MRC GUIDELINES FOR THE CREATION OF ADAC V5.0.1 XML FILES USING 12D MODEL

Version 2019.012A (19 December 2019)

TABLE OF CONTENTS

VERSION NO	DESCRIPTION AND DISTRIBUTION	DATE	COMMENTS
2017.03A	INTERNAL REVIEW	01/03/2017	DRAFT FOR DISCUSSION
2017.04A	POST TRIAL AMENDMENTS	28/04/2017	PREPARATION FOR ISSUE
2017.05A	ORIGINAL ISSUE	11/05/2017	-
2019.12A	V5.0.1 UPDATE	19/12/2019	-

1 PURPOSE

Various software tools are available to capture the necessary details and asset attributes required to produce a compliant Asset Design As Constructed (ADAC) XML file. An ADAC XML file will form part of the "As-Constructed" submission bundle for most Mackay Regional Council (MRC) projects.

Currently MRC uses 12d Model software to create ADAC XML files. MRC, along with 12d Model Solutions, has created a series of toolbars and files to assist Surveyors and Designers in the creation of XML files validated against the ADAC Schema.

This document aims to be a quick guide on the use of 12d Model, focused on the steps required to produce an ADAC XML file using the MRC setup files provided in the 'MRC Consultants Pack'. Detailed assistance and advice on the use of 12d Model should be sourced from 12d Model Solutions, who offer specific ADAC training.

The following webinar also offers an insight into the creation of ADAC XML files using 12d Model: https://youtu.be/ooEuiMJxMQA

2 WHAT IS XML?

For background information on the purpose and use of XML files refer to Mackay Regional Council's *Guidelines for Creation and Submission of ADAC XML Files*

3 CREATION OF ADAC XML USING 12D MODEL

The procedure for creating an XML file within 12d Model utilises the ADAC menu, for which MRC has produced a toolbar. The toolbar aims to reduce confusion and minimise the options available/required. The following step-by-step procedure has been written for version 14 of 12d Model and will guide a Surveyor/Designer through the process of creating a valid ADAC XML file.

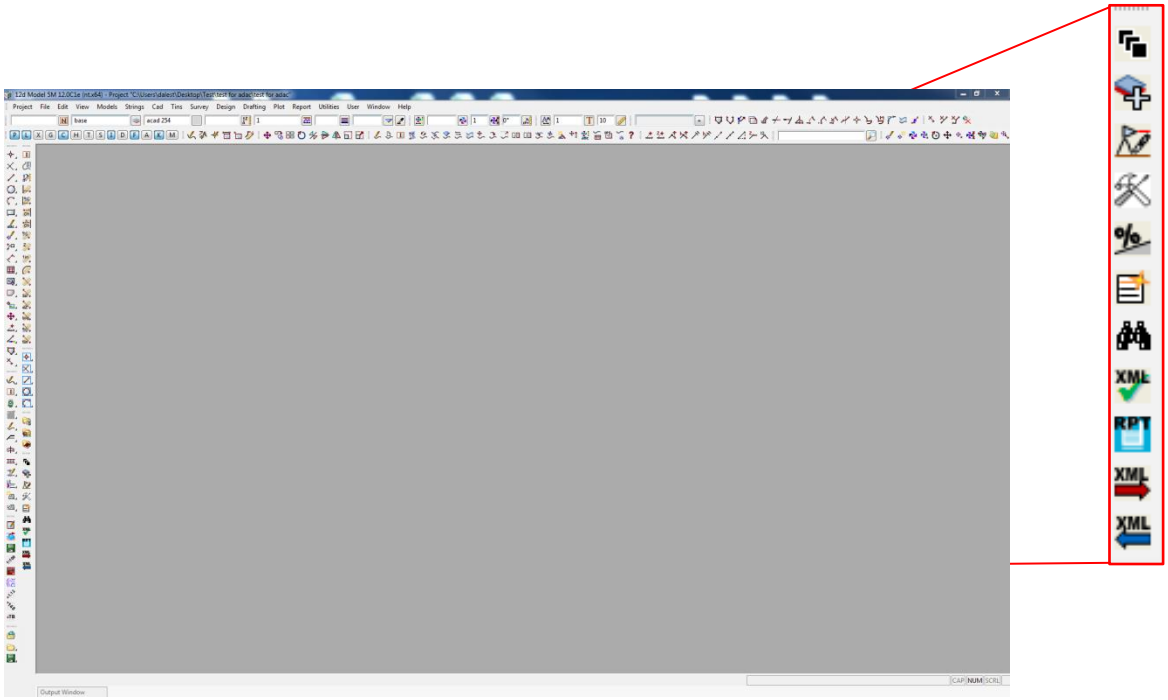
Note: For the following procedure to work, the survey "As-Constructed" data must be coded using MRC's naming conventions. Refer to MRC Guidelines for "As-Constructed" and ADAC Survey Pick-up *(available on MRC's website) for more details regarding MRC's survey codes and how best to utilise them in the ADAC process.*

