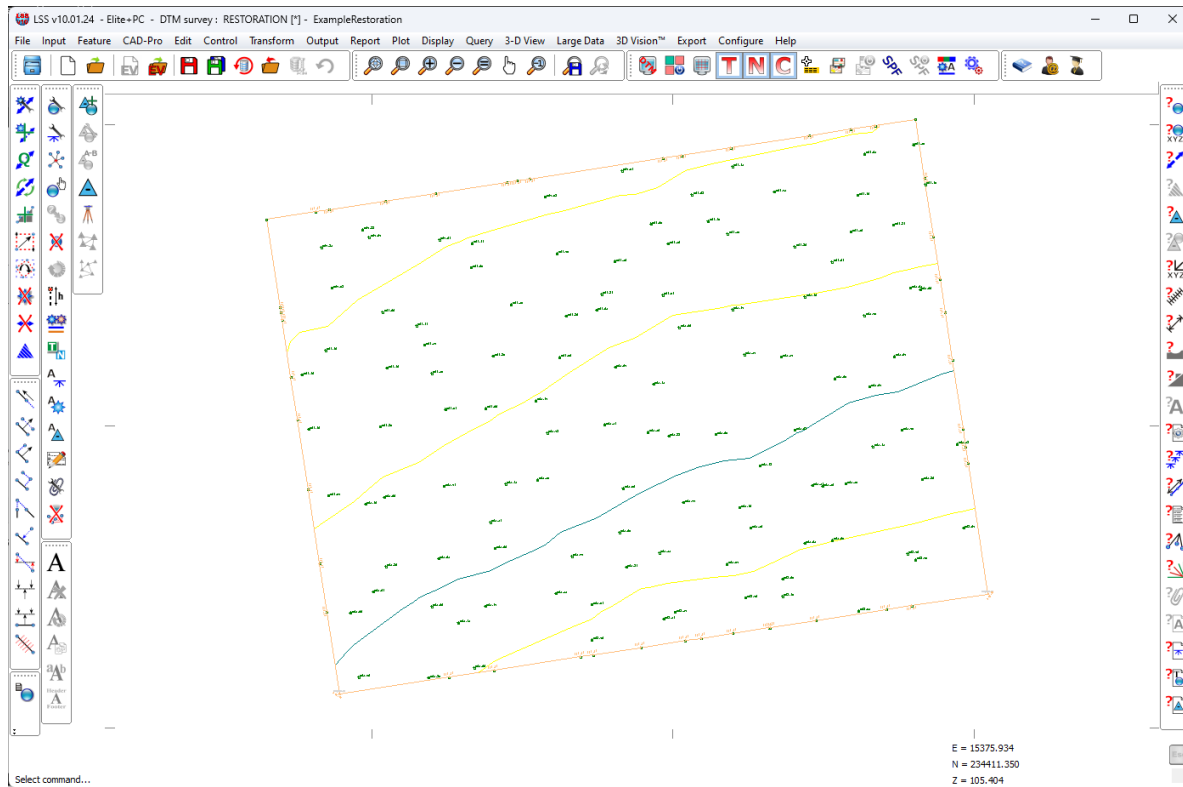# Changing The Model To Match A Volume
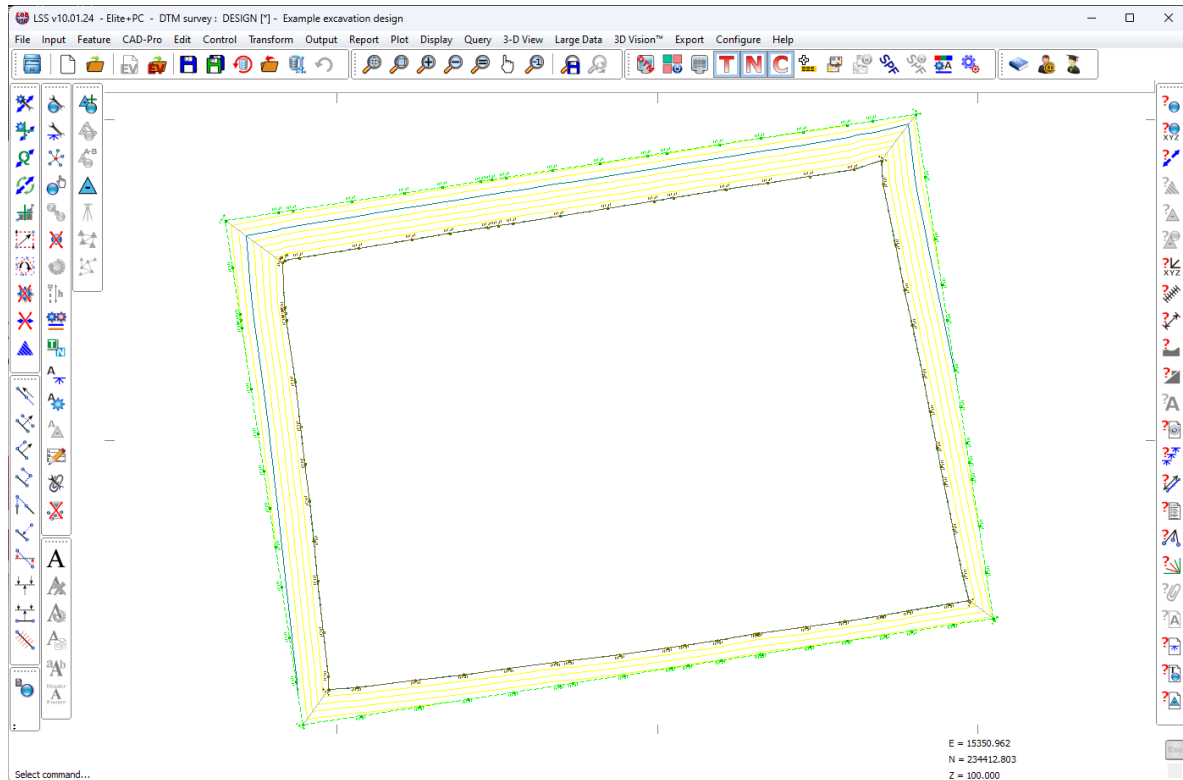
LSS™

Introduction

In this rough guide we are going to look at the method of adjusting a model to match a required volume.

