



GIS-Import Manual

AND 4.21

Table of Contents

General Overview	- 3 -
Wrappers	- 4 -
Wrapper Usage	- 4 -
Custom Wrappers	- 6 -
Shape Wrapper Example	- 6 -
WebSolution	- 7 -
GIS-Import GeoJSON File Format.....	- 8 -
GeoJSON HTML Documentation	- 8 -
GeoJSON Validation Schemas	- 8 -
Value Mapping	- 8 -
GIS Import	- 9 -
Starting the import	- 9 -
Input Directory.....	- 10 -
Mapping	- 11 -
Adding a new rule	- 13 -
Mapping Right List	- 15 -
Library Object or Template	- 15 -
Create as	- 17 -
Layer.....	- 17 -
Saving and Loading Mappings.....	- 18 -
Options.....	- 18 -
Microducts	- 19 -
Finalize the Import	- 20 -
Appendix Custom Wrappers	- 21 -
Interface.....	- 21 -
Parameters.....	- 21 -
Sample Wrapper and _ShapeBase.....	- 22 -
Simple.....	- 23 -
Complex	- 24 -
Appendix Value Mapping.....	- 25 -

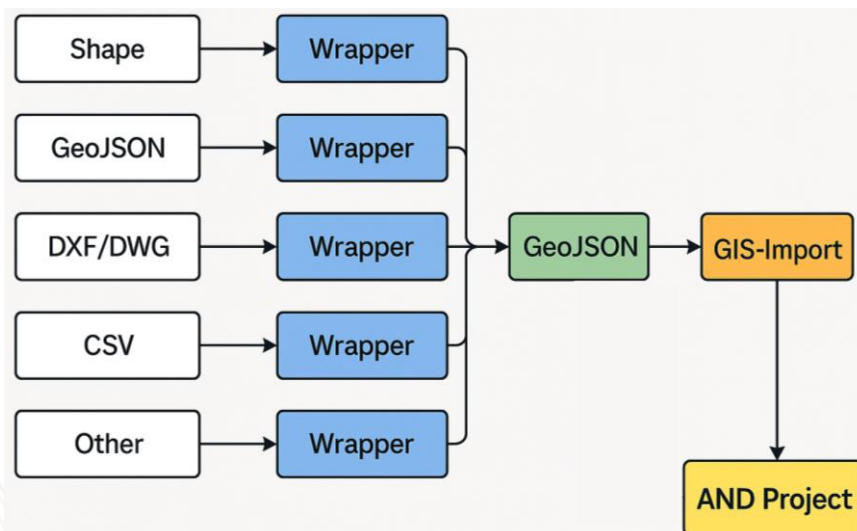
General Overview

We have created a new way of importing GIS data into the AND to create usable networks based on AND objects. Initially, infrastructure elements consisting of sites, trenches, ducts and multi-duct packages are supported.

Our concept is to accept data in a standardized format that can be easily transformed to, documented, validated and interpreted by both machines and humans. Thus, we decided to support GeoJSON as intermediate representation.

A broad set of various formats can be transformed conveniently to GeoJSON using both commercial and open-source software* in preprocessing step(s) which are composed into units called "wrappers", which will be introduced in detail in chapter 3 (Wrappers). We provide wrappers for importing from AND-WebSolution and typical shape files. To support various kinds of property schemes, these preprocessing steps can be adapted by need or on request and are decoupled from the final import steps. If you want to rely on our expertise to create a wrapper for your specific data preparation needs, reach out to us at sales@and-solution.com.

* for example gdal ogr2ogr tool: <https://gdal.org/en/stable/programs/ogr2ogr.html>



Import concept illustration

Once transformed into GeoJSON and conforming to the published attribute schema (supplied as JSON Schema**), a user can conveniently define detailed assignments/mappings to AND library objects based on input object types and their attributes. Attributes of the objects to be imported are transferred into the AND objects.

** located in your installation at %ProgramFiles%\CDS\AND\doc\JsonSchemaDocumentation\jsonSchemas

Wrappers

Wrappers are used to convert a legacy input format into the GeoJSON to be imported. The general concept is to allow wrappers to be customised or created by the customer to convert the input data into a well-defined format accepted by the AND GIS-Import feature. Wrappers can be called directly from within NetElement Import dialogue.

Schematically workflow:

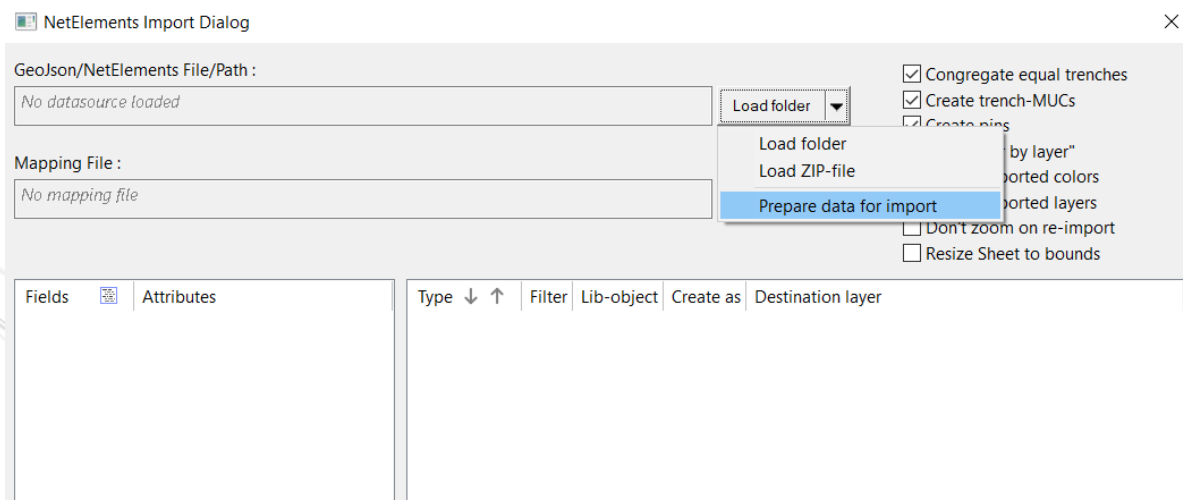
<DataSource> – wrapper → <ANDGeoJSON> – ANDClient → <ANDNetFile>

By default, the wrapper "WebSolution" is provided. This wrapper takes data exported from the AND WebSolution and formats it to fulfil the definitions of the AND GIS-Import interface. This wrapper is maintained by AND.

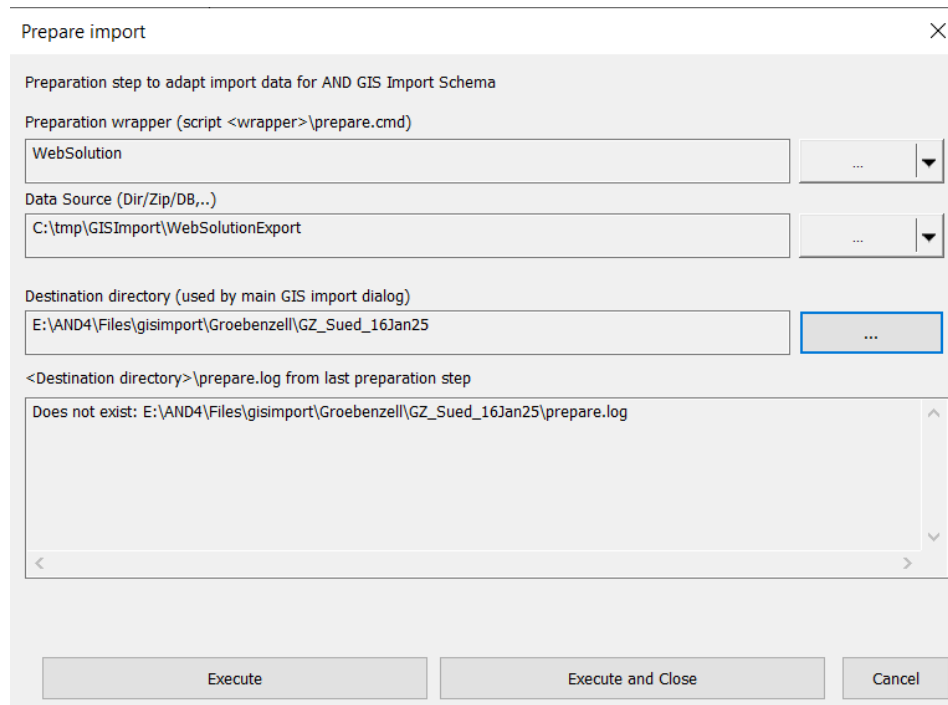
The user may provide own custom wrappers. A sample wrapper "ShapeSample" with import files, mapping and result file is provided. "ShapeSample" is derived from the "_ShapeBase" tools which can help to create custom wrappers.