3.1 Step 1 – Updating MRC Customised 12d Folder

Update the MRC customised 12d folder to incorporate the additional ADAC toolbars. The folder can be found within the *'MRC Consultants Pack'* using the MRC Fileshare. Ensure that all directory paths within the *.4d files are directed towards your local file locations.

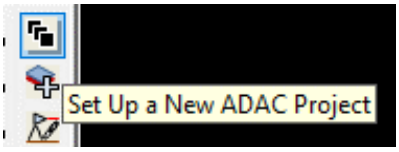
3.2 Step 2 – Create a new 12d Model Project and setup the Workspace

Once you have created a new 12d Model project, navigate to the MRC ADAC toolbar (*MRC ADAC 5.0 Survey*), within the MRC Environment file.



On the *MRC ADAC 5.0 Survey* toolbar, select the 'Set Up a new ADAC Project' button (first icon) to generate the required views used during the attribute application process (chain).

This will generate the following views:



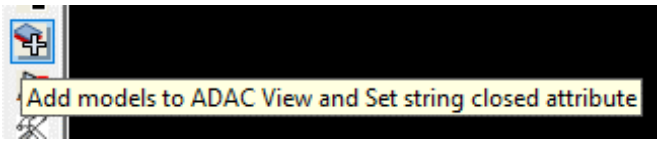
- Plan Survey to map to ADAC
- Plan Survey ready for ADAC

The workspace is now setup for the ADAC process.

3.3 Step 3 – Reading in an ADAC Survey File into 12d Model

Reading an ADAC Survey into 12d Model is the same as reading any form of file. This can either be done by using the File > Data Input option or by simply dragging and dropping the file.

With the survey now in 12d Model, the Surveyor/Designer should add the relevant models to the 'Survey to map to ADAC' view.

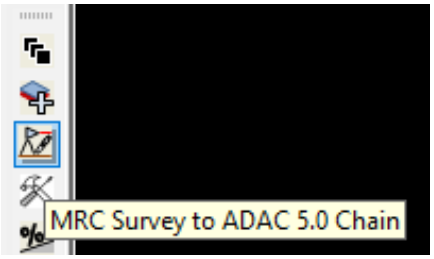


To do so, select the 'Add models to Survey to map to ADAC and Set string closed attribute' button (second icon).

This button prompts 12d to run a chain that restores a 'view favourites' to the 'Survey to map to ADAC' view. It will add all of the relevant models to this view that are required during the ADAC process. The chain also adds a string attribute named "closed" to all data in the project. This is used if the user chooses to export non-mandatory features to the ADAC *Supplementary* feature class.

Note: 'view favourites' is a feature of 12d V12 or newer. If you are using an older version, MRC has provided a screen layout file that can be utilised to restore the appropriate models (mrc-ADAC_Survey_to_Map_View_Restore.slx).

3.4 Step 4 – Running the ADAC Chain

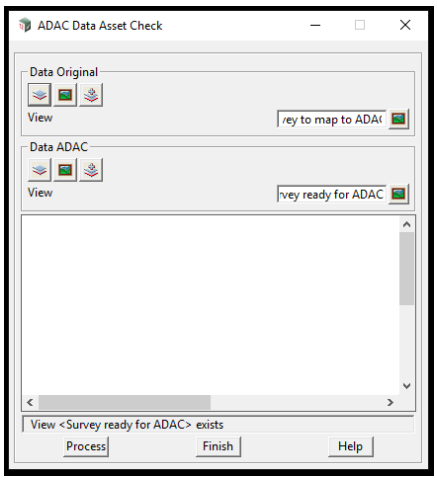


Select the 'MRC Survey to ADAC 5.0 Chain' button (third icon) to run the corresponding chain. If you are interested in the process that is completed, open the chain to view the steps.