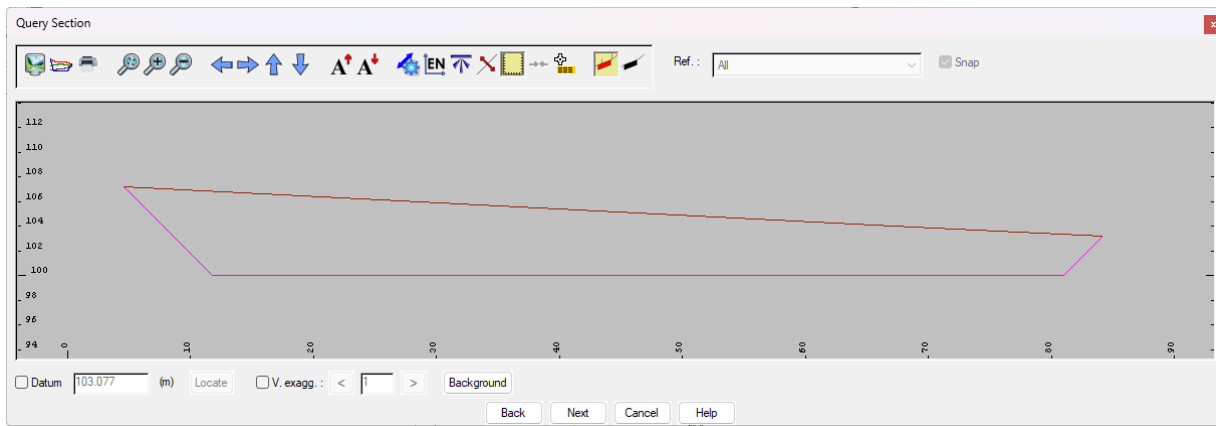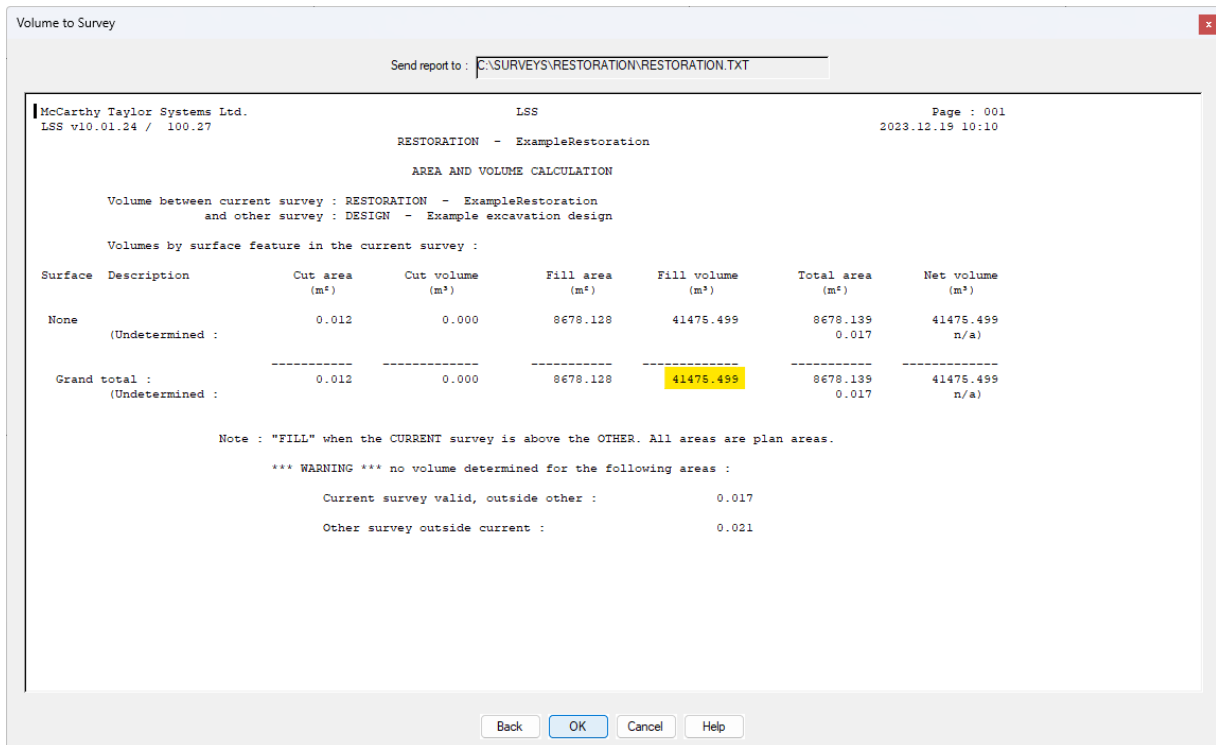For this exercise we will have simple Design and Restoration models.

The OGL looks like this…

And the Design model looks like this…

Here is a quick "Query / Section" through the two models...


The current volume between these models is 41,475.499m^3

However, for this exercise we need to achieve a volume of 50,000.000m^3. So we need to amend the levels of the Restoration model accordingly.

