

Pipe Invest

Import manual: Version 1.0.0



LOGSTOR Pipe Invest

Using the LOGSTOR Pipe Invest platform imported data is required.

The District Heating networks pipe data are imported into the software using GIS shapefiles complying with a predefined data model described in the following.

The shapefile is uploaded to the LOGSTOR Pipe Invest platform where the data are automatically screened and verified. The uploaded data forms the foundation for the analysis of pipe condition and provides you with a view of the general condition of your pipes.

Based on this, an economic view is generated, enabling you to experiment with predictive maintenance and investment planning of sustainable refurbishment with a budget.

Import of new pipe dataset

The import is conducted in six easy steps:

1. Create a shapefile containing pipe data
 - a. The shapefile must comply with the format described
2. Login to the LOGSTOR Pipe Invest Platform
3. Click "Add Dataset"
 - a. Add the zip compressed shapefile
4. Attach file
5. Upload file
6. Confirm dataset – complete
 - a. The data are analyzed and a report is generated

- Appendix: Indexation

Step 1: Create a shapefile containing pipe data

In the first step you need to collect your data model in a shapefile. The shapefile must contain some basic information regarding the pipes in your district heating network. The data needed consists of:

FieldName	Data type	Description	Codetable name	Default value	Required
Id	string	Unique identification of the pipe			Yes
Dimension	int	Outer dimension of the pipe		1 (mm)	Yes
Location	int	Indication of the pipe's zone location	LocationZone	2 (City/zone)	Yes
CreateDate	date format	Date for establishment of the pipe		Now (time at import)	Yes
Type	int	Indication of the pipe type	PipeType	3 (Distribution pipe)	Yes
Construct	int	Indication of the pipe construction type	ConstructionType	2 (Pre-insulated)	Yes
Length	decimal	The length of the pipe		1 (meter)	Yes

FieldName	Data type	Description	Codetable name	Default value	Required
Geometry	geometry	Coordinates for where the pipe is located			Yes
Describe	string	Description of the pipe shown on the map			No
IsolationDimension	int	Indication of the pipe's insulation dimension in whole millimeters		1 (mm)	Yes
IsolationClass	int	Indication of the pipe's isolation class	IsolationClass	0 (Unknown)	Yes
System	int	Indication of the system type	PipeSystem	0 (Unknown)	Yes
JointCount	int	Number of joints used for a pipe		2 (joints in each end)	Yes
MuffType	int	Indication of the joints used on the pipe (mostly used if more than one kind)	MuffType	0 (Unknown)	Yes

Data model pipe: Code table description

The following code table is available to define default values for some of the data types:

Name	Value	Description
LocationZone	0	Unknown
	1	Country
	2	Town
	3	City
	4	InnerCity

Name	Value	Description
PipeType	1	Production pipes
	2	Transmission pipe
	3	Distribution pipe
	4	Stikledning/Services pipe

Name	Value	Description
MuffType	0	Unknown
	1	Welded
	2	Cross linked PE
	3	Non cross linked PE
	4	Steel joint
	5	Shrink Wraps
	6	Kilemuffer (Polymer)

Name	Value	Description
IsolationClass	0	Unknown
	1	Serie 1
	2	Serie 2
	3	Serie 3
	4	Serie 4