Essentially, the chain converts the surveyed data into the correct ADAC format by using the attribute values that the Surveyor/Designer applied to the survey data, either during the survey or by using 12d macros.

3.5 Step 5 – ADAC Data Asset Check

Performing the 'ADAC Data Asset Check' ensures that no data has been 'missed' or 'left behind' during the chain process. To complete the process, select the 'ADAC Data Asset Check' button (seventh icon). This will load a prefilled panel; select 'Process' to compare the sets of data in the two ADAC views.



Any data that has not been read across by the chain will appear on this panel.

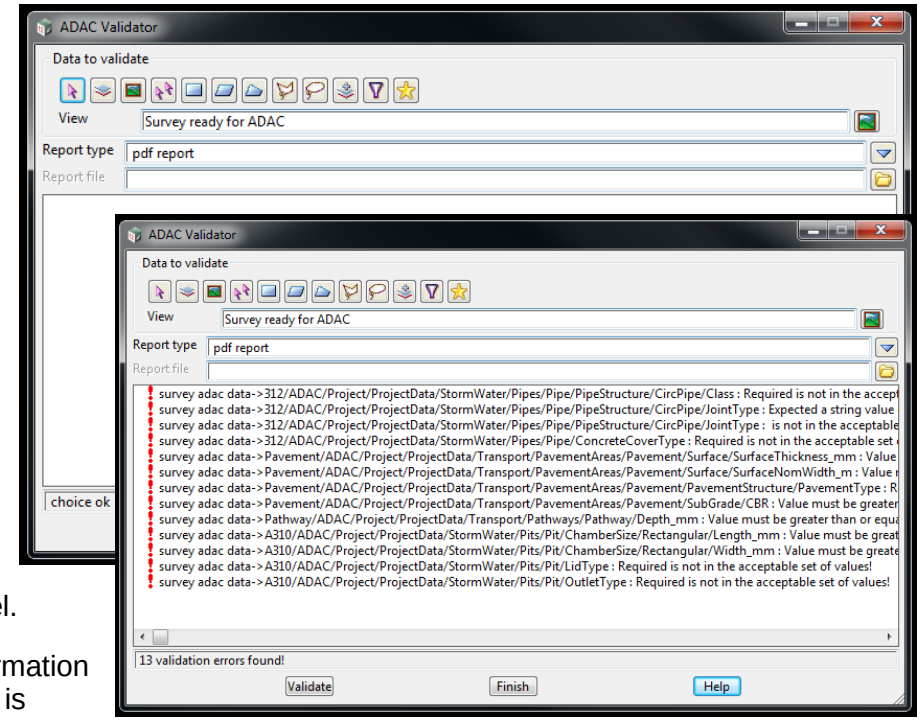
If there are any models that have not transposed, determine whether or not they are models required for ADAC purposes. If they are, check the corresponding map files to ensure that they form part of it.

If you are still finding mismatches, contact MRC for confirmation.

Note: this step will only need to be completed once and can be skipped when repeating the process if no new data has been subsequently added.

3.6 Step 6 – Validate the Data

Once the chain has been executed, the Surveyor/Designer will be able to validate the data to determine what additional attributes are yet to be completed

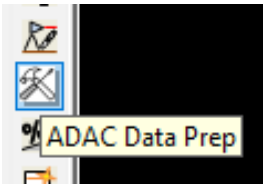


To validate the data, select the 'Validate' button (eighth icon) and the ADAC Validator panel will appear.

Select the 'Validate' button on the new window and a series of errors will appear in the panel.

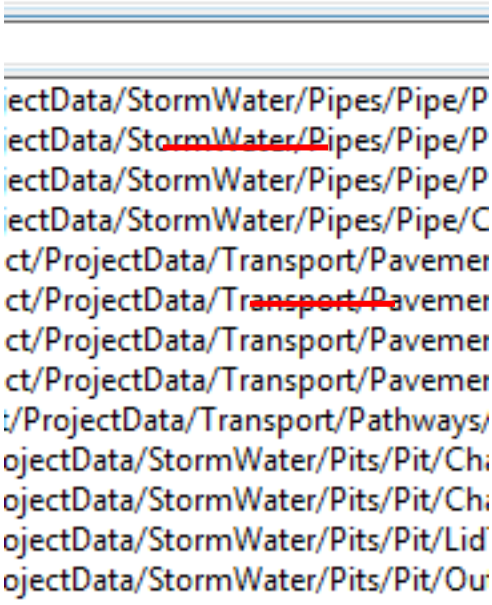
These errors are the asset information that has yet to be captured, but is required by Mackay Regional Council. You can select any of the rows, which will highlight the corresponding survey feature on the plan view.