Wrapper Usage

The wrappers can be executed from the AND client from the "NetElements Import Dialog" from the top button, which remembers the last action chosen:



Then, the "Prepare import" sub dialog opens:



There, the preparation wrapper for data sources may be chosen, e.g. *WebSolution*, as well as the *Data Source* which the wrapper should transform, e.g. `c:\tmp\GISImport\WebSolutionExport` (or some zip file) and the *Destination directory*, e.g. `E:\AND4\Files\gisimport\Groebenzell\GZ_Sued_16Jan25`. The Destination Directory is the *GeoJson/NetElements file path* for AND GIS Import in the main import dialog. The wrapper may then be executed from the preparation dialog via the button "Execute".

Execution will open a command line interpreter and show the output of the script, e.g.

```
C:\WINDOWS\system32\cmd.exe
[18:53:14,94] PREPAREDATE=27-Mar-25
[18:53:14,94] WRAPPER=WebSolution
[18:53:14,94] DATASRC=C:\tmp\GISImport\WebSolutionExport
[18:53:14,94] DATAOUT=E:\AND4\Files\gisimport\Groebenzell\GZ_Sued_16Jan25
-----
[18:53:14,95] Step1: convert shape files to shape geojson
[18:53:16,22] Step2: transform shape geojson to AND GISImport geojson
```

The AND client GIS-Import will then show the contents of the file `prepare.log` created by the wrapper `prepare.cmd` to report on problems or just a protocol.

Prepare import X

Preparation step to adapt import data for AND GIS Import Schema

Preparation wrapper (script <wrapper>\prepare.cmd)

WebSolution ... ▼

Data Source (Dir/Zip/DB,...)

C:\tmp\GISImport\WebSolutionExport ... ▼

Destination directory (used by main GIS import dialog)

E:\AND4\Files\gisimport\Groebenzell\GZ_Sued_16Jan25 ...

<Destination directory>\prepare.log from last preparation step

```

-----
[18:53:14,92] PREPAREDATE=27-Mar-25
[18:53:14,92] WRAPPER=WebSolution
[18:53:14,92] DATASRC=C:\tmp\GISImport\WebSolutionExport
[18:53:14,92] DATAOUT=E:\AND4\Files\gisimport\Groebenzell\GZ_Sued_16Jan25
-----
[18:53:14,95] Step1: convert shape files to shape geojson
[18:53:14,95] ...
  
```

With “OK” the preparation will be closed, and the user may continue with import of the generated GeoJSON files (see chapter GIS Import).

Custom Wrappers

Customer can modify or create and use his own wrappers for upcoming import file formats. See chapter Appendix Custom Wrappers.

Shape Wrapper Example

We provide a simple shape import example which can be found at
 \ProgramData\And\CommonConfig\GISImport\sampladata\ShapeSample\data
 The Steps in short:

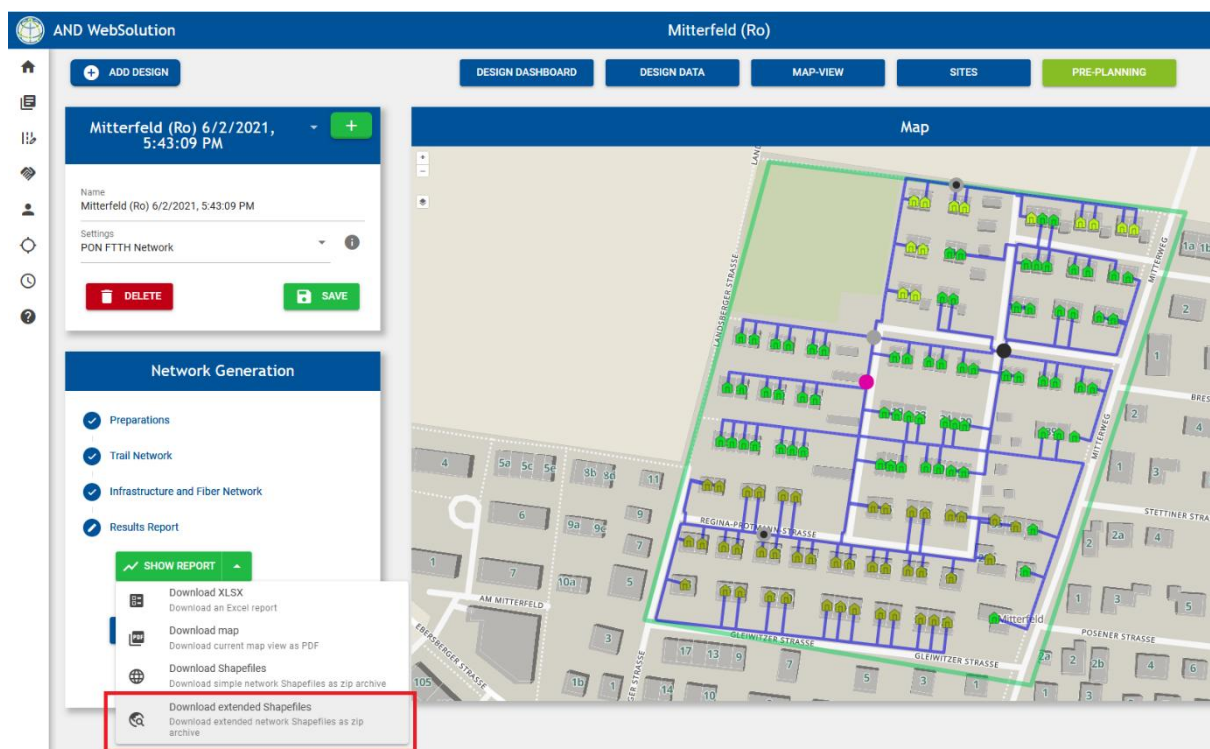
- Select ShapeSample as Wrapper
- Data Source: select sub folder 1shape within folder
 \ProgramData\And\CommonConfig\GISImport\sampladata\ShapeSample\data
- As Destination Directory set something different: e.g. D:\temp\Import
- Press Execute & Close

Back in the Netelements Import Dialog you may select as mapping file
 .\mapping\ShapeSampleMapping.json within the sample folder. At first time a message may occur asking for a catalogue update: double-click message entry to solve this problem.

WebSolution

The GIS import can process infrastructure data that has been generated and exported in the AND-WebSolution (<https://and-websolution.com>) using automated pre-planning. You can then continue with the detailed planning in AND.

As soon as you are satisfied with the pre-planning, you can export it. To do this, use the menu entry “Download extended Shapefiles” and download the zip file. This contains everything which is needed for the WebSolution Wrapper (see chapter above).



Later in GIS-Import select that zip within WebSolution Wrapper.

GIS-Import GeoJSON File Format

GIS Import accepts GeoJSON files in a standardised format. This can be from any source or as output from a wrapper (see above).

You may wish to refer to supplementary documentation for further reading.

GeoJSON HTML Documentation

The detailed file format documentation can be found in AND client installation:

`%ProgramFiles%\CDS\AND\doc\JsonSchemaDocumentation\index.html`

As well as file names, attributes and enumeration definitions, information about component mapping, value mapping and target attributes in AND can be found there.