The following methods will demonstrate how to add the required volume of material to the Restoration model in a controlled manner.
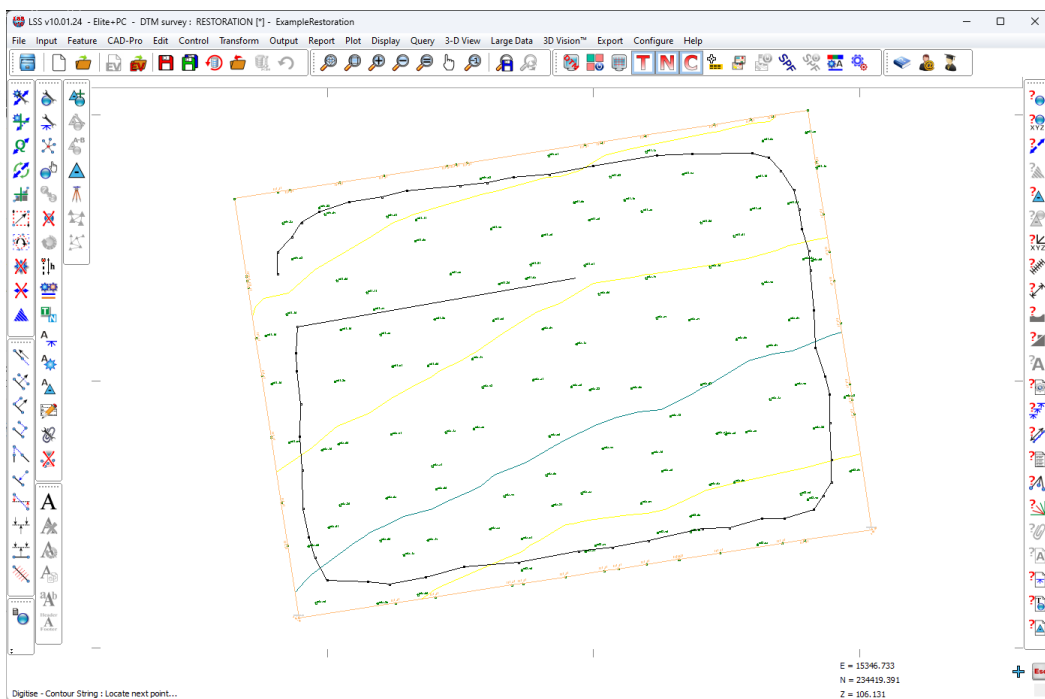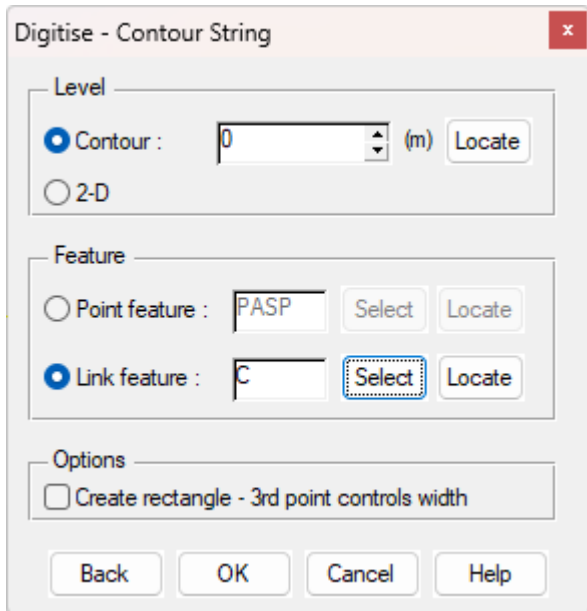
Step 1 – Designing the addition.

