

# **Safety Module**

## **User Guide**

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National Transport Authority, Dun Scéine, Harcourt Lane, Dublin .

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	Name	Position	Date
Originated by	Shoham Vaich-Shkolnik	Graduate Transport Modeller	March 2021
Checked by	Jevgenija Guliajeva	Transport Modeller	March 2021
Approved by	Chris Bushell	Associate Director	March 2021
NTA Reviewer	Stylianos Papailiou	Transport Modelling PM	March 2021





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### Foreword

This document is designed to guide both new and experienced users through the main processes of the Safety Module as part of the NTA's Appraisal Toolkit. Note this tool and User Guide have been designed and developed for the V3 RMS models. It includes a troubleshooting section to help guide the user through any known issues that may arise through its use. For more detailed information on the module please see the Safety Module Development Report and Version Control Log.

It is assumed the user has prior CUBE and safety assessment experience.

#### 1 Introduction

#### 1.1 Background

This document is designed to guide both new and experienced users through the Safety Module of the NTA's Appraisal Toolkit. The Safety Module forms part of the NTA's Appraisal Toolkit, which has been built for efficient manipulation of regional model outputs that will support strategy development, assessment and scheme appraisal.

The main aim of the Safety Tool is to undertake the analysis of the impact of road accidents for transport schemes, primarily road schemes. It uses a bespoke version of the **CO**st and **B**enefit to Accidents – Light Touch (COBALT) Ireland spreadsheet and assesses the safety aspects of road schemes using detailed inputs of combined links and junctions that would be impacted by the scheme.

The safety appraisal is based on a comparison of the number of accidents on the transport network by severity and associated costs between a With-Scheme (Do Something) and Without Scheme (Do Minimum) forecast scenario.

To run the Safety Module, a complete RMS model run is required, which will automatically produce the modelling inputs required to run the Safety Module (road link type, road length, speed limit and forecast traffic volumes). The non-modelled inputs in the process are accident rates and costs.

The bespoke version of the COBALT Ireland spreadsheet has been developed by Transport Infrastructure Ireland (TII) for use with the regional transport models. This bespoke version automatically reads in path file locations, which are created by the Cube Voyager process. The current version of the COBALT Ireland spreadsheet **COBALT-Ireland\_2015\_06\_v0.8.xls.** 

This document is designed to guide both new and experienced users through the Safety Module of the NTA's Appraisal Toolkit. This document is split into sections that each describe an element of the process. The process is described below and where relevant the user is directed to the relevant section of the user guide. Note this tool and User Guide have been designed and developed for the V3 RMS models.

For more detailed information on the module please see the Safety Module Development Report and Version Control Log.

#### **1.2** Contents

This document is structured by the different elements of the process, as shown in Figure 1.1. These are broken down as follows:

Section 2 – Location of the Safety module, required programmes and macro settings





- Section 3 CUBE process
- Section 4 COBALT Ireland Spreadsheet
- Section 5 Troubleshooting
- Appendix A Input from RMS
- Appendix B Annualisation factors
- Appendix C Model machine matrix







Figure 1.1: Overview of Safety Module Process



## 2 Before you Start

## 2.1 Location of Safety Module

The latest version of the Safety Module is stored here:

NDFM:\04\_Data\Appraisal Tools\Apprasial\_Modules\_Version\_3\Safety

The 0\_Version\_Control subfolder contains the Version Control Log.

The 1\_ Program subfolder contains the Module files for the latest version.

The COBALT subfolder contains the COBALT excel Macro and the COBALT parameters file.

#### 2.2 Required Programs

To run the Safety Module the following programs must be installed on the local machine;



**CUBE Voyager V6 or above** 



Microsoft Excel 2010 or above -must be 64-bit version

Also included are two executables, all found at the \Program directory of the main directory. The two executables are:

- CBI\_Links.exe deals with link characteristics. This file takes multiple preparation files from the base and do minimum scenarios and combines them with the do something scenario to create the final CBI file.
- cbisplit.exe which splits the CBI files into 9900 links each. It takes the CBI file produced by the executable above and produces split CBI files along with a .txt file with the numbers of CBI files created.