Hint: for AND Standalone the doc folder is deployed separately as a zip and must be extracted and installed manually.

GeoJSON Validation Schemas

The GeoJSON files used for import may be validated against the schema files we provide with the delivery. You may use one of the numerous JSON validation tools offered in web.

The JSON schemas files for validation can be found here:

- AND SmartServer:
`\\<smartserver>\Settings\GisImport\jsonSchemas`
- AND Client Installation:
`%ProgramFiles%\CDS\AND\doc\JsonSchemaDocumentation\jsonSchemas`

Value Mapping

We provide a default value conversion/mapping for attribute values contained in the import GeoJSON files. This mapping is defined in the following file (see also Appendix Value Mapping):

`%ProgramFiles%\CDS\AND\Install\Common\CommonConfig\GisImportEnumMappings.xml`

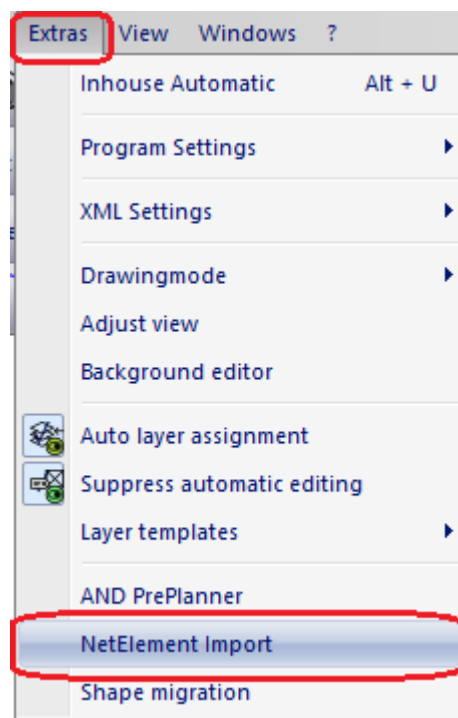
The possible input values are also listed in the HTML documentation (see chapter above). If changes are required, it is recommended to contact us for advice.

GIS Import

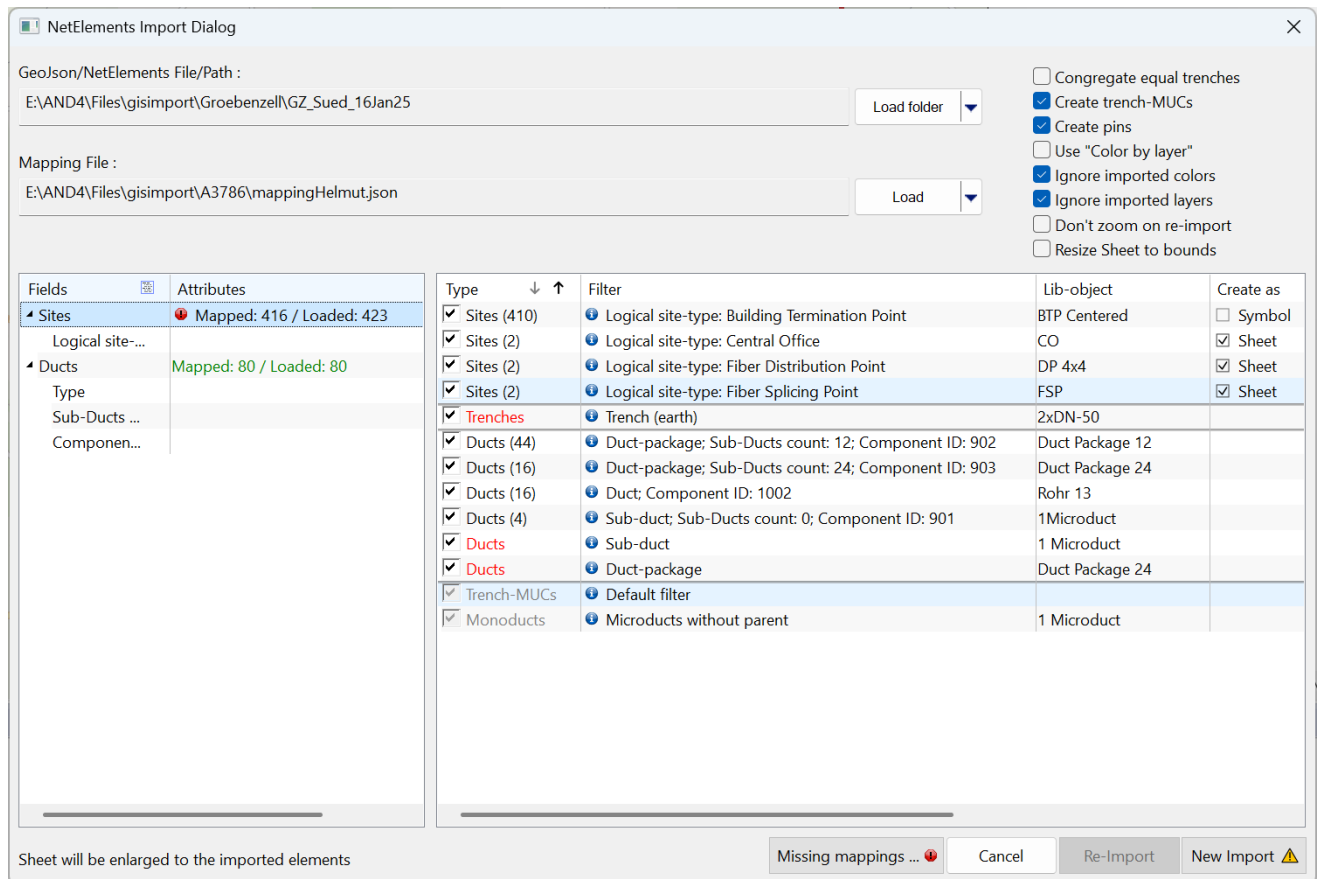
This feature loads the GeoJSON files (native or from wrapper output), assigns library components, converts attribute values and generates an infrastructure network consisting of trenches, ducts, multi-duct-packages and site-(sheets).

Starting the import

The import is started from menu Extras, NetElement Import:



When you press this command, the following dialog appears:



Input Directory

The current input directory is displayed in the top left corner. It can be changed using the Load Folder button. If a Wrapper has been called before this is already prefilled.

The input directory should contain valid GeoJSON files (see the GeoJSON specification at <https://GeoJSON.org> and the schema validation files (see chapter

GIS-Import GeoJSON File Format

GIS Import accepts GeoJSON files in a standardised format. This can be from any source or as output from a wrapper (see above).

You may wish to refer to supplementary documentation for further reading. (GeoJSON HTML Documentation)).

The pre-defined file names are:

Input file	usage	schema file for validation
ducts.geojson	ducts, multiduct-packages and subducts	importDuctsSchema.json
trenches.geojson	trenches	importTrenchesSchema.json
sites.geojson	sites (e.g. CO, FDP, FSP, BTP)	importSitesSchema.json

The extension “.json” is accepted as well for input files.

By clicking on the arrow to the right of the button, it is possible to switch the mode for importing individual GeoJSON files.

Please note that only when importing sites and trenches together, the sites will be correctly connected to the trench lines.

Only in this case will sheet connectors be created automatically. Importing whole folders or zip files is the recommended way.

Mapping

The main activity in this dialog is the mapping (assignment) of imported locations and trench lines to AND objects.

The mapping can be defined depending on the attributes of the input objects. Import is possible only if all input objects are mapped.

The situation on the input side is shown in the left list.

Show all items	
Fields	Attributes
▾ Sites	🚫 Mapped: 416 / Loaded: 423
Logical site-type	
▾ Ducts	Mapped: 80 / Loaded: 80
Type	
Sub-Ducts count	
Component ID	

In the screenshot, the situation is as follows:

The input contains a total of 423 sites, of which 416 are already mapped to library objects.

The text indicating this is red, because there are still 7 unmapped locations.