We first need to open the Restoration model.
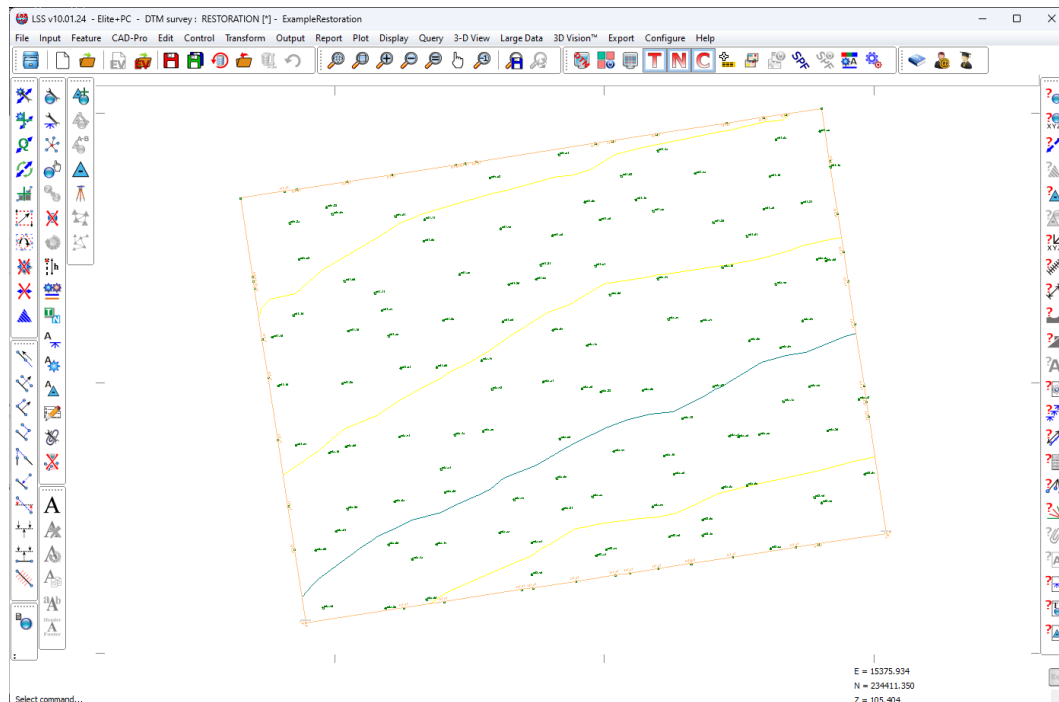
Now we need to design the shape of the additional material. TO do this we need to go to the command "Output / Design Digitise – Contour string". We will call the new file "ADDITION.001"
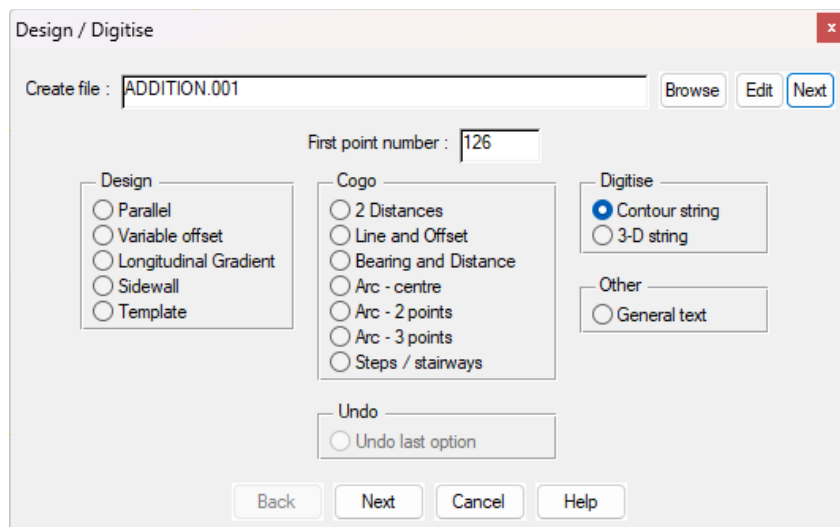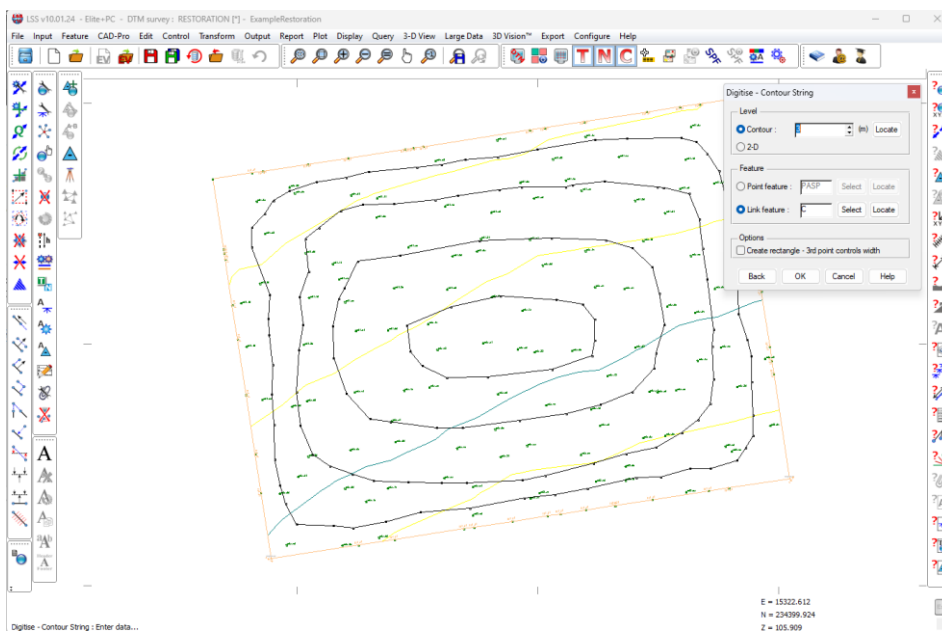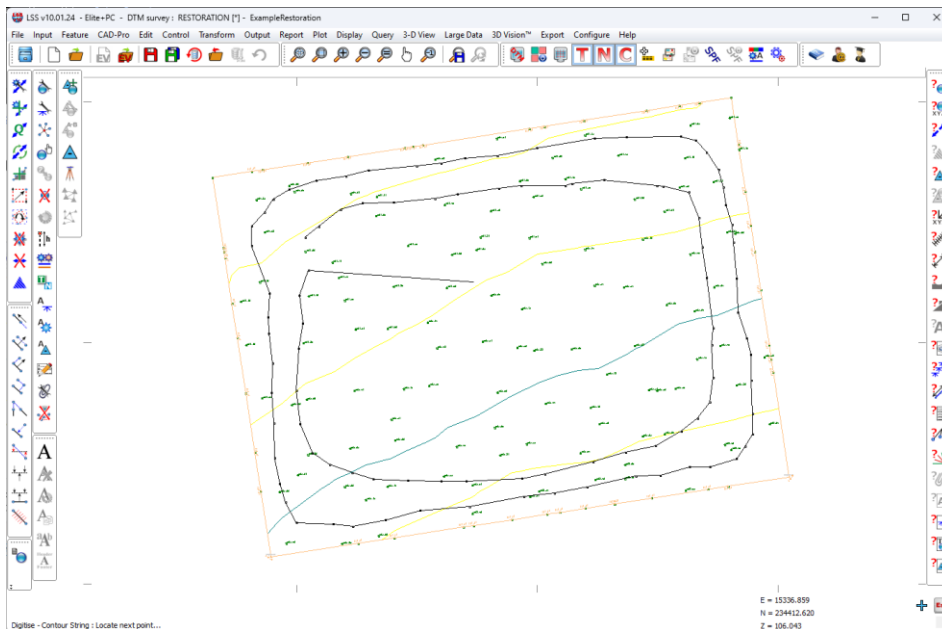