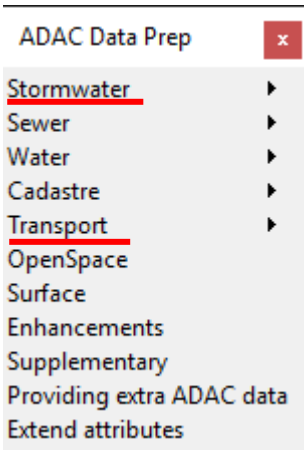
3.7 Step 7 – Applying Attributes to the Data

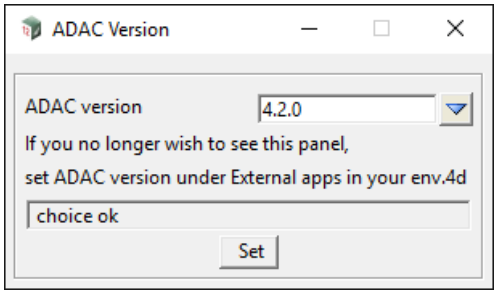


To apply the required attributes, select the 'ADAC Data Prep' button from the MRC ADAC toolbar (fourth icon). The ADAC Data Prep' menu will appear.

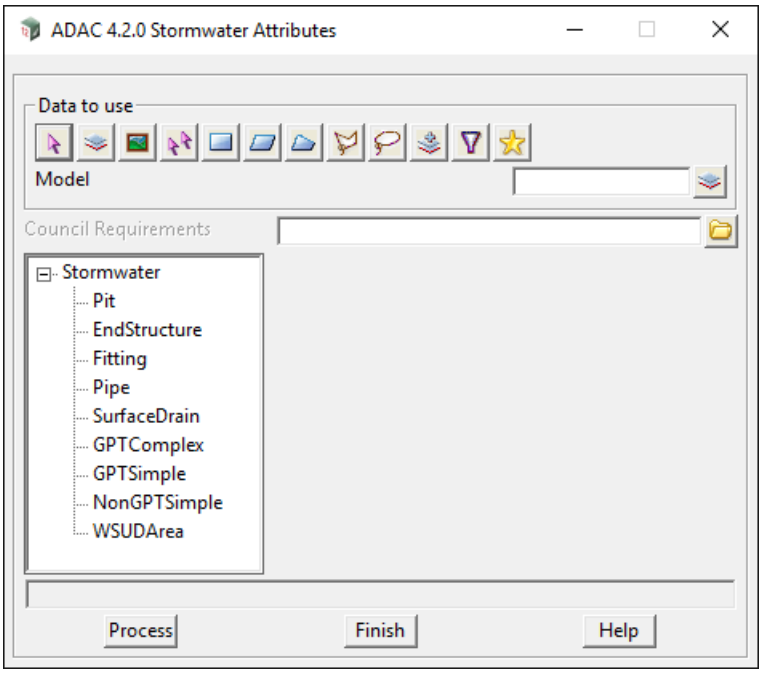
Paying attention to the ADAC validator and particular errors shown, you will find common names mentioned between this and the ADAC Data Prep options.







Select the appropriate option from the 'ADAC Data Prep' menu, select the current ADAC Schema and 'Set' on the ADAC Version window. The following example shows the 'Stormwater' option having been selected:



You should begin to notice a link between the macro (Pipes, Pavement, Pits etc.) fields and the file paths in the validation errors.

The designer should complete the required fields, either using the drop down menus or by filling the empty field with an acceptable value.

Note: the drop down menus contain <u>only</u> acceptable values for that particular field. For fields that do not contain a selection drop down, refer to MRC's Guidelines for Creation and Submission of ADAC XML Files for acceptable values.

Data can be applied to single strings, model, views, multi-strings etc. like most other panels within 12d Model. Select the 'Process' button on the panel to apply the attributes to the selected data.