The text for the duct lines is green because all 80 ducts are mapped.

The child entries of "Site" are the attributes that exist at least once in the input.

In the screenshots here, "Logical site-type" is the only site attribute.

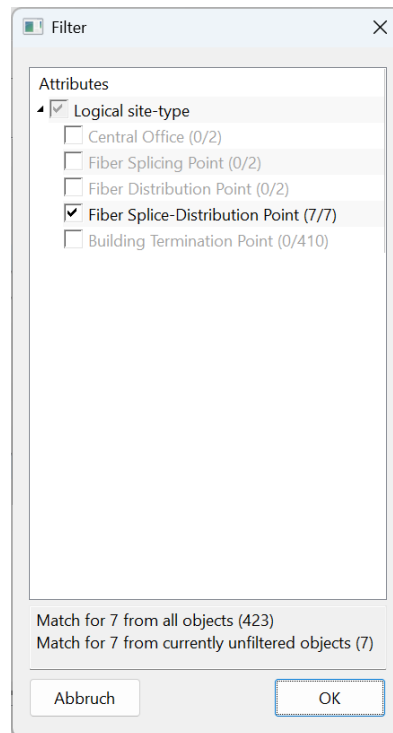
When the toggle button is pressed, all possible attributes are displayed, including those which are not present in the input, with the unused ones in grey:

Fields	Attributes
◀ Sites	🚫 Mapped: 416 / Loaded: 42
Site-type	
Logical site-type	
Visual reference...	
Color	
Layer	
Levels	
Number Shaft...	
Has power	
▸ Trenches	Mapped: 0 / Loaded: 0
◀ Ducts	Mapped: 80 / Loaded: 80
Type	
Sub-Ducts count	
Component ID	
Color	
Layer	
Diameter	
Surface of Trench	
Trench Layingty...	
Trenching meth...	

Adding a new rule

To map the unmapped sites, you need to create a new rule.

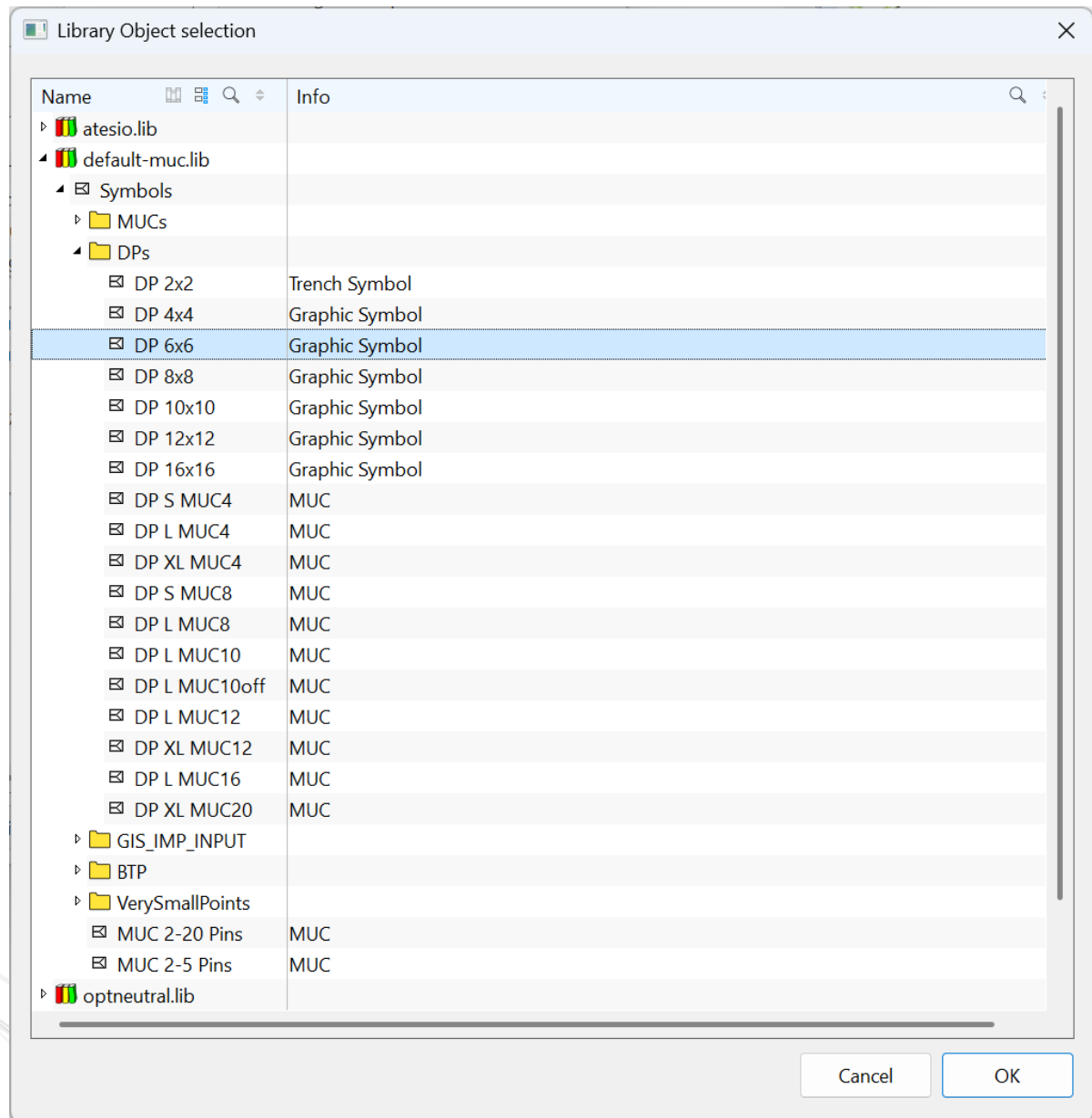
Left click on the red icon in the "Sites" line (or right click and select the "Add new mapping" command) and a dialog will appear showing the attributes of the unmapped sites.



In this example, all 7 unmapped locations are of type "Fiber splice-distribution point" and are already selected.

You can change the selection here. Pressing the OK button creates a new filter for the selected attributes.

A subsequent dialog appears in which you assign the library object for the filter.



For sites, you can select a symbol or a **sheet template**. Sheets must have square symbol extensions (see chapter Library Object or Template below).

After that, your new filter (=rule) will be displayed in the right list of mappings.

Mapping Right List

The list on the right shows the current mapping rules:

Element type	Filter	Lib-object	Create as	Destination layer
Site	Logical Type: Fiber Splicing Point	DP 6x6	<input checked="" type="checkbox"/> Sheet	T FSP
Site	Site type : Technical_any	StreetCabinet	<input type="checkbox"/> Symbol	T Trench
Site	Site type : Residential_any - Logical site type : BTP	BTP Bottom	<input type="checkbox"/> Symbol	T Trench
Trench fork MUCs	Default filter			N Trench fork
Trenchduct	Trench/Duct Type: Earthtrench - Trenching Meth...	2xDN-50		T Trench

There are 5 mapping rules defined here, one per row.

The first rule specifies that a library object named DP 6x6 is created as a worksheet on the FSP layer for each part with logical type = "Fiber Splicing Point".

T means layer type "Trench", N means layer type "Netlist".

The third rule creates a symbol library object named "BTP Bottom" on the Trench layer for each building type = "Residential_any" and logical site type = "BTP" (building termination point).

Conditions within a rule are always combined with a logical "and". Combining with "or" is not possible - in this case 2 rules must be created.

The 4th rule is a built-in rule that can't be deleted. This rule describes the creation of the "Trench-MUC"(multi-connector object), which is automatically created at all trench forks where trench lines meet without a site.

For the trench fork rule, only the destination layer can be edited.