We will begin by outlining the extent of the addition, where there will be no change to the existing Restoration…
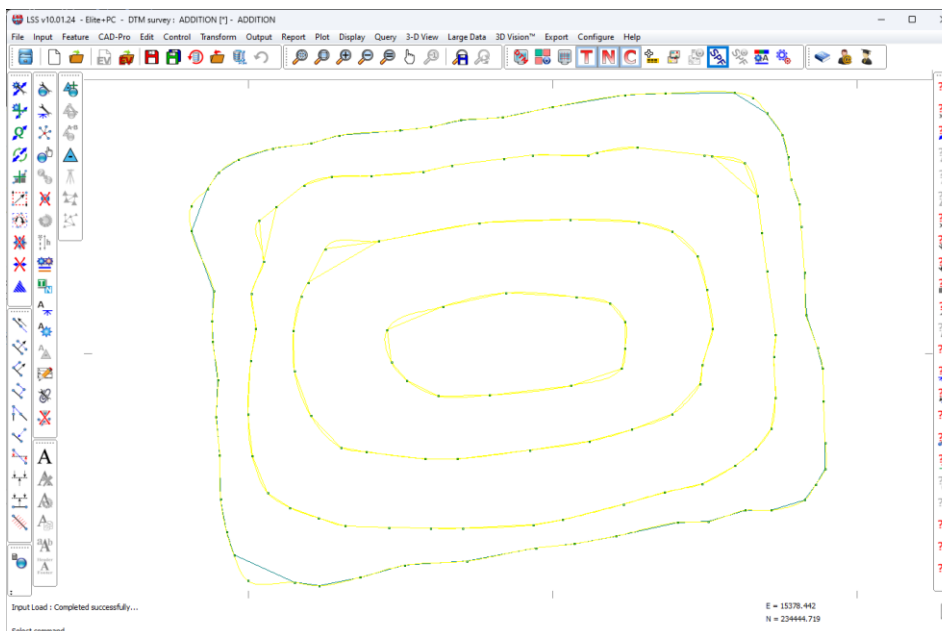
… and close the loop after hitting Escape when done.
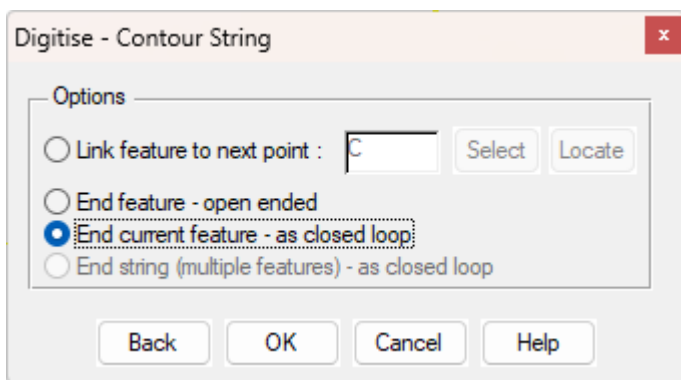
We now need to continue with a series of concentric 1m, 2m and 3m contours for the addition.

Once done, we Finish the digitising and continue through Save & Load to create the new Addition model.

This ADDITION.LSS DTM with the outer contour set at 0 m, can be regarded as equivalent to the level difference model used in the pre-settlement Rough Guide.