Name	Value	Description
ConstructionType	1	Canal
	2	Pre-insulated

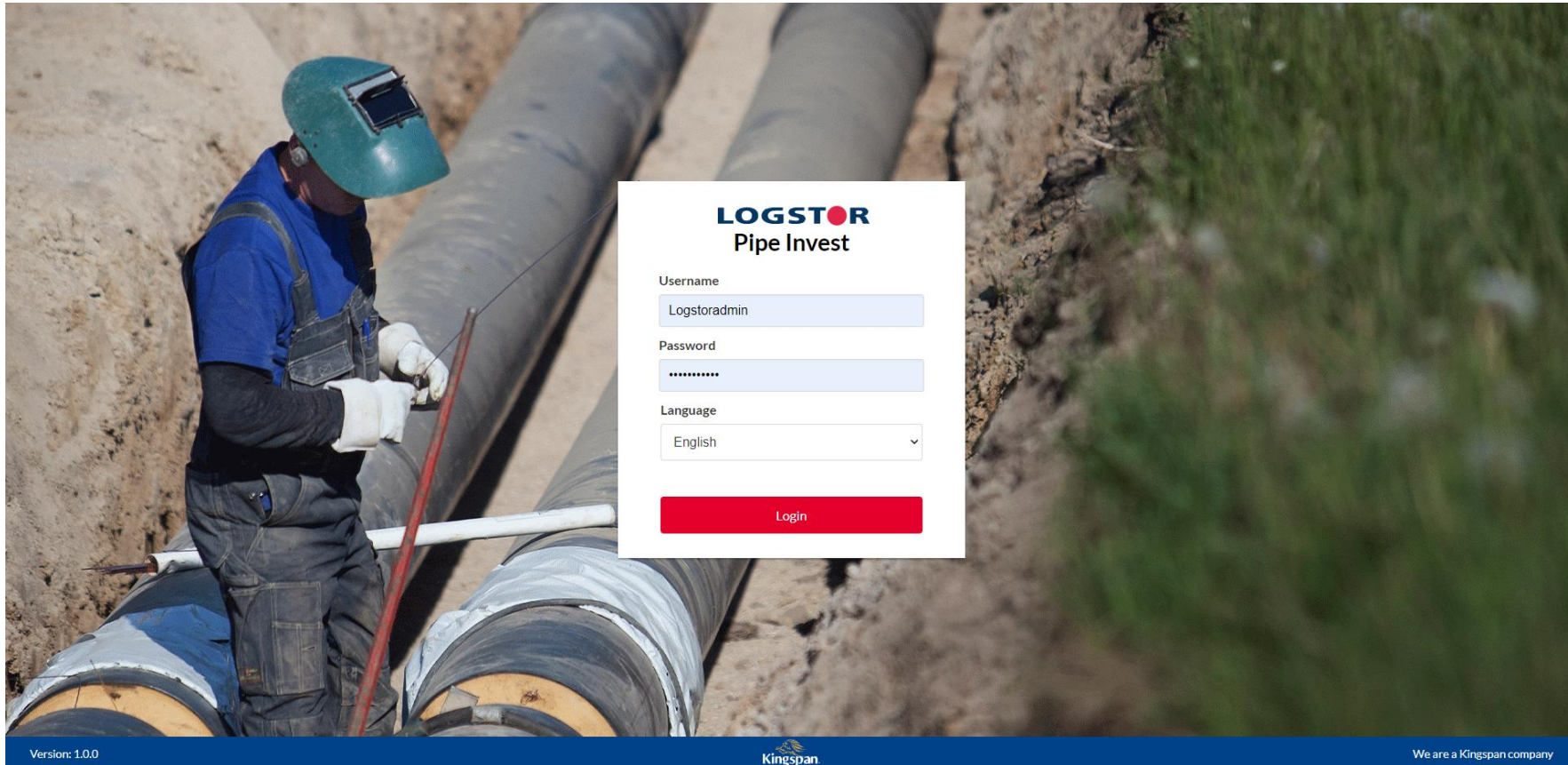
Name	Value	Description
PipeSystem	0	Unknown
	1	AluFlextra
	2	CuFlex
	3	Enkelt
	4	PexFlextra
	5	Twin
	6	TwinAluFlex
	7	SteelFlex
	8	Steel (bonded pipes)

Data model pipe: Format description

The following format description is available for date.

Name	Value	Examples	Description
date format (string)	DD-MM-YYYY	15-11-1974	Date
	DDMMYY	15111974	
	YYYY	1974	Automatically becomes the 1/1-year
	YYYY-MM-DD	15-11-1974	

Step 2: Login to the LOGSTOR Pipe Invest Platform
Use your profile details to login.