The folder structure and required files to run this tool are shown at the bottom of this document in Appendix A.

Within Excel, ensure that macros are enabled, as shown below:

File – Options – Trust Centre – Trust Centre Settings...







Macro Settings – Enable all macros





Trust Center		? <mark>- x -</mark>
Trusted Publishers	Macro Settings	
Trusted Locations Trusted Documents	Disable all macros without notification	
Add-ins	<ul> <li>Disable all macros with nonneaton</li> <li>Disable all macros except digitally signed macros</li> <li>Enable all macros (not recommended; potentially dangerous code can run)</li> </ul>	
Macro Settings	Developer Macro Settings	
Protected View Message Bar External Content File Block Settings Privacy Options	■ Trust access to the <u>VBA</u> project object model	
	ОК	Cancel



#### 3.1 Introduction

This section lists, in a step by step process, how to run the Cube Voyager elements of the Safety Module.

The Cube Voyager element of the Safety Module process automatically creates the COBALT Input Scheme File and the Path File Locations Files, and also runs the COBALT Ireland spreadsheet, if specified. Section 4 discusses the COBALT Ireland spreadsheet and its outputs.

Within the main user interface of the Cube Voyager catalog, there are eighteen steps (see Figure 3.2), which either directly read in the script, or provide a linkage to other loops or script, and are run dependent on which key values are entered.

The 1<sup>st</sup> PILOT box checks if the base year model run type has been selected and directs Cube to the catalog directory.

The 2<sup>nd</sup> PILOT box creates the directories for storing the outputs.

The 3<sup>rd</sup> and 4<sup>th</sup> boxes determine which loops of the Cube process are required depending on which model type has been selected (Base, Do Minimum or Do Something).

Boxes 5 - 11 runs through the looping process and run, dependent on which model type has been selected (they all run the same process). These all follow the same process:

- A COBALT link type is assigned to the SATURN road network links, based on road link capacity indices (speed flow curve) or a combination of road speeds and the number of lanes
- The modelled peak hour traffic flows are converted from PCUs (passenger car units) to vehicles, and then converted into Annual Average Daily Traffic (AADT) flows. The flows are converted to AADT flow using annualisation factors, as described in appendix B. These should be adjusted by the user if necessary
- Creation of the COBALT preparation file which contains all necessary link information used by the COBALT Ireland spreadsheet including link ID, COBALT link type, distance, speed and AADT traffic flows
- Creation of the COBALT Input Scheme File by re-formatting the COBALT preparation file
- Automatic splitting of the COBALT Input Scheme file if it is larger than 9900 entries.

Loop control 12 is set out to automatically run COBALT as many times as necessary for the split COBALT Input Scheme File.

PILOT box 13 determines if COBALT needs to be run, and if not exits out of the loop.

MATRIX box 14 and PILOT box 15 determine how many times the initial cbi file was split, and therefore how many times the loop should run.

PILOT box 16 creates the path file locations file, which consists of the required input files to run the COBALT Ireland spreadsheet and the location of the output file. This is adjusted based on which loop the run is currently on.

PILOT box 17 automatically runs the COBALT Ireland spreadsheet for a Do Something scenario only.

Currently PILOT box "Run Summary Statistics Extraction Spreadsheet" is turned off, with the executable order set to 0. This spreadsheet imports the outputs of the Safety Module into an excel spreadsheet, however, this spreadsheet has been superseded by the Summary Tool which offers a more robust method of importing outputs.

PILOT boxes 18/19 end the CUBE process, while PILOT box 20 deletes all the files in the Temp folder.





## **3.2 Opening the Cube catalog**

- 1) Open up the Cube Voyager catalog Safety Module.Cat
- 2) Allow it to update all file paths if required (Figure 3.1)



#### Figure 3.1 Cube prompt to update links

The main Cube view as seen by the user is presented in Figure 3.2.







