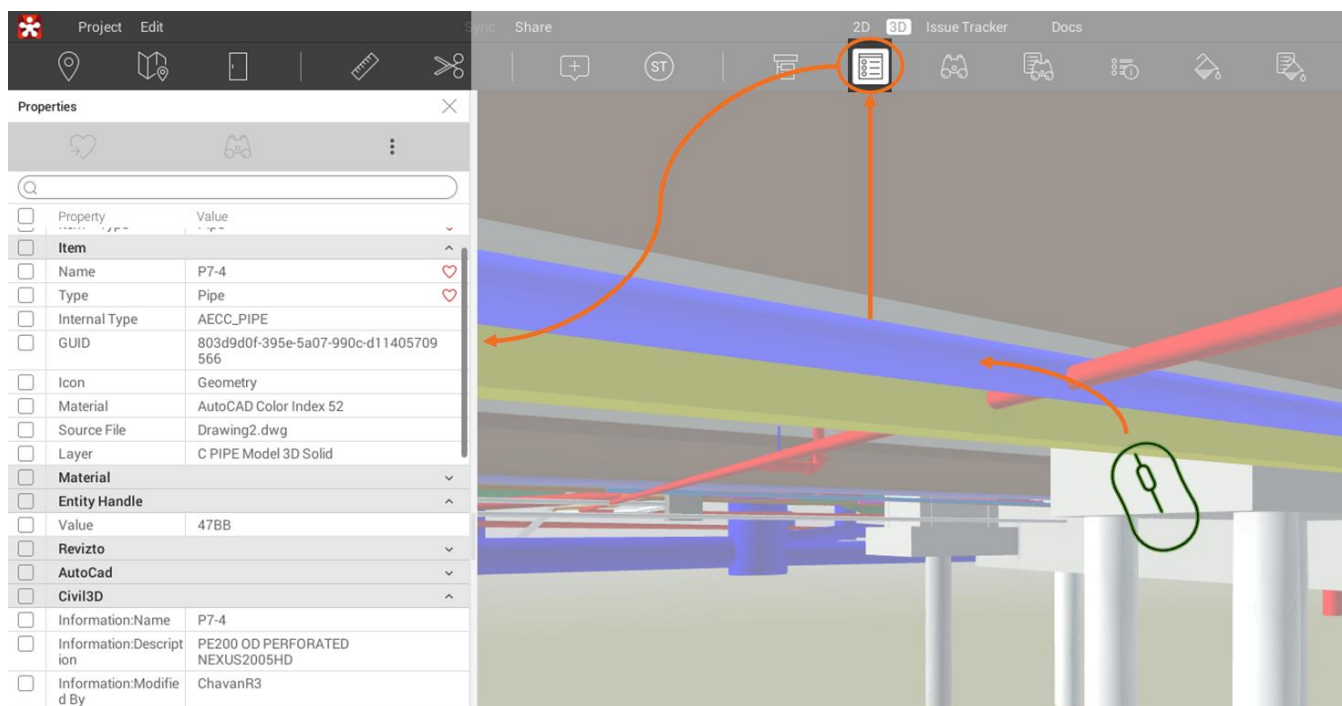


Figure 13 Properties

12 Appearance Profiler

The appearance profiler allows the project team to configure and pre-define the appearance of various model elements. As a minimum, this tool is to be used to demonstrate the status of objects (where applicable), such as, whether the object is an existing or as built.

13 Training & Support

Training and support will be provided by KiwiRail DE team to demonstrate the KiwiRail way of working within the Revizto environment. This will enable each project team to leverage the full functionality of the tool, share data, and collaborate in an efficient and effective manner.

Furthermore, KiwiRail has created a Story Maps page ([found here](#)) that features a collection of instructional videos. These videos are designed to assist individuals in utilising Revizto for the successful delivery of their KiwiRail projects.