The image shows a worker in a blue uniform and green helmet working on large pipes in a trench. A login form is overlaid on the image, featuring the LOGSTOR Pipe Invest logo and fields for Username, Password, and Language. The Username field contains 'Logstoradmin', the Password field contains '*****', and the Language dropdown is set to 'English'. A red 'Login' button is at the bottom of the form.

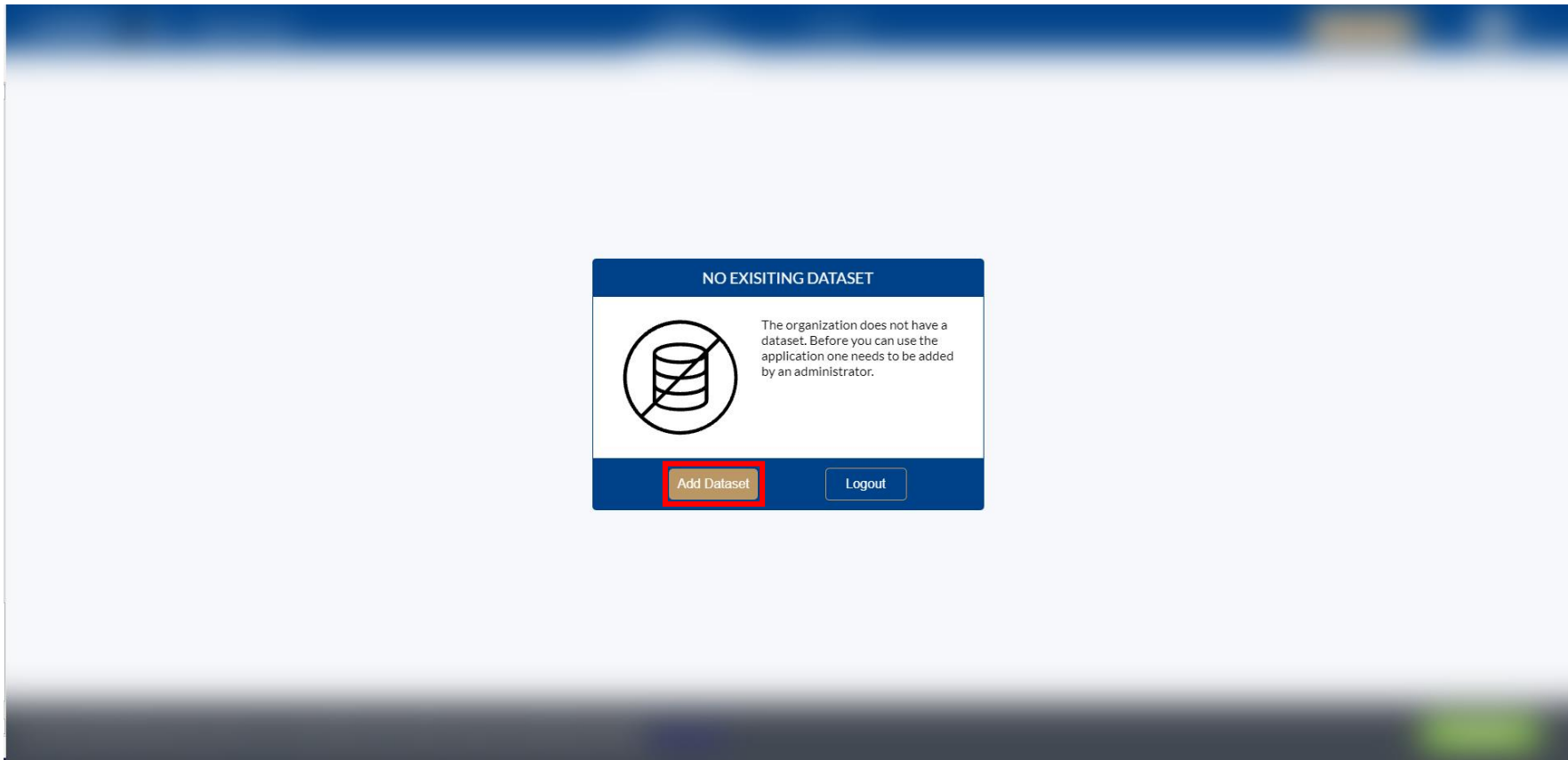
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Step 3: Click “Add Dataset”