We need to compute the volume of the Addition survey. This will be used as part of the addition shape calculating when merging the landform later on in this guide.
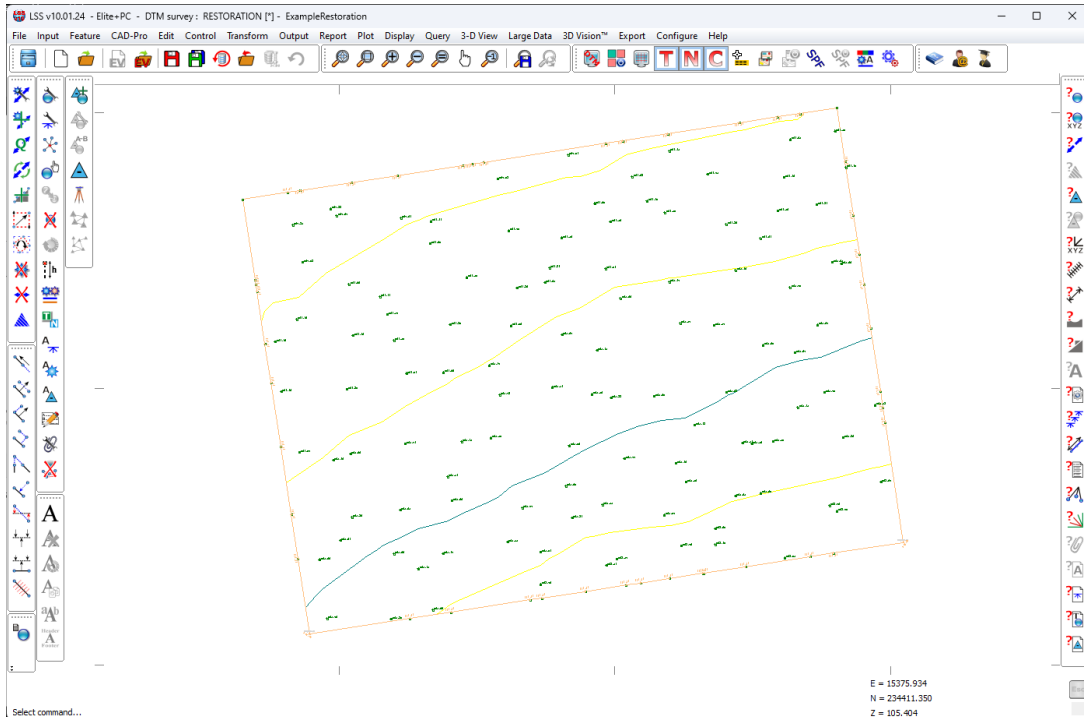
Here we need to use the command "Report / Volume to Datum", where the Datum will be a value of zero.
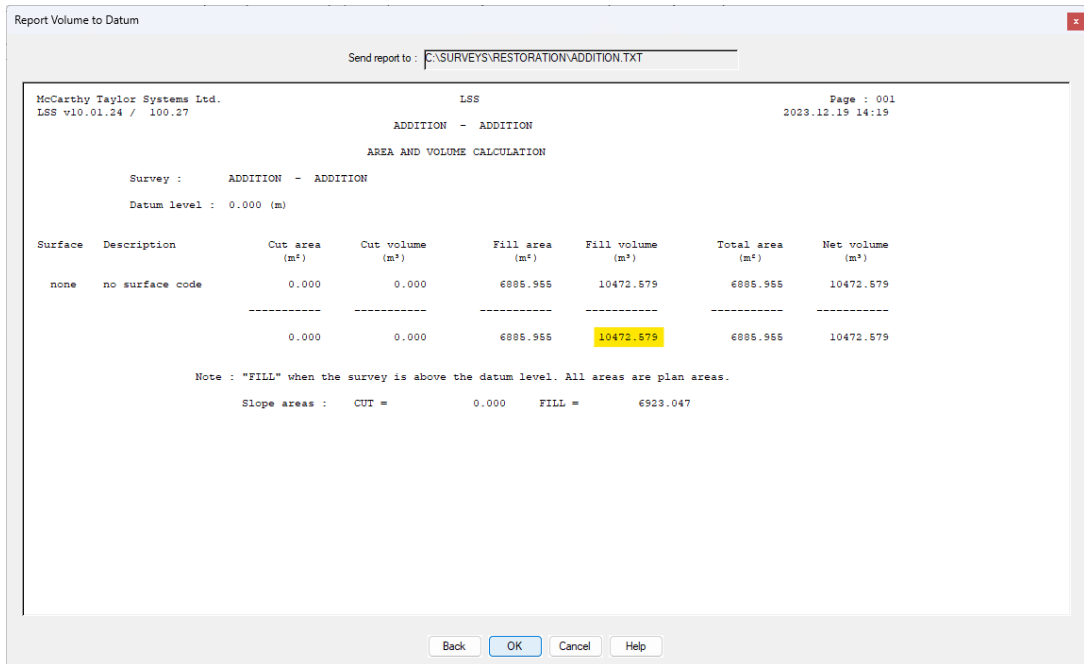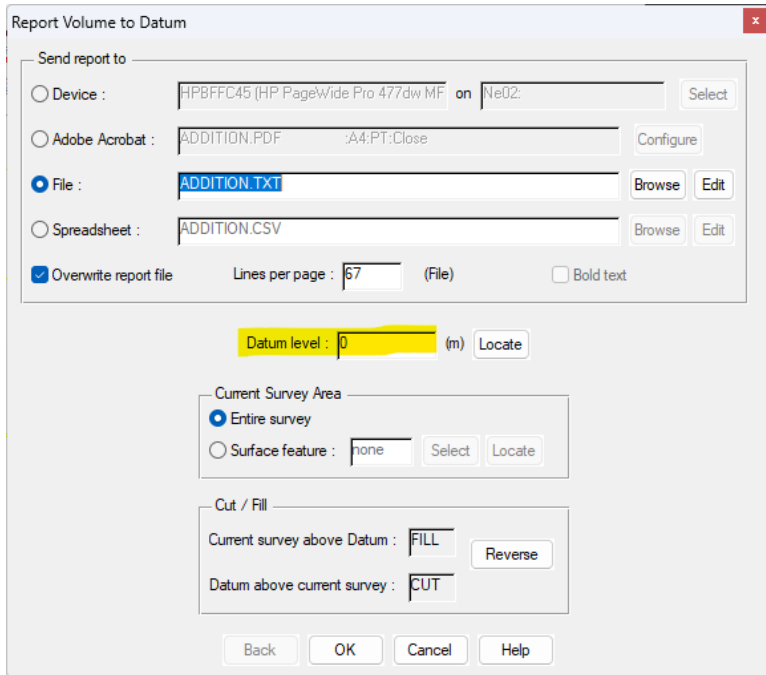
The resultant volume of the Addition is 10,472.579m^3, this will be used in the calculation for the addition in the next step.

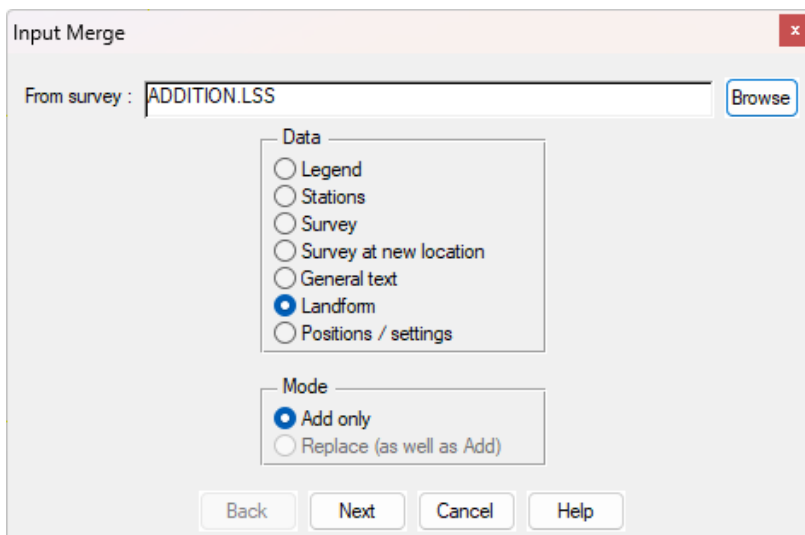# Step 2 – Add the shape of the addition to the Restoration model.

We now need to go back to the Restoration model.