A rule can be deleted by right-clicking it and selecting the "Delete" command:

Site	Site type : Technical_any	Stre
Site	Site type : Resi	BTP

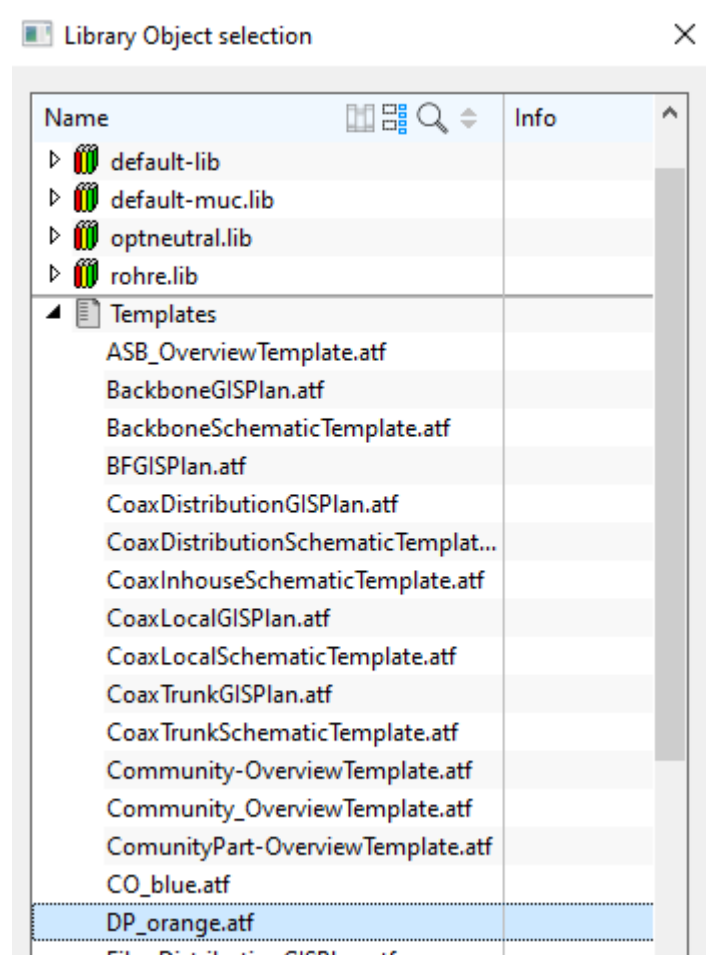
Delete

Library Object or Template

For existing rules, the library object can be changed by clicking on the "Lib-Object" column. For sheets, only symbols with square shape and even size are allowed. This means symbols of size 2x2, 4x4, 6x6, 8x8, etc. in LibEdit symbol coordinates. Symbols that don't meet these criteria will not be offered.

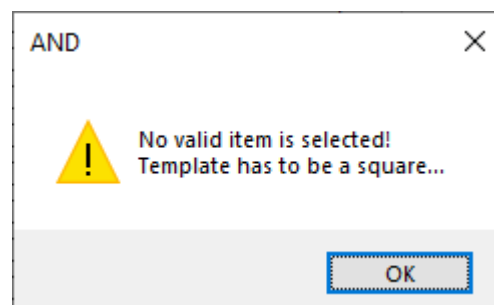
Hint: at fist usage or on a later change of the content of the template folder it may be needed to update the internal catalogue file. Just double-click onto an entry in upcoming message to re-read all contained templates and refresh the catalogue.

It is possible to use a sheet template instead of a symbol. Sheet templates can be found at the bottom of the library list:



Note that templates are also restricted to quadratic symbols.

If you select a non-quadratic template, you will get a rejection with the following message



Allowed library objects for trench lines are

- Trench Lines from TrenchTemplate.lib and UserTrenchTemplate.lib
- Single Ducts from the library
- Micro-duct-packages from the library

Create as

When you have mapped to a symbol, you have two choices:

1. Create as Symbol: A symbol is created. The pins have fixed positions given by the library
2. Create as Sheet: An empty sheet containing the graphics of the symbol is created. The pins are created dynamically depending on the connected trench lines. For example, if three trench lines are connected to a given location, three sheet connector pins are created connecting the trench lines to the sheet.

Layer

When the mouse is moved over the right side of the layer, an arrow appears. Clicking this arrow allows you to select an existing layer.

It is also possible to create a new layer for a rule. This can be done by double-clicking on the layer in the 5th column and entering the name of the new layer.

For these new layers, it is possible to change the layer type by clicking on the T/N icon. If the layer type is changeable, the icon is blue.

If one or more lines are selected and the "Create Rule" button is pressed, a dialog appears for selecting the library object or template for the rule(s).

After this selection, the new rule is added to the list on the right and the number of mapped objects is updated.

The target layer and the "Create as Sheet" flag must be edited in the right list.

Alternatively, you can right-click on the red or green text showing the number of mapped objects and select the Add Rule command.

Element type	Attributes	Element
Site	Mapped: 465 / Loaded: 479	Site
Site type		
Logical site type	FDP	Trench
TrenchDuct	Mapped: 958 / Loaded: 958	Trench
Type		Trench
Trenching method		

This creates a new rule using the current attribute situation.

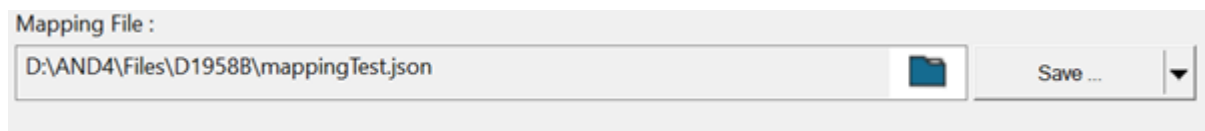
In the situation shown in the screenshot above, this is Logical Site Type = "FDP" and Site Type = any.

If no specific value is set for an attribute, this means any value.

Saving and Loading Mappings

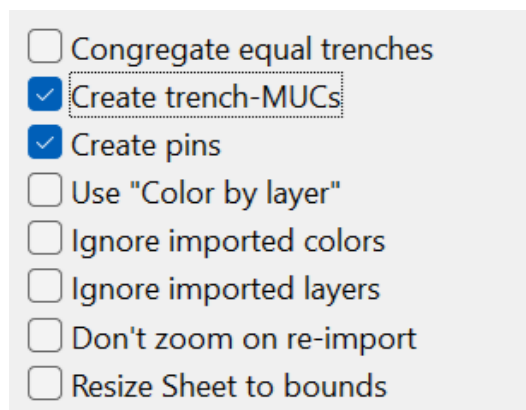
The current mapping can be saved using the Save button.

A mapping file can be loaded using the folder button to the left of the Save button.



Options

The following options are present:



- ☐ Congregate equal trenches
- ☒ Create trench-MUCs
- ☒ Create pins
- ☐ Use "Color by layer"
- ☐ Ignore imported colors
- ☐ Ignore imported layers
- ☐ Don't zoom on re-import
- ☐ Resize Sheet to bounds

- **Congregate equal trenches**
Merge trench-lines with equal data together
- **Create trench-MUCs**
Create MUCs at points where 3 or more trench-lines meet and cut those trench-lines to fit the pins of the MUC
- **Create pins**
Create sheet-pins, which connect the lines with the sheets.
Cut the lines to fit to those pins.
Separate too narrow point objects

- **Use "color by layer"**
If this is on, the colour of the imported object is given by its layer
If it is off, the colour is given by the library object
- **Ignore imported colors**
If this is on, the colour read in input is ignored and instead the colour is by layer of library object
- **Ignore imported layers**
If this is on, the layer read in input is ignored and instead the layer from automatic assignment is used
- **Don't zoom on re-import**
After import it is normally zoomed automatically so that the just imported network is completely visible.
With that option this can be switched off so that the viewport remains unchanged after import

Microducts

Microduct packages and the microduct legs are expected in ducts.GeoJSON.

In AND, the legs are subobjects of the package.