Figure 3.2: Cube process

![](_page_12_Picture_4.jpeg)

![](_page_13_Picture_1.jpeg)

## 3.3 Creating a New Scenario (Child)

For each model scenario that requires analysis, a "child" needs to be created, which is then run through the Cube process.

**3)** On the main user interface (as shown in Figure 3.2), within the columns on the left-hand side, in the Scenario section, right click on the appropriate regional model, and click "Add Child" (Figure 3.3)

	🖉 = 🛞   =	Safety M	Iodule A	pplication Tools					Cube (Licensed	to Jacobs Global)			- a ×
Run	Go to Add Parent Group	Export	Branch × X Delete	Network Highway Poblic Transpo Voyager	Gn Generation D Distribution rt Fr Fratar	n M Matrix n P Plot TII Trnbuid	Analyst Analyst Ave	Av L C enue Land Cluster Other	Cargo Cargo Cargo	s • Process Templates	E Order Check File Boxes * Snap & Refresh Al * katen Tools G		
Scenario		÷>		<b>O</b> Welcome to Ca	.be 6.4	× 🙂 Saf	ety00.app, Safety Module	(Scenario ' 🗙					* X
6: Base - 50 - 50 - 50 - 50 - 50	Add Child Add Skiling Deite Edityfun Scan Rename Properties	rie			Loop Model Loop 3	Script File	PROT     T      Jump to Mod     SonetFile      S      PROT     6      PROT     6      PROT     7      PROT     8	el Type FLOT A 4 Sectored Base	•	Scret Th	PILOT 2 Sectored Base Dos Something Dos Something 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	V1 Scheme Fac V2 Scheme Fac V3 Scheme Fac V3 Scheme Fac	
Scener	o () Kers	4 >>	×			Loop 12 Script Fil Record Fil Script Fil Record Fil Script Fil Script Fil	Script Fil MATRIX 14 DBALT run file paths 14 DBALT run file paths 14 16 PILOT 17	e PILOT 13 Part File Part File Part Data 1	Script File	PILOT 15	End Script File PILOT 18 Script File PILOT 19 Script File PILOT 20		×

Figure 3.3: Add Child

![](_page_13_Picture_7.jpeg)

![](_page_14_Picture_1.jpeg)

4) Enter the model name of the scenario and any other key information to identify the scenario (such as forecast year of growth) (Figure 3.4)

![](_page_14_Figure_3.jpeg)

Figure 3.4: Re-naming Child

**5)** Enter any further properties to identify the scenario (Figure 3.5). Press OK and this will open up the Cube catalog keys

Scenario Prope	rties	23
Name:	D5_DM_2022	
Code:	0025	
Description:		
	Cancel	

![](_page_14_Picture_7.jpeg)

![](_page_15_Picture_0.jpeg)

#### **Figure 3.5: Scenario Properties**

## 3.4 Catalog Keys

The Cube Voyager catalog contains a number of different catalog keys, which need to be filled in by the user. The inputs to these keys will determine different elements of the Cube process.

6) Open the new scenario key entry and complete the four pages of catalog keys. Table 3.1 to Table 3.4 lists each catalog key, the value to be entered along with a description for each of the pages, a screenshots of which are shown in Figure 3.6 to Figure 3.9.