The first thing we need to do here is go to the command "File / Save As", to copy the Restoration model as "RESTORATION PLUS.LSS"
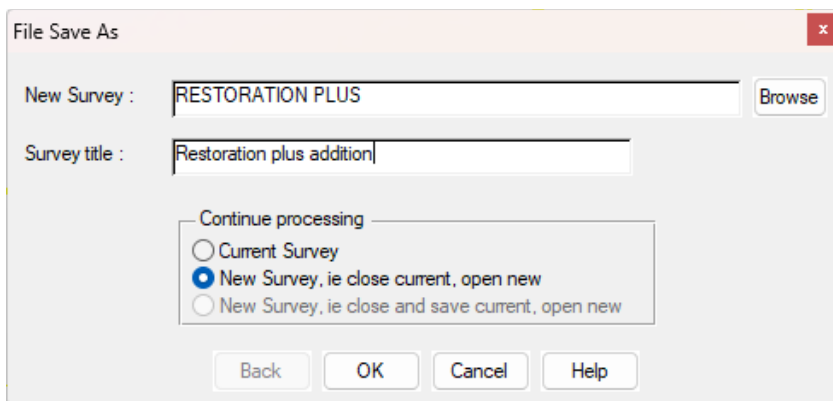

We now need to use the command "Input / Merge – Landform" and select ADDITION.LSS.

We need to increase the Restoration by an additional 8524.501m³. However, rather than simply adding the Addition survey shape we will multiply the Addition levels by a factor.

This factor is calculated by dividing the required increase in volume of fill by the volume found in the Addition model above datum 0.

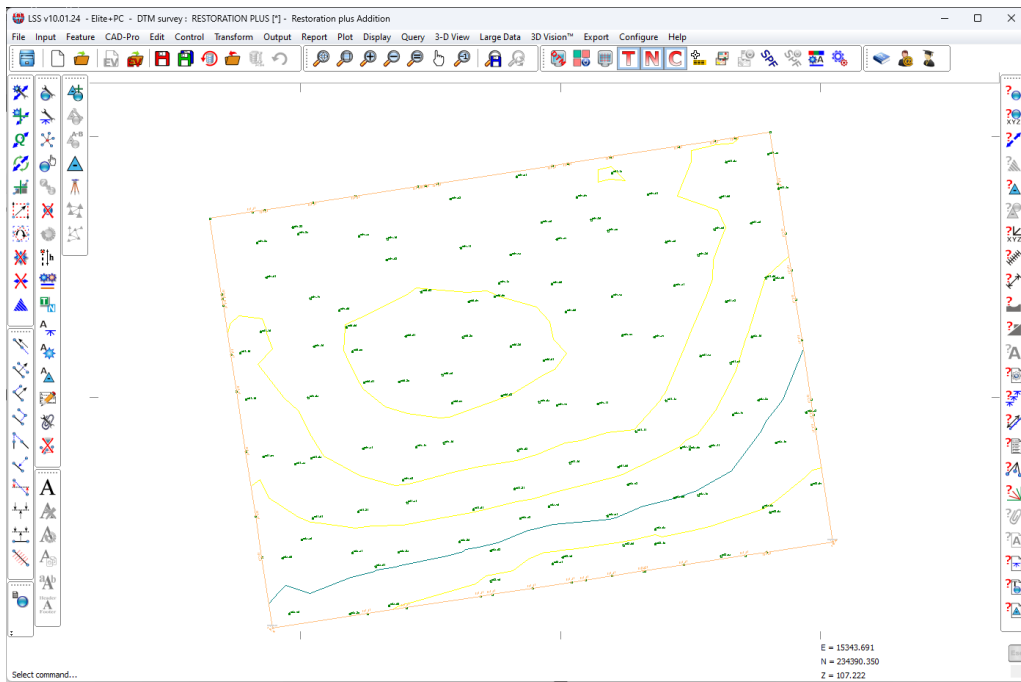i.e. 8524.501 (Required increase) / 10,472.579 (Addition volume) = 0.813982
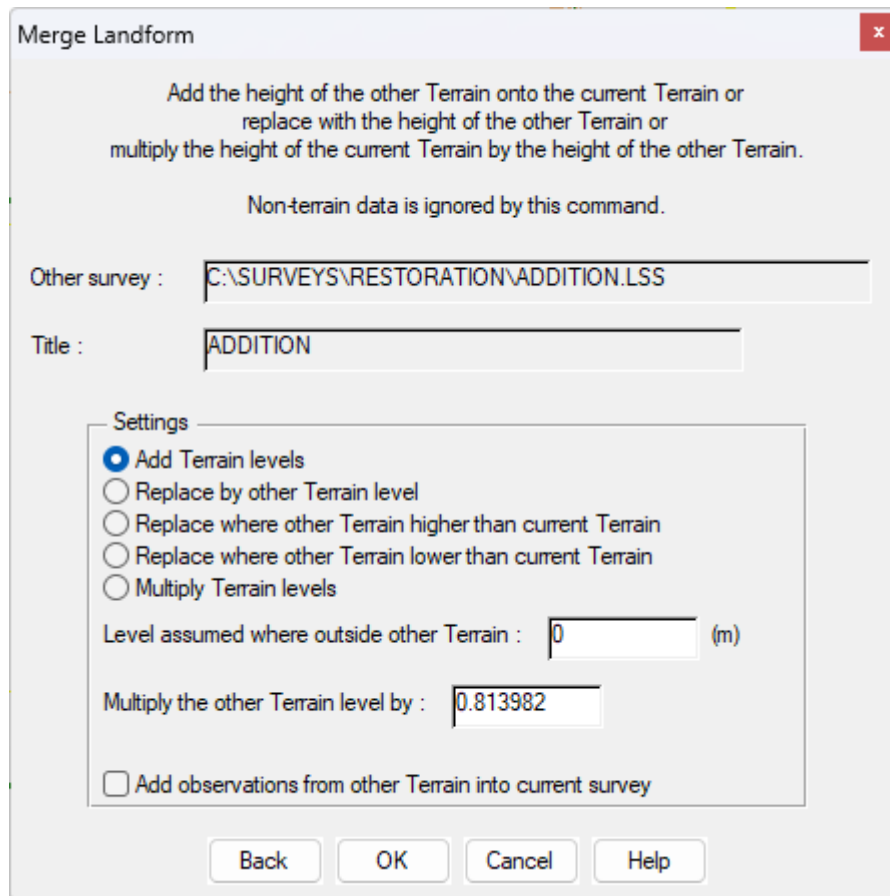
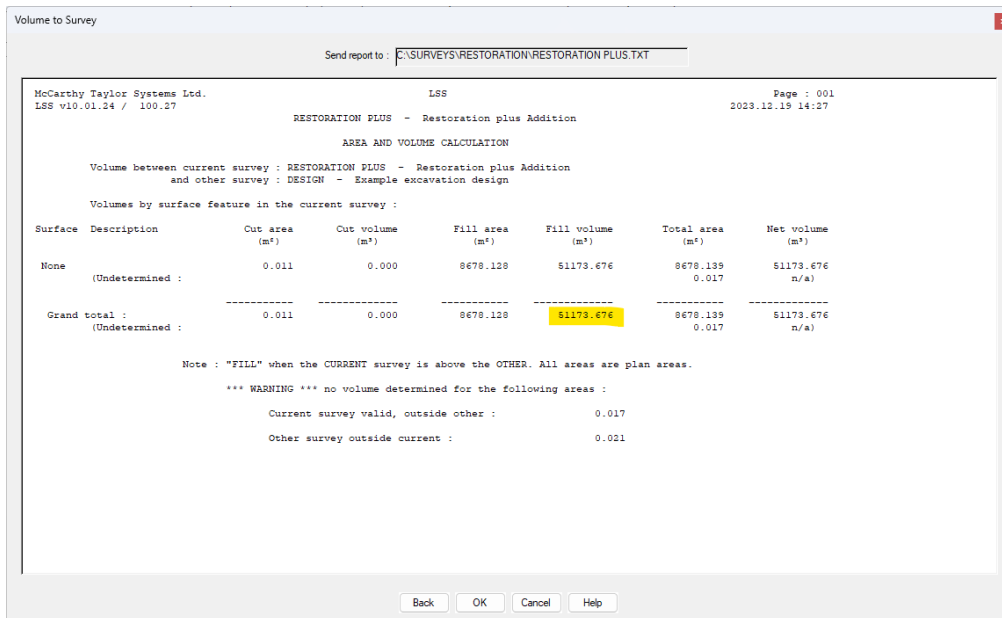We are restricted to5 decimal places, so LSS will round accordingly…
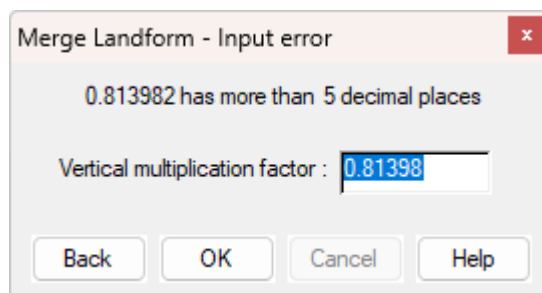
LSS will update the model and refresh the screen, which shows the results of the Landform merge