The import will create a microduct object for the package and all its legs. It is possible to specify a parent/child relationship in the input, e.g:

A microduct package with 12 subducts:

```
"id": "DL8-2941",
"properties": {
  "type": "duct_package"
  "sub_ducts": 12,
}
```

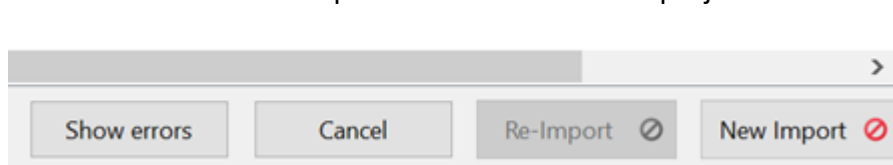
A microduct leg with the above package as parent:

```
"id": "D-L-458906",
"properties": {
  "type": "sub_duct"
  "parent_id": "DL8-2941"
  "parent_type": "duct_package",
  ....
}
```

If the parent relation is missing, the import tries to find the parent of a given leg by position.

Finalize the Import

When all objects are mapped, the New Import button is enabled. When it is clicked, trenches and sites are imported and added to the project.



If the Resize option is enabled, the sheet bounds are reduced to imported area plus 10%.

The purpose of the Re-Import button is to repeat the same import with different settings without being asked if all previously imported stuff should be deleted.

The difference to a normal import is that Re-Import automatically deletes all previously imported objects.

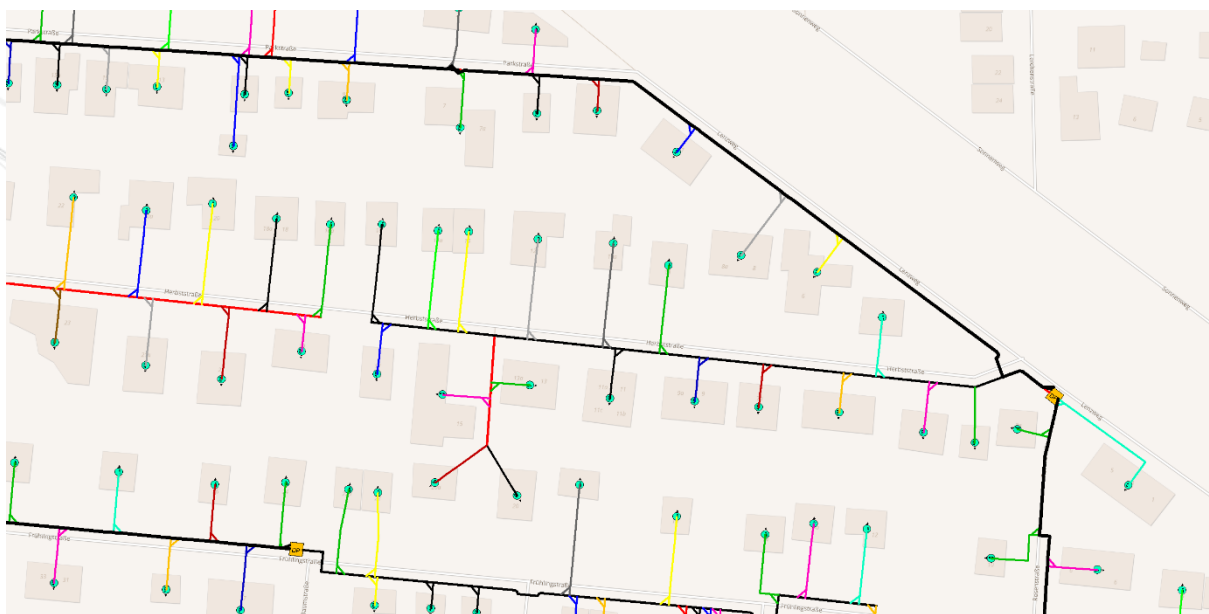
Only objects from a previous import and only those within the polygon of the data to be imported are deleted.

The Re-Import button is enabled if all data is mapped and at least one object that would be deleted exists.

If present, the ID of the GeoJSON source object is written into the AND object created from it as a reference (as a triplet with the name "GisImportSourceId").

The MUC created for the trench forks is a built-in object that exists since AND 4.19.

As a consequence, the projects created by GIS-Import feature can only be used in AND 4.19 and higher.



Example of a project generated with GIS-Import feature from a WebSolution export

Appendix Custom Wrappers

With the toolset in installation folder and this documentation user may create own wrappers allowing to convert existent input formats into the defined GeoJSON which is then accepted by GIS-Import feature. Such a custom Wrapper can then easily be called from Import dialogue.

Hint: the GeoJSON output of a wrapper should be validated against the schema files we provide with the delivery. You may use one of the numerous JSON validation tools offered in web by just dragging the schema and the input file into it and examine the resulting output.

Interface

Wrappers are subdirectories containing a script prepare.cmd.

The command line script prepare.cmd is expected to process the data source (e.g. a WebSolution export or a shape file, ...) and transform it into AND GIS Import compatible GeoJSON files.

The location for the **wrappers** is

<SERVER_SHARES OR ProgramData>\Settings\CommonConfig\GISImport\wrappers

e.g.

C:\ProgramData\AND\Settings\CommonConfig\GISImport\wrappers\ShapeSample

or e.g.

C:\ProgramData\AND\Settings\CommonConfig\GISImport\wrappers\WebSolution

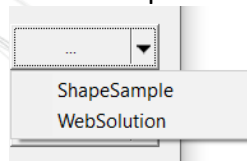
The location for sample wrapper **data** is

<SERVER_SHARES OR ProgramData>\Settings\CommonConfig\GISImport\sampladata

e.g.

C:\ProgramData\AND\Settings\CommonConfig\GISImport\sampladata\ShapeSample

The wrapper subdirectories are listed in AND client GIS Import function and can be chosen in the "Prepare Import" sub dialog.



Then prepare.cmd of the chosen wrapper can be executed from the AND client using the "Execute" button in the "Prepare Import" sub dialog as already described above.

Parameters

prepare.cmd is given three parameters by the AND client:

- src=%~1 (source: directory, zip, ..)
- dst=%~2 (destination: GIS import directory for AND)
- tools=%~3 (tools used: "<ANDExeBinDir>\INSTALL\GIS Import")

The result code of `prepare.cmd` is used by AND client to report errors:

- return code 0 indicates success
- return code > 0 indicates an error

A result file `prepare.log` is expected to be created by `prepare.cmd`: `prepare.log` will be displayed by AND client.

In case of success the result AND GeoJSON files can then be imported in the main AND client NetElement GIS Import dialog.

In case of errors, the user may inspect the error messages in `prepare.log` and try to resolve the error and retry.

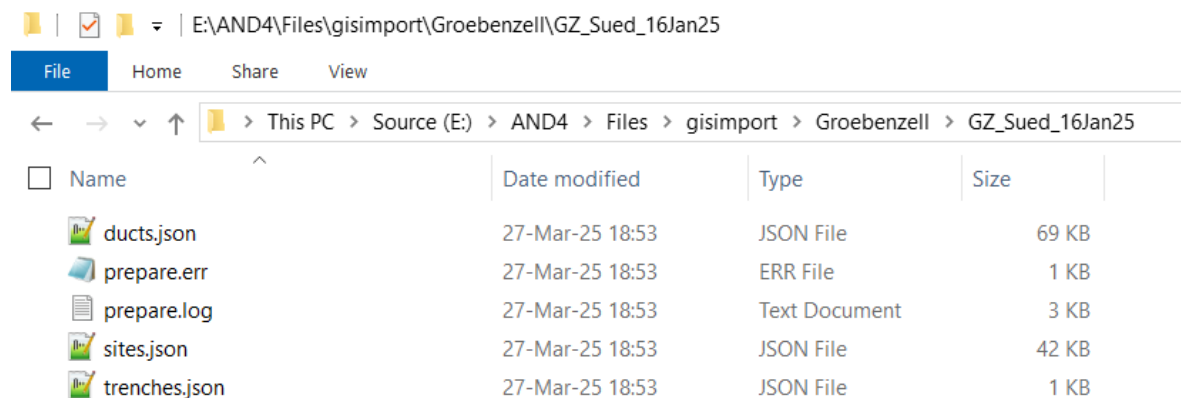


Image: result files of a wrapper run.

Note: `prepare.err` is used by the WebSolution wrapper to store additional log information in case of errors.

Sample Wrapper and `_ShapeBase`

`_ShapeBase` is a helper tool for creating custom wrappers. The ShapeSample wrapper is based on `_ShapeBase` and shows the usage of the `_ShapeBase` tools.

ShapeSample is provided with sample data too (a shape with more or less 1:1 AND GeoJSON attributes) plus a mapping of the transformed AND GISImport GeoJSON and with the resulting net file.

`_ShapeBase` is called by the ShapeSamle wrapper:

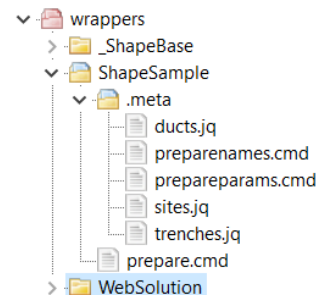
```
set DERIVEDDIR=%~dp0.
call "%DERIVEDDIR%\..\_ShapeBase\preparebase.cmd" "%~1" "%~2" "%~3" "%~4" "%~5"
```

`_ShapeBase` provides two abstraction levels of configuration: simple and complex:

Simple

For simple shape file transformations, a simplified `_ShapeBase` interface exists in the `.meta` subdirectory of the simple `_ShapeBase` derived wrapper (see `ShapeSample` wrapper).

Create 5 files: 2 are cmd script files, 3 are jq script files for JSON transformation.



The tools directory provided with the AND GIS Import (in `<bindir>\Install\GISImport\tools`) contains 7zip for zip file unpacking, GDAL tools for file format conversion and the jq script language for transforming json files. Of course, these are not mandatory, and any other user provided tools can be used (e.g. winrar for unpacking (limited), jslt for JSON transformation (requires an appropriate java installation), etc.).

The default tools provided are free and distributable and do not require extensive setup/configuration.

`_ShapeBase` consist of 2 steps:

<Shape> – step 1 (gdal) → <coordinate-transformed GeoJSON> - step 2 (jq) → <AND GeoJSON for import>

Step1

- ***prepareparams.cmd***
set GDAL ogr2ogr conversion tool parameters: EPSG coordinate system of the shape datasource.
see the `ShapeSample\.meta\prepareparams.cmd` for an example.
- ***preparenames.cmd***
script which allows to prepare coordinate-transformed files `ducts.json`, `trenches.json`, `sites.json` from the files resulting from 1:1 conversion of shape files.

E.g. ducts might reside in files with different names or consist of multiple json files: there are tools "init" (create empty), "use" (copy) and "append" for this; e.g. to merge `ducts1.json` and `ducts2.json` into `ducts.json` do init then 2x append.
See the `ShapeSample\.meta\preparenames.cmd` for examples.

Step 2

- ***ducts.jq***
transform the `ducts.json` from shape conversion to AND GisImport GeoJSON
see `ShapeSample\.meta\ducts.jq` as an example.
- ***trenches.jq***
transform the `trenches.json` from shape conversion to AND GisImport GeoJSON
see `ShapeSample\.meta\trenches.jq` as an example.

- **sites.jq**

transform the sites.json from shape conversion to AND GisImport GeoJSON
see ShapeSample\meta\sites.jq as an example.

Notes for importing

- _ShapeBase\preparebase.cmd contains an commented out line which allows to enable **data source specific configuration** of _ShapeBase: this by default has been disabled for security reasons, such that users (especially on Citrix) may not execute random script code coming with data sources. If however, a service provider with a local AND client installation has various data sources which requires one-time changes for whatever reason (bad data, export errors, ..). This can be enabled to avoid having to create a custom wrapper for each data source. Search for METASRC in the script file for detailed information.

Hints for jq scripts

- The **jq manual** is available online: <https://jqlang.org/manual/>
When developing JQ transformations, it is advisable to make small changes at a time and improve the script step by step. Use a script call to check compatibility and results, from the ShapeSample directory;
e.g.
`prepare.cmd "c:\tmp\myshape" "c:\tmp\GISImport" "C:\Program Files\CDS\AND4\Install\GISImport\tools"`
- With the default Step2 transformation, the jq transformations are provided with all three data sources as parameters, in case cross file id translations are required. See ShapeSample\meta\ducts.jq as an example.

Complex

For complex wrappers like WebSolution which transforms relations etc the two _ShapeBase steps may be replaced.

Things like zip decompression and log framework are then still available via preparebase.cmd as tools.

preparebase.cmd can also be replaced, there is no restriction.

To replace the main steps, see the WebSolution wrapper as example or ask for AND consulting.

In the "transform" subdirectory of the wrapper, create your own script files:

- Step1_shape2shapeGeoJson.cmd
(convert shape to shape GeoJSON 1:1 with coordinates transformed and file names normalized)
- Step2_shapeGeoJson2ANDGISImportGeoJson.cmd
(transform shape GeoJSON from step 1 to AND GIS-Import GeoJSON)

Appendix Value Mapping

The value mapping converts input attribute values into defined values within AND objects. Those target values may be hard-defined or in most cases defined through 'enum' xml files also stored in folder .\Install\Common\CommonConfig

The content of file

%ProgramFiles%\AND\Install\Common\CommonConfig\GisImportEnumMappings.xml

as a list. For the case there is no target enum such a value will not be converted.

import file attribute SourceEnums - see GeoJSON schema	AND object DestEnum
gis_interface::Status::Not_available	MetaStates::Status::Unknown
gis_interface::Status::Inherit	MetaStates::Status::Unknown
gis_interface::Status::Evaluation	MetaStates::Status::Unknown
gis_interface::Status::Decision	MetaStates::Status::Unknown
gis_interface::Status::Planning	MetaStates::Status::Planning New
gis_interface::Status::Planned	MetaStates::Status::Planning corrected
gis_interface::Status::Ordered	MetaStates::Status::Unknown
gis_interface::Status::Booked	MetaStates::Status::Unknown
gis_interface::Status::Interrupted	MetaStates::Status::Asset out of service
gis_interface::Status::Building	MetaStates::Status::Unknown
gis_interface::Status::Built	MetaStates::Status::Asset in operation
gis_interface::Status::Operation	MetaStates::Status::Asset in operation
gis_interface::Status::Standing_idle	MetaStates::Status::Asset unmanaged
gis_interface::Status::Out_of_order	MetaStates::Status::Put out of operation
gis_interface::LogicalSiteType::Not_available	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::TI	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::RS	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::HEAD	Generic::NHSpecifiers::Headend
gis_interface::LogicalSiteType::POP	Generic::NHSpecifiers::POP
gis_interface::LogicalSiteType::CO	Generic::NHSpecifiers::CO
gis_interface::LogicalSiteType::MPOP	Generic::NHSpecifiers::POP
gis_interface::LogicalSiteType::DP	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::FSP	Generic::NHSpecifiers::SplicePoint
gis_interface::LogicalSiteType::FDP	Generic::NHSpecifiers::FDP
gis_interface::LogicalSiteType::FSDP	Generic::NHSpecifiers::FDP
gis_interface::LogicalSiteType::POI	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::RDP	Generic::NHSpecifiers::
gis_interface::LogicalSiteType::BTP	Generic::NHSpecifiers::OptSignalPoint
gis_interface::LogicalSiteType::BEP	Generic::NHSpecifiers::BEP
gis_interface::LogicalSiteType::NODE	Generic::NHSpecifiers::FiberNode
gis_interface::LogicalSiteType::AMP	Generic::NHSpecifiers::GroupAmp