After you have logged in for the first time, you will be met by the following pop-up window. Click “Add Dataset”.



Step 4: Attach file

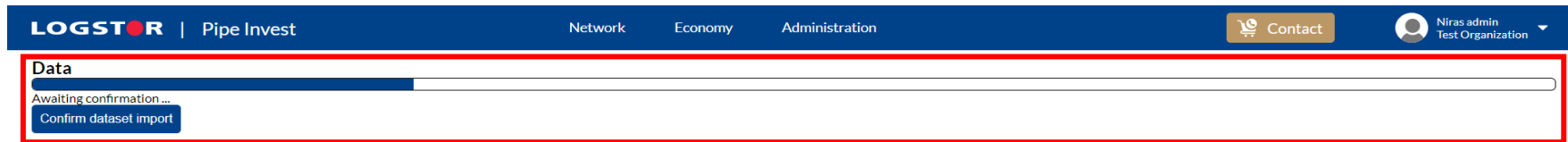
Click "Upload one .zip file", locate your zip shapefile of the pipe data on your local drive and upload the file.



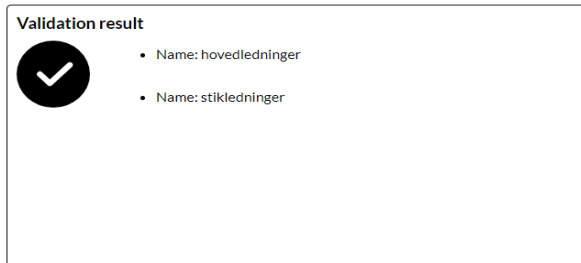
The screenshot shows the top navigation bar of the LOGSTOR Pipe Invest application. The navigation bar is dark blue and contains the following elements from left to right: the LOGSTOR logo, the text 'Pipe Invest', three menu items 'Network', 'Economy', and 'Administration', a 'Contact' button with a shopping cart icon, and a user profile dropdown menu for 'Niras admin' from 'Test Organization'. Below the navigation bar, the page content is white. On the left side, there is a 'Data' section with a 'New dataset' link. A red rectangular box highlights a button labeled 'Upload one .zip file' within this section.

Step 5: Upload file

After locating your zip shapefile and uploading it, a validation of the file will start.



The screenshot shows the top navigation bar of the LOGSTOR | Pipe Invest application. The navigation bar includes the logo, the text "Pipe Invest", and menu items for "Network", "Economy", and "Administration". On the right side, there is a "Contact" button and a user profile dropdown for "Niras admin Test Organization". Below the navigation bar, a red-bordered box highlights a "Data" section. Inside this box, there is a progress bar and the text "Awaiting confirmation ...". A blue button labeled "Confirm dataset import" is positioned below the progress bar.



The screenshot shows a "Validation result" section. It features a circular icon with a white checkmark on a black background. To the right of the icon, there is a list of two items:

- Name: hovedledninger
- Name: stikledninger

Step 6: Confirm dataset - complete

After the validation has been completed, a report of the import is shown and you are ready to use Pipe Invest. You can see the separate guide "User manual" for an introduction to Pipe Invest, which can be found in the "Help"-tab in the menu dropdown.

The screenshot displays the LOGSTOR Pipe Invest interface. At the top, a dark blue navigation bar contains the logo, menu items (Network, Economy, