



# **MRC GUIDELINES FOR THE CREATION OF ADAC XML FILES USING 12D MODEL**



*Version 2017.05A (11 May 2017)*

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## 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 files 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, valid with 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://www.youtube.com/watch?v=ooEuiMJxMQA&index=2&list=PLvBKANuJGV64sG2b8\\_lh4klITa84Ti9C](https://www.youtube.com/watch?v=ooEuiMJxMQA&index=2&list=PLvBKANuJGV64sG2b8_lh4klITa84Ti9C)

## 2 WHAT IS XML?

For background information on the purpose and use of XML files refer 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 will guide a Surveyor / Designer through the procedure.

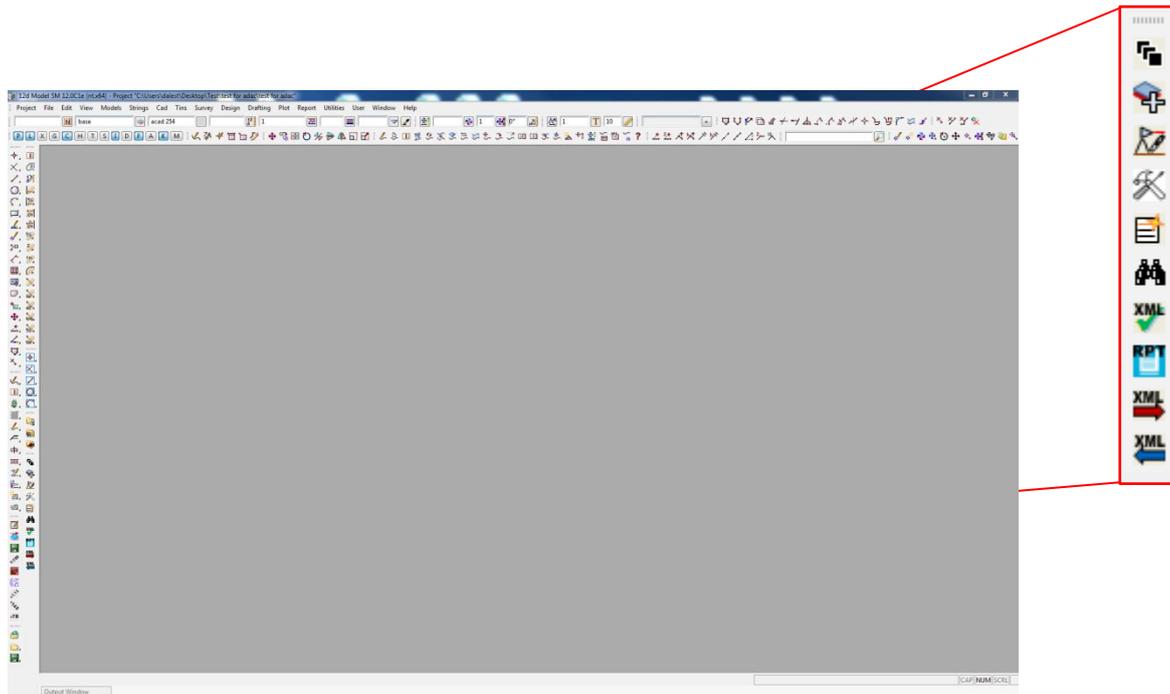
*Note: For the following procedure to work, the survey “As-Constructed” data must be coded using MRC’s naming conventions. Refer to MRC Guidelines for “As-Constructed” and ADAC Survey Pick-up for more details regarding MRC’s survey codes and how best to utilise them in the ADAC process.*

### 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

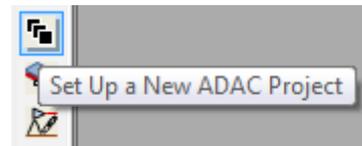
Once you have created a new 12d Model project, navigate to the MRC ADAC toolbar (*MRC ADAC 4.1 Survey*), which has recently been added to the MRC Workspace within the MRC Environment file.



On the *MRC ADAC 4.1 Survey* toolbar, select the ‘Set Up a new ADAC Project’ button (top 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



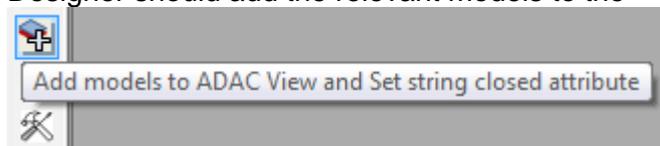
The workspace is now setup for the ADAC process.

### 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 View’ button (second icon).

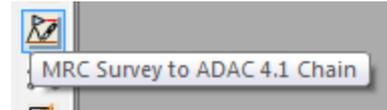


This button prompts 12d to run a chain that restores a ‘view favourites’ to the ‘Survey to map to ADAC’ view. It will add all of the relevant models to this view that are required during the ADAC process.

*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

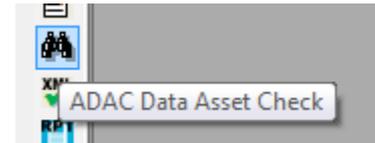
Select the 'MRC Survey to ADAC 4.1' button (third icon) to run the corresponding chain. If you are interested in the process that is completed, open the chain to view the steps.



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 (sixth icon). This will load a prefilled panel; select 'Process' to compare the sets of data in the two ADAC views.

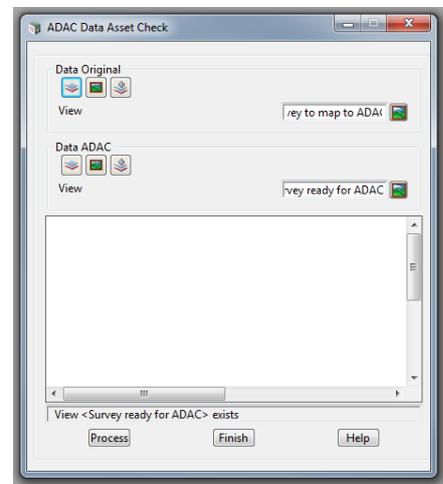


Any data that has not been read across by the chain will appear on this panel.

If there are any models that have not transposed, ensure that the models are 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.*

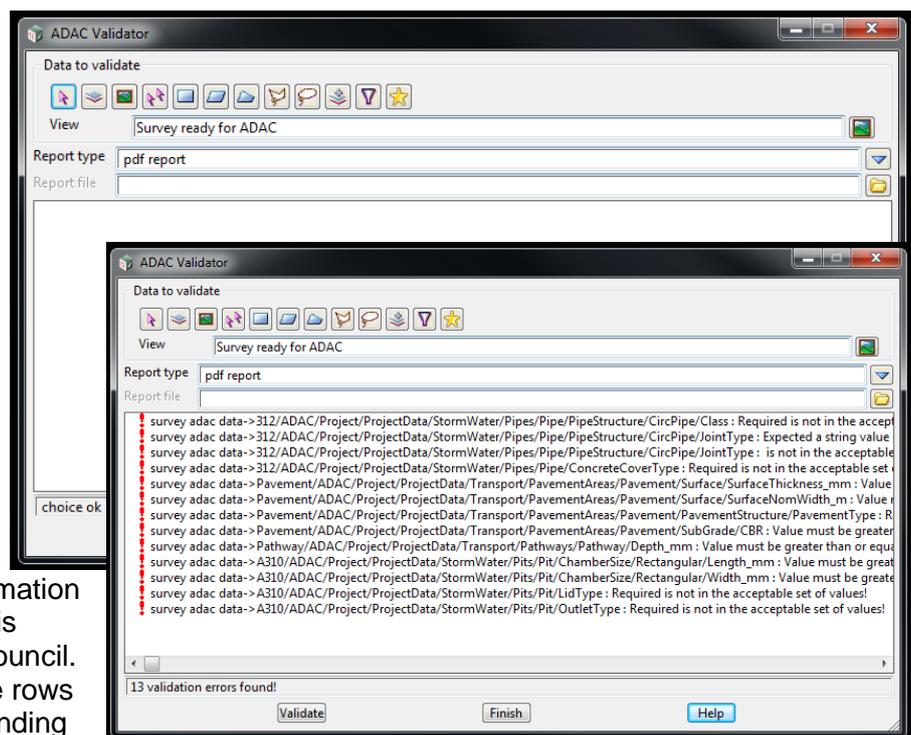


### 3.6 Step 6 – Validate the Data

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

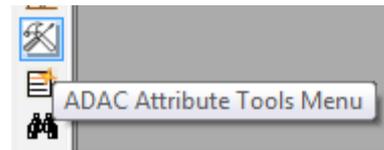
To validate the data select the 'Validate' button (seventh icon) and the following window will appear: Select the 'Validate' button on the new window and a series of errors will appear.

These errors are the asset information that has yet to be captured, but is required by Mackay Regional Council. You are able to 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 Attribute Tools Menu' button from the MRC ADAC toolbar (fourth icon). The following window will appear:

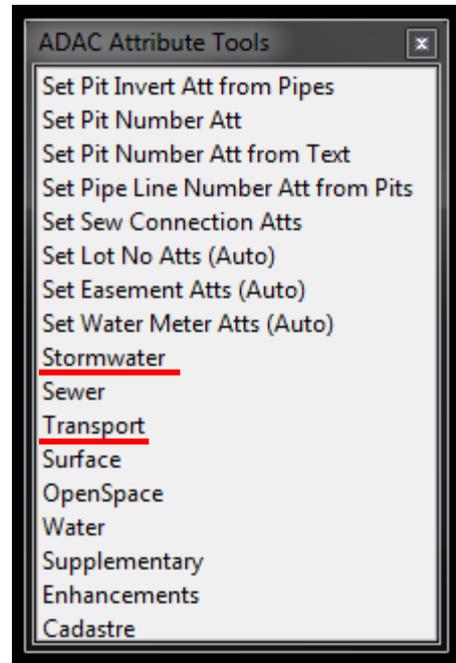


This panel is known as the 'ADAC Attribute Tools'.

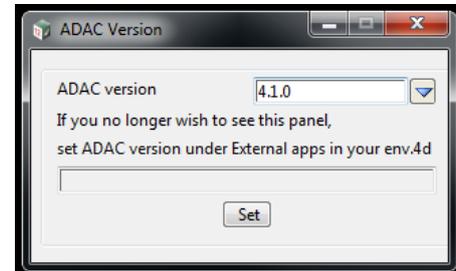
Paying attention to the ADAC validator and particular errors shown, you will find common names mentioned between this and the ADAC Attribute Tools.

```

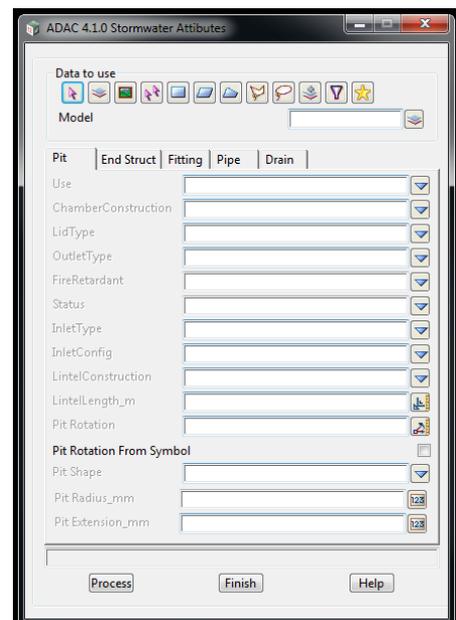
ectData/StormWater/Pipes/Pipe/P
ectData/StormWater/Pipes/Pipe/P
ectData/StormWater/Pipes/Pipe/P
ectData/StormWater/Pipes/Pipe/C
ct/ProjectData/Transport/Pavemer
ct/ProjectData/Transport/Pavemer
ct/ProjectData/Transport/Pavemer
ct/ProjectData/Transport/Pathways/
objectData/StormWater/Pits/Pit/Chi
objectData/StormWater/Pits/Pit/Chi
objectData/StormWater/Pits/Pit/Lid
objectData/StormWater/Pits/Pit/Ou
    
```



Select the appropriate ADAC Element macro from the 'ADAC Attribute Tools', 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 (Stormwater, WSUD, Sewer 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 only 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 macro panel to apply the attributes to the selected data.

### 3.8 Step 8 – Run Chain & Re-Validate

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

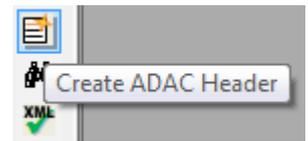
The amount of validation errors will reduce each time. This process should be completed until there are 0 (zero) validation errors before moving to step 9.

### 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.

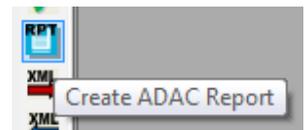


The Surveyor / Designer shall use the 'Create ADAC Header' button (fifth icon) on the MRC ADAC toolbar to fill in the information within the header editor. This information will be used during the report file creation and also during the final xml export for submission.



### 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 (eighth icon) on the MRC ADAC toolbar. This will load a screen layout file with fields prefilled. Simply select the header string and click 'write'.

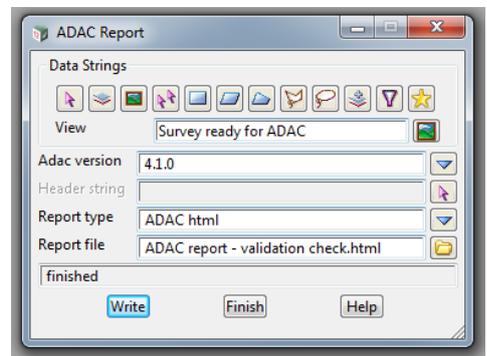


This will generate an .html report file similar to that shown below and will open in the default web browser.

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.



**12d 12D ADAC REPORT**

Current Date: 05-05-2017, 09:10:00

Project name:	X	Work Approval ID:	X
ADAC version:	4.1.0	Drawing Number:	X
Author:		Drawing Junction:	
Station:	Station	Construction date:	
Project date class:		Software product:	100 ADAC 11.07C
Owner:		Software version:	11.1.1.0
Revision:			

Name: \_\_\_\_\_ Engineer: \_\_\_\_\_

Draw approval: \_\_\_\_\_

Best Read (meters): \_\_\_\_\_

**Coordinate system**

International coordinate: \_\_\_\_\_

International datum: \_\_\_\_\_

Vertical datum: \_\_\_\_\_

As appropriate: \_\_\_\_\_

Origin: \_\_\_\_\_

Scale: \_\_\_\_\_

**Drawing Extents**

	GNSS	North	East	South	West
South West	25811.000	78504.000	78504.000	78504.000	78504.000
South East	25811.000	78504.000	78504.000	78504.000	78504.000

**Transport**

**Bound Edge:**

Chain ID	Start	End	Start	End	Start	End
1	25811.000m	25811.000m	78504.000m	78504.000m	25811.000m	78504.000m
2	25811.000m	25811.000m	78504.000m	78504.000m	25811.000m	78504.000m

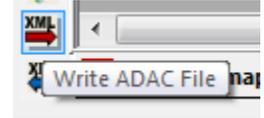
**Substructure code**

Code	Code	Code	Code	Code	Code
00000	00000	00000	00000	00000	00000
00000	00000	00000	00000	00000	00000

### 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 (ninth 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 as per the naming convention below and select the write button to complete.



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.

*Note: this naming convention is used for Capital Works Projects only.*

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. 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 that may be useful:

- 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 Attribute Tools
  - 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 Attribute Tool 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.
- Default values when information is unknown
  - Should there be a required field that was never needed / known, the following values should be input to remove any errors or ‘required’ instances and an explanatory note added to the ComponentInfo:
    - Integer - -333
    - Text attribute - NA
- Ensure that manhole chamber levels are taken at the surface and not at the invert of the chamber. The manhole depths (which are automated) 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.
- 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 be used where possible.