Catalog Key	Value to be Entered	Description
Model Type	Base, Do Minimum, Do Something, All	Describes the transport model type. All includes running Base, Do Minimum and Do Something in sequential order
Zones	1953 (ERM), 836 (WRM), 834 (SWRM), 654 (SERM), 650 (MWRM)	Total number of zones in each regional model – default values need to be checked
Choose Network Extent (Default No)	No	Future functionality in place that will allow sectoring of transport network.
RunCOBALT	Yes, No	Only select Yes if running a Do Something Model Type (or All)
Current Year (YY)	YY	The year in which the Safety appraisal is being undertaken. Only applicable to Do Something Model Type. Enter 0 if model type is Base or Do Minimum
Scheme Opening Year (YY)	YY	The year of the scheme opening. Only applicable to Do Something Model Type. Enter 0 if model type is Base or Do Minimum
Base Run Settings – only er	nter values if Base Year	Model Type is being used
If not running, enter "-" for	non-numeric values a	nd "0" for numeric values
Base Run ID	Base Model Run ID	The Run ID for the Base Year transport model
Base Model Year	YY	Base Year in YY format (currently 18)
Base Demand Scenario	Base Demand Scenario ID	The Base travel demand scenario ID
Run Base from remote location?	ü	ü if not running Base Model on the RMS network

#### Table 3.1: Catalogue Keys Page 1

![](_page_15_Picture_8.jpeg)

![](_page_16_Picture_0.jpeg)

#### Table 3.2: Catalogue Keys Page 2 (Figure 3.7)

Catalog Key	Value to be Entered	Description
Forecast Year 1 – only ente	r values if running at le	ast 1 Forecast Year
If not running, enter "-" for	non-numeric values ar	nd "0" for numeric values
FY1 Do Minimum Run ID	Do Minimum Run ID	The Run ID for the Do Minimum transport model
FY1 Do Something Run ID	Do Something Run ID	The Run ID for the Do Something transport model
Forecast Growth	Forecast Growth Scenario ID	The forecast growth travel demand scenario ID
Year	YY	1 <sup>st</sup> forecast year of model input
Run DoMin from remote location?	ü	ü if RMS outputs are not in the same directory as the Safety Module Catalog
Run Do Something from remote location?	ü	Location of RMS outputs on the network if previous key isü

## Table 3.3: Catalogue Keys Page 3 (Figure 3.8)

Catalog Key	Value to be Entered	Description			
Forecast Year 2 – only ente	r values if running at le	ast 2 Forecast Years			
If not running, enter "-" for	non-numeric values a	nd "0" for numeric values			
FY2 Do Minimum Run ID         Do Minimum Run ID         The Run ID for the Do Minimum transport model					
FY2 Do Something Run ID	Do Something Run ID	The Run ID for the Do Something transport model			
Forecast Year 2 Growth	Forecast Growth Scenario ID	The forecast growth travel demand scenario ID			
Second Forecast Year	YY	2 <sup>nd</sup> forecast year of model input			
Run DoMin from remote location?	ü	ü if RMS outputs are not in the same directory as the Safety Module Catalog			
Run Do Something from remote location?	ü	Location of RMS outputs on the network if previous key isü			

![](_page_17_Picture_0.jpeg)

<b>Table 3.4:</b>	Catalogue	Keys	Page 4	(Figure 3.9)
-------------------	-----------	------	--------	--------------

Catalog Key	Value to be Entered	Description					
Forecast Year 3 – only enter values if running 3 Forecast Years.							
If not running, enter "-" for non-numeric values and "0" for numeric values							
FY3 Do Minimum Run ID	Do Minimum Run ID	The Run ID for the Do Minimum transport model					
FY3 Do Something Run ID	Do Something Run ID	The Run ID for the Do Something transport model					
Forecast Year 3 Growth	Forecast Growth Scenario ID	The forecast growth travel demand scenario ID					
Third Forecast Year	YY	3 <sup>rd</sup> forecast year of model input					
Run DoMin from remote location?	ü	ü if RMS outputs are not in the same directory as the Safety Module Catalog					
Run Do Something from remote location?	ü	Location of RMS outputs on the network if previous key isü					
Do Minimum Run ID	DO NOT USE	Key not in use					

![](_page_17_Picture_4.jpeg)

![](_page_18_Picture_0.jpeg)