As you can see. the displayed contours have moved away from the original digitised lines.

You should save your model at this stage.

Now if we calculate the volume between this model and the design…

…we now have a volume of 51173.676m³.

Note that we have not quite arrived at the desired volume on this first attempt. We missed the mark by 1,172.676m³.

A repeat of the exercise, WITH possibly changing how the ADDITION model is formed etc… could result in a closer resultant volume.

Here is a quick "Query / Section" between "RESTORSTION PLUS", "RESTORATION" and "DESIGN" to see how the additional volume looks.
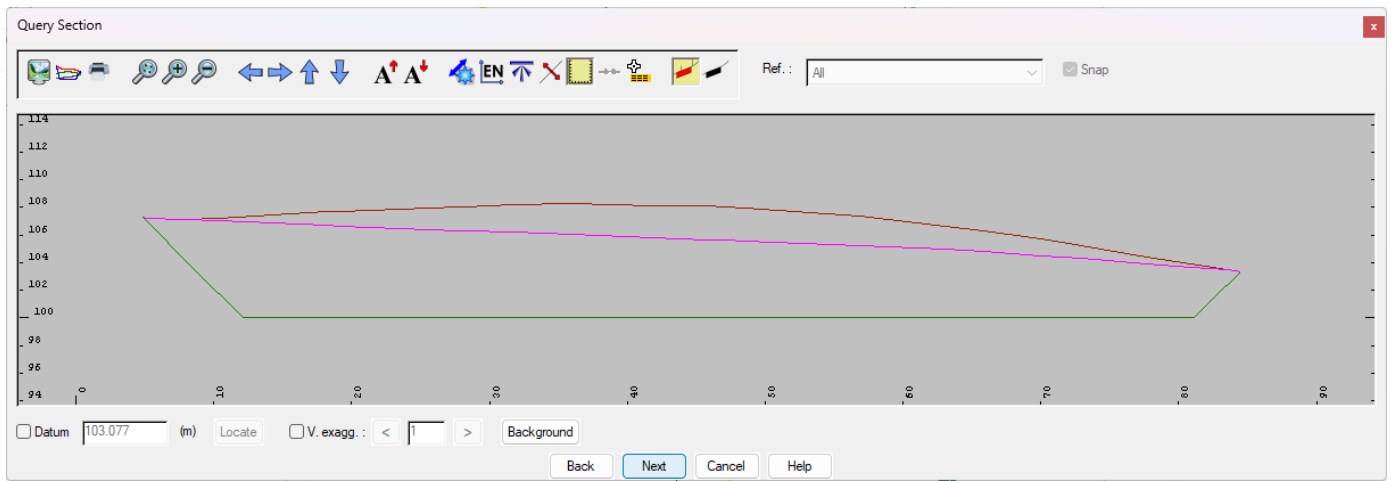
If you need further Technical Support, or you wish to attend any training courses please contact us…

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