3.8 Step 8 – Run Chain & Re-Validate

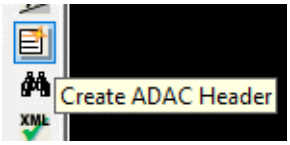
Once the Surveyor/Designer has completed applying attributes to the data where required, return to Step 4 and complete the process again.

The amount of validation errors will reduce each time. This process should be completed until there are 0 (zero) validation errors before moving to step 9.

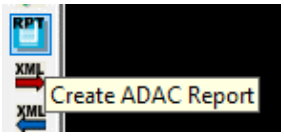
3.9 Step 9 – Create ADAC Header

To create the ADAC Header, select 'header' in the names list and create a CAD point somewhere outside the general extents of the survey. The point will present an 'H' symbol as shown.

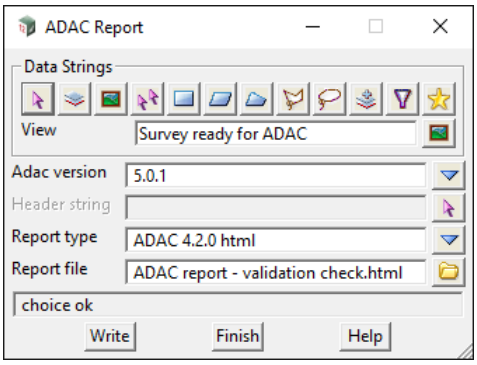
The Surveyor/Designer shall use the 'Create ADAC Header' button (sixth icon) on the MRC ADAC toolbar to fill in the information within the header editor. This information will be used during the report file creation and also during the final xml export for submission.



3.10 Step 10 – Create ADAC Report to Check for Errors



With zero validation errors after completing steps 1 – 8, the Survey/Designer should now run a report on the data to ensure that none of the fields contain the word 'required' or number '-999'. To do so, select the 'Create ADAC Report' button (ninth icon) on the MRC ADAC toolbar. This will load a screen layout file with fields prefilled. Simply select the header string and click 'Write'.

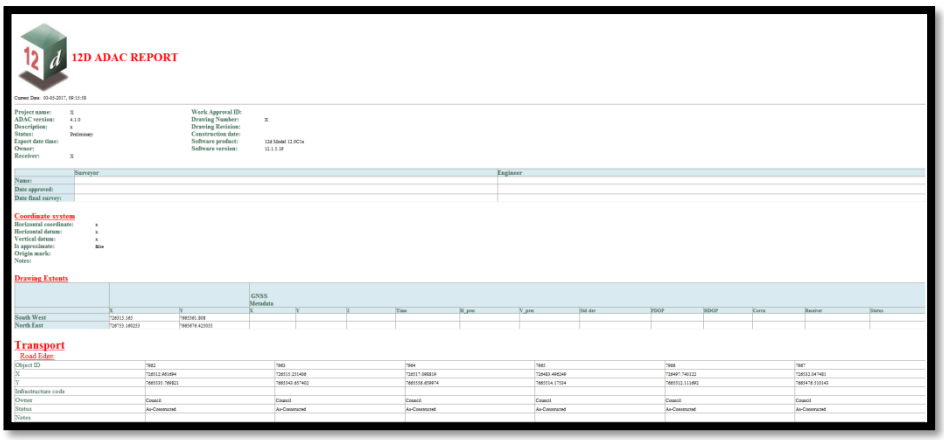


This will generate an .html report file similar to that shown below and will open in the default web browser.

The Surveyor/Designer will be able to complete a search (Ctrl+F) to find any instance where the word 'required' or number '-999' is found within the report.

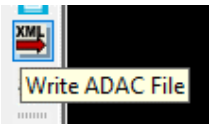
They should then return to 12d and complete steps 4 – 8 until the word 'required' and number '-999' does not appear in the report.

Once this is achieved, the file is now ready to be exported as a valid ADAC xml file.



3.11 Step 11 – Exporting XML File for Submission to MRC

With zero validation errors showing and no 'required' or '-999' values found in the ADAC report, the Surveyor/Designer is now ready to export the valid XML file for submission.



To export the XML file, select the 'Write ADAC file' button (tenth icon) on the MRC ADAC toolbar. A series of prompts will appear with 'Yes' and 'No' options. These are aimed to eliminate potential blunders that could have been made in the previous steps. Ensure that each prompt is read and considered prior to pressing 'Yes'. After completing the prompts, a window will appear for the export of the xml file. Again, the fields have been pre-filled with the correct information. Simply input the correct file name and select the write button to complete.