14 Appendices

14.1 APPENDIX 1: TERMS AND DEFINITIONS

Term(s)	Definitions	ISO 19650 term
Appointed party	<i>Other consultants, sub-consultants to the lead appointed party, who is the provider of information pertaining to works, goods, or services.</i>	✓
Appointing party	<i>End client, Asset owner or similar. Receiver of information from appointed party pertaining to works, goods or services.</i>	✓
Asset	<i>Item, thing, or entity that has potential or actual value to an organisation.</i>	✓
Asset information model (AIM)	An Asset Information Model (AIM) is a model that compiles the data and information necessary to support asset management, that is, it provides all the data and information related to, or required for the operation of an asset. – <i>Source NBS</i>	✓
Asset Life cycle	Life of the asset from the definition of its requirements to the termination of its use, covering its conception, development, operation, maintenance support and disposal.	✓
Author/Owner	The person responsible for the content in the information container.	
Building information modelling (BIM)	Use of a shared digital representation of a built asset to facilitate design, construction, and operation to form a reliable basis for decisions Note: BIM is a process for sharing structured information	✓
Classification	Information classifications allow information objects to be grouped for the purpose of common, agreed controls. Examples of controls may include object permissions, workflows, naming etc.	
Common data environment (CDE)	A system that manages the collaborative production, control and exchange of information based on a common standard and agreed access.	✓
Content engine	A content engine is a system designed to manage the production, control, and exchange of project information. Content engines are chosen based on the content they will manage	
Deliverable	Information container contractually agreed to be supplied to the client. The product of engineering and design efforts to be delivered to the client as digital files and / or printed.	
Delivery team	Lead appointed party and their appointed parties. Multi-organizational team working on a part of the project under a lead appointed party	✓
Design Intent Model	A stage of the project information model which demonstrates the early co-ordination of multidisciplinary design elements, including outline specifications and requirements.	✓
Digital Engineering Execution Plan (DEXP)	An agreed set of information to define the projects digital way of working during the delivery phase. The digital engineering execution plan may also be referred to as a BIM Execution Plan, Digital Work Plan, this may be dependent on industry or clients.	
Document	Information (meaningful data) and the medium on which it is contained. Container for persistent information that can be managed and interchanged as a unit. This can represent snap shots from the information model for a specific purpose. This is a synonym to information container	
Document code	A unique code attached to an information container for management purposes. The document code may also be referred to as the Information container code when applied to an information object.	
Information	For the purpose of this standard information is defined as geometric and non-geometric objects or set of objects that forms part of the project information model and ultimately the asset information model.	
Information breakdown structure	A means of grouping information objects by a common purpose. For example, by Work breakdown structure or plant area or facility.	

Term(s)	Definitions	ISO 19650 term
Information container	<p>A named persistent set of information retrievable from within a file, system, or application storage hierarchy.</p> <p>An information container can refer to a specific information object or a set.</p>	✓
Information life cycle	Information on a project goes through several stages starting with the requirements for information to the final archiving of the information after project closure.	
Information object	<p>A specific information container such as a document, geometrical model or piece of data which is produced, received, or referenced during the delivery of the project.</p> <p>This is a synonym to information container</p>	
Information set	<p>A set of information objects grouped for the purpose of information control. This control may include reporting, quality assurance or workflow state change activities.</p> <p>Information sets will be typically applied to define groups of information objects delivered as part of the transmittal process. For example, an engineering work pack containing a number of information objects.</p>	
Issued	<p>An information object, or information package, that is distributed either internally or externally formally via a transmittal. The act of issuing may be carried out for many reasons and is defined by status coding.</p> <p>Typically, information is issued at defined workflow state changes such as Shared and Published.</p>	
Lead appointed party	"Lead consultant", EPC (Engineering, Procurement and Construction) or similar	✓
Master Information Delivery Plan (MIDP)	The MIDP (Master Integrated Deliverable Register) serves as a comprehensive record generated by the supplier It meticulously documents all anticipated deliverables encompassing the entire contract scope and designates responsibility for each. Additional details for each deliverable are also captured, encompassing its document number, design package, and the specified due date	✓
Metadata	Data that describes the information container stored in a common data environment (For example: project number, title, life cycle state, revision, etc.).	
Native	Term used for the information objects original file format created by the authoring application. E.g. docx, dwg, dgn, or rvt	
Phase	A point in time of an asset life cycle examples include opportunity, delivery and operational.	
Project	<p>Unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost, and resources.</p> <p>For the purpose of this standard, a project is the full life cycle from initiation project hand back/closeout according to the KiwiRail CPAD Manual.</p>	
Project Information Management	Project Information Management is the application of management techniques and computer software to collect project information, communicate it within and outside the organization, process it to enable managers to make quicker and better decisions and ultimate disposition through archiving or destruction.	
Project information model (PIM)	A Project Information Model (PIM) is a model that compiles the data and information necessary to support design and construction phase of an asset, that is, it provides all the data and information related to, or required for the build of an asset.	✓
Project team	Appointing party and all the delivery teams	✓
Published	<p>An information container is identified as ready for use outside the delivery organization, its actual use is typically defined by status coding clearly defines its allowed use and may enable it to be used to support different life cycle phases.</p> <p>Typically, it will be formally issued to the employer or contractor at this life cycle phase and in a suitable format.</p>	
Rendition	A non-editable version of a native information container, typically a PDF or 3D review format such as Autodesk's Navisworks or Bentley's iModel.	