gis_interface::LogicalSiteType::POW	Generic::NHSpecifiers::PowerSource
gis_interface::SiteType::Site_any	CSiteTypes::eSiteTypes::eNone
gis_interface::SiteType::Residential_any	CSiteTypes::eSiteTypes::eResidentialBuilding
gis_interface::SiteType::Commercial_any	CSiteTypes::eSiteTypes::eCommercialBuilding
gis_interface::SiteType::Administrative_any	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Technical_any	CSiteTypes::eSiteTypes::eTechnicalFacility
gis_interface::SiteType::Infrastructure_any	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Tower	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Transformer_tower	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Single_family_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Duplex_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Terraced_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Multiple_dwelling_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Apartment_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::High_rise_house	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Office_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Commercial_single	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Commercial_multi	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Commercial_mall	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Market	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Kiosk	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Warehouse	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Factory_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Industrial_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Farm	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Hotel	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Government_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Administrative_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::School	CSiteTypes::eSiteTypes::
gis_interface::SiteType::University	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Kindergarten	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Church	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Hospital	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Train_station	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Transportation	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Parking_garage	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Airport	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Sports_building	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Stadium	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Building_infrastructure	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Tower_infrastructure	CSiteTypes::eSiteTypes::

gis_interface::SiteType::Transformer_tower_infrastructure	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Transformer_station_infrastructure	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Cabinet	CSiteTypes::eSiteTypes::eStreetCabinet
gis_interface::SiteType::Manhole	CSiteTypes::eSiteTypes::eManhole
gis_interface::SiteType::Earthhole	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Trench_Divider	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Closure	CSiteTypes::eSiteTypes::eEnclosure
gis_interface::SiteType::Mast	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Pole	CSiteTypes::eSiteTypes::ePole
gis_interface::SiteType::Wallbox_outside	CSiteTypes::eSiteTypes::eWallbox
gis_interface::SiteType::Floor	CSiteTypes::eSiteTypes::eFloor
gis_interface::SiteType::Room	CSiteTypes::eSiteTypes::eRoom
gis_interface::SiteType::Appartment	CSiteTypes::eSiteTypes::eDwellingUnit
gis_interface::SiteType::Office_open_plan	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Office_room	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Wallbox_inside	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Cabinet_inside	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Distribution_Frame	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Construction	CSiteTypes::eSiteTypes::
gis_interface::SiteType::Rack	CSiteTypes::eSiteTypes::eRack
gis_interface::SiteType::Shelf	CSiteTypes::eSiteTypes::eShelf
gis_interface::SiteType::Cassette	CSiteTypes::eSiteTypes::eCassette
gis_interface::TrenchType::Trench_earth	CSegmentInfo::eLayingTpe::eEarth
gis_interface::TrenchType::Trench_air	CSegmentInfo::eLayingTpe::eAir
gis_interface::SurfaceType::Unknown_surface	EnumValues::SurfaceType::unknown
gis_interface::SurfaceType::Unmetaled_surface	EnumValues::SurfaceType::unmetaled
gis_interface::SurfaceType::Tarred_surface	EnumValues::SurfaceType::tarred
gis_interface::SurfaceType::Concreted_surface	EnumValues::SurfaceType::concreted
gis_interface::SurfaceType::Paved_surface	EnumValues::SurfaceType::paved
gis_interface::SurfaceType::Paved_Sealed_surface	EnumValues::SurfaceType::paved (sealed)
gis_interface::LayingType::Unknown_laying	EnumValues::TrenchLayingType::ignore
gis_interface::LayingType::Buried_laying	EnumValues::TrenchLayingType::buried
gis_interface::LayingType::Tray_Installation_laying	EnumValues::TrenchLayingType::tray
gis_interface::LayingType::Ariial_laying	EnumValues::TrenchLayingType::arial
gis_interface::LayingType::Dry_Installation_laying	EnumValues::TrenchLayingType::
gis_interface::LayingType::Within_Construction_laying	EnumValues::TrenchLayingType::
gis_interface::LayingType::Street_Crossing_laying	EnumValues::TrenchLayingType::
gis_interface::LayingType::Train_Route_Crossing_laying	EnumValues::TrenchLayingType::
gis_interface::LayingType::Bridge_Route_Crossing_laying	EnumValues::TrenchLayingType::

gis_interface::LayingType::River_Route_Crossing_laying	EnumValues::TrenchLayingType::
gis_interface::TrenchingMethod::Unknown_trenching_method	EnumValues::ConstructionMethod::
gis_interface::TrenchingMethod::Conventional_Excavation_trenching_method	EnumValues::ConstructionMethod::
gis_interface::TrenchingMethod::Cable_Ploughing_trenching_method	EnumValues::ConstructionMethod::ploughing
gis_interface::TrenchingMethod::Micro_Trenching_trenching_method	EnumValues::ConstructionMethod::Microtrenching
gis_interface::TrenchingMethod::Mini_Trenching_trenching_method	EnumValues::ConstructionMethod::Minitrenching
gis_interface::TrenchingMethod::Macro_Trenching_trenching_method	EnumValues::ConstructionMethod::Macrotrrenching
gis_interface::TrenchingMethod::Hydraulic_Rotary_Water_Drilling_trenching_method	EnumValues::ConstructionMethod::WaterDrilling
gis_interface::TrenchingMethod::Soil_Displacement_trenching_method	EnumValues::ConstructionMethod::SoilDisplacement
gis_interface::TrenchingMethod::With_Sewer_Trench_trenching_method	EnumValues::ConstructionMethod::SewerPipe
gis_interface::TrenchingMethod::With_Water_Trench_trenching_method	EnumValues::ConstructionMethod::WaterPipe
gis_interface::TrenchingMethod::Aerial_Mounting_trenching_method	EnumValues::ConstructionMethod::AboveGround
gis_interface::TrenchingMethod::Other_trenching_method	EnumValues::ConstructionMethod::Other
gis_interface::Accuracy::Unknown_accuracy	EnumValues::Accuracy::unknown
gis_interface::Accuracy::Planned_accuracy	EnumValues::Accuracy::planned
gis_interface::Accuracy::Estimated_accuracy	EnumValues::Accuracy::estimated
gis_interface::Permission::Neutral_permission	EnumValues::Permit::unknown
gis_interface::Permission::Not_Needed_permission	EnumValues::Permit::Not needed
gis_interface::Permission::Pending_permission	EnumValues::Permit::Pending
gis_interface::Permission::Obtained_permission	EnumValues::Permit::Obtained
gis_interface::Permission::Rejected_permission	EnumValues::Permit::Rejected
gis_interface::DuctUsage::Unknown_duct_usage	EnumValues::DuctTradeType::any
gis_interface::DuctUsage::Communication_duct_usage	EnumValues::DuctTradeType::communication
gis_interface::DuctUsage::Electricity_Supply_duct_usage	EnumValues::DuctTradeType::power
gis_interface::DuctUsage::District_Heating_duct_usage	EnumValues::DuctTradeType::heat
gis_interface::DuctUsage::Drinking_Water_Supply_duct_usage	EnumValues::DuctTradeType::fresh water
gis_interface::DuctUsage::Wastewater_duct_usage	EnumValues::DuctTradeType::waste water
gis_interface::DuctUsage::Gas_duct_usage	EnumValues::DuctTradeType::gas
gis_interface::DuctUsage::Disused_Conduit_duct_usage	EnumValues::DuctTradeType::
gis_interface::DuctUsage::Other_duct_usage	EnumValues::DuctTradeType::other
gis_interface::RentalType::Neutral_rental	EnumValues::RentalType::neutral
gis_interface::RentalType::Rental_Income_rental	EnumValues::RentalType::rental income

gis_interface::RentalType::Lease_Costs_rental	EnumValues::RentalType::lease costs
gis_interface::RentalType::Other_rental	EnumValues::RentalType::
gis_interface::OwnerType::Neutral_owner	EnumValues::OwnerType::neutral
gis_interface::OwnerType::Own_Inventory_owner	EnumValues::OwnerType::own inventory
gis_interface::OwnerType::Foreign_Inventory_owner	EnumValues::OwnerType::foreign inventory
gis_interface::OwnerType::Communal_Inventory_owner	EnumValues::OwnerType::
gis_interface::OwnerType::Partner_Inventory_owner	EnumValues::OwnerType::