> *Note: For Capital Works Projects, this naming convention is used.*
>
> File Naming Convention: ********50.xml*** e.g. ***215050.xml***
>
> *Where ***** is the survey file number. The value of 50 represents that this is an ADAC survey and should increase by 01 for each amendment that is completed.*

The XML file will form part of the "As-Constructed" bundle and should be submitted to MRC as per Council's *Engineering Design Guidelines (D20) – Drawings and Documentation Guidelines*.

3.12 Hints, Tips & Tricks

The above method offers a process that will produce a valid xml file for MRC; however, there are several different methods within 12d to do so. Surveyors and Designers may vary the method used to produce the file so long as the final product suits MRC requirements. Below are a few notes to keep in mind when generating an xml:

- Use of the ADAC Manager
  - Validate and report on ADAC by element (i.e. stormwater, sewerage etc.)
  - Useful where different personnel are completing the different elements and you are only concerned with one in particular.

- Creating holes within a polygon
  - May be required where there are different pavement configurations or roundabout/medians that pavement does not extend under.
  - Found under CAD > Hole > Add
  - Multiple holes can be applied to a single polygon.

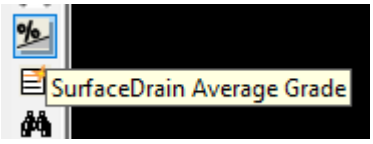
- Use of ADAC Data Prep
  - There are several tools that can be used to set attributes outside of those mentioned in the steps above. These can be found on the 'ADAC Data Prep' menu.
  - These tools will need to be used in order to set stormwater pit / pipe number attributes.
  - When using these tools, they should be used in a manner much like Step 7, continuing with the process.
  - For additional help on how to use these features, refer to the *12d Model Reference Manual*.

- Pavement width/footpath width when applying to a polygon/polyline
  - The ADAC schema dictates how the asset should be recorded. Where this situation occurs, a nominal average width should be recorded (e.g. pavement widths at intersections or footpath widths in CBD areas)

- Multiple pavement areas within survey area
  - The surveyor may not always be aware that multiple pavement formations exist beneath the finished surface. The Designer shall produce multiple pavement polygons based on "As-Constructed" information available should they be required.

- MaintenanceHole
  - Ensure that manhole chamber levels are taken at the surface and not at the invert of the chamber. The manhole depths (which are set by running the macro "*Set Pit Invert Att from Pipes"*) will be incorrect if this level is not at the surface. If you find that the centre of chamber level is at the invert – where it is easiest for the surveyor to survey - the model can be draped onto the ground tin and the chain re-run to amend the manhole depth attributes.

- SurfaceDrain Average Grade
  - If the average grade attribute has not populated automatically from the string properties, select the 'SurfaceDrain Average Grade' button (fifth icon) on the MRC ADAC toolbar, choose the SurfaceDrain data and 'Process.'



- If Data is being "left behind" in Step 5 – ADAC Data Asset Check
  - The mapfiles used to apply ADAC attributes to the survey data have been created based on data collected by a surveyor using 12d Field. If you are using data collected by another method or the data you are working with has had no attributes applied to it, it is likely that some data will not be transferring across to the 'Survey ready for ADAC' view. A surveyor using 12d Field collects the features listed in the table below using an additional attribute. These are then used as an "Att Key" in the mapfile to determine which ADAC attributes to apply. The 'MRC ADAC 4.1 Attribute Mapping' toolbar can be used to quickly apply these "Att Key"s to data in the office.

Asset	Code	Attribute	Value
StormWater Pipe	312	String/**Type**/Text	Circ Pipe
			Box Pipe
Sewerage PipeNonPressure/ PipePressure	743	String/**Pipe Type**/Text	Non-Pressure Pipe
			Pressure Pipe
OpenSpace ElectricalFitting	715	String/**Type**/Text	Power Outlet
			Switch Board/Meter Box
Transport FlushPoint	321	Vertex/**Owner**/Text	Council
		Vertex/**Status**/Text	As-Constructed
		Vertex/**Function**/Text	Cleanout

- Surveyors/Designers should make use of any information available to ensure the accuracy of the ADAC xml file. The use of design drawings, red pen mark-ups and verbal communication with construction personnel should all be used where possible.