Term(s)	Definitions	ISO 19650 term
Retention period	<p>A time period applied to records to ensure retention of information to meet legal obligations and support business continuity.</p> <p>Retention periods are governed by the KiwiRail Information Management Policy, KRG-IS008-POL0.</p>	
Revision	<p>A formal label stored on an information container to formally identify it from previous copies of the information container. Typically, revisions are incremented to reflect changes in life cycle states. Revisions may be alpha or numeric characters or a combination of both.</p> <p>Note: Revision numbers within the KiwiRail CDE are alphanumeric (e.g. P01) and are automatically assigned based on review/approval workflows.</p>	
Shared	<p>Once development of a deliverable has reached a suitable point and has been suitably checked, reviewed, verified, and approved, it may be shared outside of the immediate task team.</p> <p>Typically, this is the point at which the design may be translated and made available for cross discipline coordination. The information container may also be issued for external quality assurance review and/or verification processes.</p>	
State	<p>A state represents the different areas of the Common data environment workflow through which information objects transition.</p> <p>The only defined states applied by this standard are Work in Progress, Shared, Published and Archived.</p>	
Status code	<p>A formal label stored on an information container to formally identify the allowed use of the information container in a specific state in the workflow. (This term is contained in ISO 19650 and is also known as a suitability code).</p>	✓
Supplier	<p>Supplier is used as an all-encompassing term for any party contracted to KiwiRail to undertake any form of work, which could include design (by a design consultancy) or construction (undertaken by a contractor).</p>	
Task Information Management	<p>The management of information sets defined by individual activities or tasks. Each activity has a task information delivery plan (TIDP) which described its information container, format, schedule etc.</p> <p>Task information delivery plans are combined to form a master information delivery plan (MIDP).</p>	
Task team	<p>Individuals assembled to perform a specific task.</p> <p>One or more task teams are appointed by the delivery team.</p> <p>Small projects may define a single task team.</p>	✓
Version	<p>Versioning is a system-controlled copy of the information object to define an auditable history of change.</p>	
Virtual Construction Model	<p>The virtual construction model provides information describing the detailed design, and should be relied upon for construction sequencing, methodologies, and other construction planning, before commencing construction on site.</p>	✓
Work breakdown structure (WBS)	<p>A means of breaking up the delivery of a project scope into packages, typically defined by a hierarchical coding system.</p> <p><i>“deliverable oriented hierarchical decomposition of the work to be executed by the project team.” – PMBOK definition.</i></p>	
Work in progress (WIP)	<p>The first state in a workflow at which effort is applied, ongoing development of a task or deliverable prior to review and approval for share outside the originating task team.</p> <p>Typically work in progress is the only state where an information container can be edited.</p>	✓
Workflow	<p>The automation of a business process, in whole or part, during which information or tasks are passed from one participant to another for action, according to a set of procedural rules, a series of states.</p>	