G C Stafety Module		Cube (Licensed to SYSTRA UK (MVA))	8 🖷 🗆
Rerge     Refresh     Properties     Catalog    Catalog    See Run Report     See Run Report	Add Report Add Sinsert Sibling Add Sinsert Sibling Add Sinsert Sibling Add Sinsert Sibling Add Report Edit Report Reports rai Reports rai		
Scenario 🗜	🔟 Safety00.app, Safety Module (Scenario ' 🗴 📶 Scenario - SWRI	1.DS_AAK (Application Sa ×	▼ X
	Model Type	Do_Something	
D-SWRM Base_AAF DM_AAH DS_AAK	Zones Choose Network Extent (Default No) © No C Yes	792	
SERM MWRM	RunCOBALT G Yes C No		
Data P	Current Year (YY) Scheme Opening Year (YY)	18 25	
Inputs     Outputs     Reports	Base Year Base Run ID	AAF	
	Base Model Year Base Demand Scenario	18	
	Run Base from Remote Location?	ידע	
	Network Location	C:\Safety\CubeProgram	
e <sup>™</sup> a App ₽ ⊕ <mark>Safety Module</mark>			
Key         Value         A           Key         Value         A           Scen. Name         D5_AAK         D5_AAK           Model Type         Do_Something         Zones           Zones         792         P		Save Close Next Back Run	

Figure 3.6: Catalog Keys Page 1

![](_page_18_Picture_4.jpeg)

![](_page_19_Picture_0.jpeg)

Contemporary Safety Module		Cube (Licensed to SYSTRA UK (MVA))	23 <b>6</b>
Merge Refresh Properties Catalog 7	nd Sibling Add Report t Sibling Edit Report © Scenario Reports ©		
Scenario       ₽         Base       Pri Do Minimum R         WRM       Pri Do Minimum R         SWRM       Pri Do Minimum R         DM AAH       Pri Do Minimum R         Pri Do Something         MWRM         Base_AAF         Do Math         SERM         WWRM         State         Pri Do Something         Reports         Pri Do Something         Pri Pri	Safety Module (Scenario ' × Canario - SWRM.DS_AAK (Application Sa × * 1 un ID AAH Run ID AAK N00 22 m remote location? C:\Safety\CubeProgram ing from remote location? C:\Safety\CubeProgram		- X
Keys Received a second		Save Close Next Back Run	

Figure 3.7: Catalog Keys Page 2

![](_page_19_Picture_4.jpeg)

![](_page_20_Picture_0.jpeg)

Image: Safety Module       File       Scenario		Cube (Licensed to SYSTRA UK (MVA))	8 🖷
≪ Merge     S Refresh     E Properties     Catalog	QI Append Sibling     Image: Sibling       Add     Sibling       Add     Sibling       Add     Sibling       Sibling     Image: Sibling       Add     Sibling       Sibling     Image: Sibling       Add     Sibling       Add     Sibling       Add     Sibling       Sibling     Image: Sibling       Add     <		
Scenario 🏨	🚾 Safety00.app, Safety Module (Scenario ' 🗴 🚾 Scenario - SWRM	DS_AAK (Application Sa ×	<b>▼</b> X
Base - EM - WRM - SWRM - Base_AAF - OM_AAH - <u>OS_AAK</u> - SERM - MWRM	Forecast Year 2 FY2 Do Minimum Run ID FY2 Do Something Run ID Forecast Year 2 Growth Second Forecast Year Run DoMin from remote location? Network Location Run Do Something from remote location?	-       -       -       0	
	Network Location	NetworkDrive]CatalogFolder	
Dota     A     Dota     Dota     Dota     Dota     Dota     Reports			
()         Keys         P           Key         Value         A           Scen. Name         D5_AAK         P           Model Type         D0_Something         Zones           Zones         792         V		Save Close Next Back Run	

Figure 3.8: Catalog Keys Page 3

![](_page_20_Picture_4.jpeg)

![](_page_21_Picture_0.jpeg)

Image: Safety Module       File       Scenario		Cube (Licensed to SYSTRA UK (MVA))	88 ° 🖷 🗆 (\$) A
Image: Merge     Image: Merge       Image: Refresh     Image: Run Script       Image: Properties     Image: Run Report       Catalog     Image: Run Report	P     Append Sibling     Add Report       Si Insert Sibling     Edk Report       Achid     Delete Scenario       Si Delete Scenario     Export Report		
Scenario 🏨	🚾 Safety00.app, Safety Module (Scenario ' 🗴 🌃 Scenario - SWRM	D5_AAK (Application Sa ×	- X
Base     ERM     WRM     SWRM     SWRM     Base_AAF     OG_AAH     OG_AAH     OG_AAK     SERM     MWRM	Forecast Year 3 FY3 Do Minimum Run ID FY3 Do Something Run ID Forecast Year 3 Growth Third Forecast Year Run Do Minimum from Remote Location? Network Location		
	Run Do Something from Remote Location?	house strategy	
	Network Location	NetworkDrive[CatalogDir	
📰 Data 👎	Do Minimum Run ID	DO NOT USE	
Inputs Page Outputs Page Reports			
e <sup>®</sup> e App P B <sup>®</sup> <mark>Sal'ety Module</mark>			
Keys         P           Key         Value           Scen, Name         DS_AAK           Model Type         Do_Something           Zones         792		Save Close Next Back Run	
	e		

Figure 3.9: Catalog Keys Page 4

![](_page_21_Picture_4.jpeg)

![](_page_22_Picture_0.jpeg)

![](_page_22_Picture_1.jpeg)

## 3.5 Checking of Catalog Keys

The following are checks that are recommended before undertaking the Safety Cube process:

- Are you using the latest version of the tool taken from the network?
- Do the zone numbers entered in the key match the number of zones in the model?
- Have you selected to run COBALT if required?
- Have you selected the correct Model Type?

#### 3.6 Running the Safety Cube Process

7) Once these checks are complete, either press "Run" on the keys page or F2 on the main Cube view. The following prompt is displayed, ensure that Run Current Group Only box is ticked, and click OK (Figure 3.10).

Run Application	<b>×</b>
Catalog: C:\Safety\CubeProgram\Safety Module.cat	
Scenarios: SWRM.Base_AAF	Select Scenarios
Run Settings	
C Create Task Run File Only (Run later from Monitor)	
C Create Script (Run from VOYAGER)	
Run Application now from Task Monitor	
Run Current Group Only	
Start this run at the active program box! (USE WITH CARE)	_
Run Title:	
Task Monitor Run File Name	
C:\SAFETY\CUBEPROGRAM\PROGRAM\SAFETY MODULE\SAFETY00.TRF	Cancel
,	

Figure 3.10: Running Cube Application (1)

The following message may appear if it does, click on Yes (Figure 3.11):

Application	n Manager	×
?	Errors encountered checking execution order and file existence. CREATE A BATCH JOB ANYWAY? (Answer No to see the errors)	
	Yes No Cance	:

Figure 3.11: Running Cube Application (2)

![](_page_22_Picture_15.jpeg)

![](_page_23_Picture_0.jpeg)

The following prompt may then displayed, click on OK to start the module (Figure 3.12):

![](_page_23_Picture_3.jpeg)

Figure 3.12: Running Cube Application (3)

## 3.7 Automatic COBALT run

If an automatic COBALT run is undertaken, the user should take several steps to ensure the automatic run of the split COBALT Input Scheme File. Firstly, the user should close any open excel spreadsheets or macros, as this can interfere with the automatic run of the tool. Secondly, the user needs to close COBALT in-between runs, as it does not close automatically. Once COBALT opens, a process box will open, showing the current stage of the COBALT process. Once this box disappears (after the "writing output file" part), this spreadsheet can be closed, and the next one to be ran will open automatically. Alternatively, the user can look at the output folder where the output file will be created. Once the output has been created and populated (the size of the file is not 0 kb), the spreadsheet can be closed.

#### 3.8 Cube Process Completion

Once the model has run successful, the following message will be displayed in Cube Voyager (Figure 3.13).

Task Run Result	×
	_
VOYAGER Run of Application Safety Module, 00 is complete	
OK View Run Report File	

Figure 3.13: Finished Cube Application

![](_page_23_Picture_11.jpeg)

![](_page_24_Picture_1.jpeg)

## 4 COBALT Ireland Spreadsheet

#### 4.1 Introduction

The sole purpose of running the Base Model Type and the Do Minimum Model Type is to produce files containing the required Base Year and Do Minimum modelled link characteristics in the appropriate format to be included in the COBALT Scheme File.

The COBALT Ireland spreadsheet that is used, is the same as the UK version (with only the costs differing). The user guide for COBALT can be accessed via the following link:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/fil e/488064/cobalt-user-manual.pdf

https://www.gov.uk/government/publications/cobalt-software-and-user-manuals

The current cbp file that is used can be found in the following directory: "{Catalog Dir}\Program\Safety Module\". The file is named "COBALT-Ireland\_NRPAG\_Parameters.cbp". The user should confirm with the NTA if a different cbp file should be used, or if the standard one provided is correct to use. To replace the cbp file that will be used in the tool, replace the current .cbp file in the directory above, and rename it with the same name, "COBALT-Ireland\_NRPAG\_Parameters.cbp".

#### 4.2 COBALT Output Scheme File

Following completion of all of the processes described in this user guide, several COBALT analysis files are produced, saved in the following format:

{RunID}{Growth}YY\_COBALT\_OUTPUT\_FILE\_NON\_SECTORED{SplitNumber}.cbo

Saved in the following location:

RUNS\YY\{RunID}\Output\Growth\Appraisal\_Tools\Safety

This .cbo files can be opened in any text editing programme.

The "Run Summary Statistics Extraction Spreadsheet" is currently turned off in the main CUBE user interface due to formatting issues.

#### 4.3 COBALT Output

The COBALT Output Scheme File includes:

- Economic Summary: this summary provides the total costs of collisions across the full modelled area over the appraisal period. The costs are discounted to and in the price base year as defined in the COBALT Input Parameters File for the Do Minimum and Do Something Model Types. The total economic benefit (or dis-benefit) is also provided
- Accident Summary: this summary provides the total number of accidents over the appraisal period for the Do Minimum and Do Something Model Type. The difference between the two is also provided.
- **Casualty Summary:** this summary provides the number of fatal, serious and slight casualties over the appraisal period for the Do Minimum and Do Something Model Types, along with the difference between the two for each severity level.

![](_page_24_Picture_21.jpeg)

![](_page_25_Picture_0.jpeg)

## 5 Troubleshooting

In the CUBE Voyager cases the print files (.prn) will provide the best clues as to why the run has not worked.

PROBLEM SOFTWARE	PROBLEM	SOLUTION
CUBE	Tool crashes as files missing	Check all files are named and stored correctly
Excel	Not able to run macro	Check macros are enabled
Excel	If using Excel 2016 the CUBE script doesn't allow Excel to close, and the CUBE program will just hang	Close Excel 2016 manually and the CUBE program will continue
Excel	Summary Statistics Extraction Spreadsheet has an issue with the macro	This output is currently turned off (refer Section 3.1 for details)

If the problem cannot be resolved from the print files or troubleshooting table please email ntamodel@nationaltransport.ie to get technical support.

![](_page_25_Picture_6.jpeg)

![](_page_26_Picture_0.jpeg)

## 6 Appendix A - Inputs from RMS

#### 6.1 Folder structure

The latest RMS output folder structure is: {CATALOG\_DIR}\Runs\(Region)\(Year)\(Scenario)\ 4\_Outputs\_(Region)\_(Year)\_(Growth Scenario)\_(Scenario)\_Input\_(Version number)

Within the RMS output folder, the toolkit is set to create two additional folders on two different levels; the 'Appraisal\_Tools' folder (upper level) and the 'Safety' folder (lower level) where the toolkit's outputs are saved. An example of the final folder structure is shown below:

📙 « Windows (C:) > NTA > AppraisalTools > Safety > Runs > ERM > 20 > Metro1 > 4\_Outputs\_ERM\_20\_D1\_Metro1\_Input\_v0001 > Appraisal\_Tools > Safety

Where: {CATALOG\_DIR}<sup>1</sup> = C:\NTA\AppraisalTools\Safety

{Region} = ERM (variable)

{Model Year} = 20 (variable)

{Run ID} = Metro1 (variable)

{Growth Scenario} = D1 (variable)

{Version number} = v0001 (variable) (not a capital v)

The model .net files need to go in the respective scenario/time period folders such as below. The full list of these files is found in section 6.2 of this appendix.

p - Nuau					
Home Share View					
	1)\Runs\ERM\30\ACH\4_Outputs_	ERM_30_G30_ACH_Input_v0001\Road		V Search Road	
neDrive - Jacobs	^ Name	^ Date modified	Туре	5 items	
4465	AM	13/10/2020 10:11	File folder		
Desktop	📕 LT	13/10/2020 10:11	File folder	_	
DM assignments and Results	DP	13/10/2020 10:11	File folder		
Dublin	PM	13/10/2020 10:11	File folder		
Grad CVs	SR	13/10/2020 10:11	File folder		
Huddersfield					
VI60J18					
Vicrosoft Teams Chat Files					
MNWQ					

### 6.2 Input files

The output RMS network files by time period are used as inputs to the Safety Module. The complete list of input files required to test the Module are presented below:

#### **Base**

- Road\_AM\_(BASE Run ID)(BASE Growth)(BASE Forecast Year).NET
- Road\_LT\_(BASE Run ID)(BASE Growth)(BASE Forecast Year).NET
- Road SR (BASE Run ID)(BASE Growth)(BASE Forecast Year).NET
- Road\_PM\_(BASE Run ID)(BASE Growth)(BASE Forecast Year).NET

<sup>&</sup>lt;sup>1</sup> The {CATALOG\_DIR} is user specific (usually saved on C: Drive).

![](_page_26_Picture_23.jpeg)

![](_page_27_Picture_0.jpeg)

#### Do Minimum

- Road\_AM\_(DM Run ID)(DM Growth)(DM Forecast Year).NET
- Road\_LT\_(DM Run ID)(DM Growth)(DM Forecast Year).NET
- Road\_SR\_(DM Run ID)(DM Growth)(DM Forecast Year).NET
- Road\_PM\_(DM Run ID)(DM Growth)(DM Forecast Year).NET

These files are needed for every forecast year used

#### **Do Something**

- Road\_AM\_(DS Run ID)(DS Growth)(DS Forecast Year).NET
- Road\_LT\_(DS Run ID)(DS Growth)(DS Forecast Year).NET
- Road\_SR\_(DS Run ID)(DS Growth)(DS Forecast Year).NET
- Road\_PM\_(DS Run ID)(DS Growth)(DS Forecast Year).NET

These files are needed for every forecast year used.

![](_page_27_Picture_14.jpeg)

![](_page_28_Picture_0.jpeg)

## 7 Appendix B – Annualisation factors

To convert from peak hour flow to AADT flow, the tool uses an annualisation factor file. This file is found in the \COBALT of the main directory, and it is called "(Region)\_ Annualisation factors.dbf". This file exists separately for every region. In the file, there are multiplication factors for each user class/time period combination, which can then add to be used to calculate the AADT flow.

## 8 Appendix C – Model machine matrix

Model Machine	NTA-Mod-01	NTA-Mod-02	NTA-Mod-03	NTA-Mod-04	NTA-Mod-05	NTA-Mod-06	NTA-Mod-07	NTA-Mod-08	NTA-Mod-09	NTA-Mod-10
Cube Version	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2	6.4.2
Safety Module	√	√	√	√	√	√	√	√	√	√

The table above shows which NTA model machines can currently run the Safety module.

![](_page_29_Picture_5.jpeg)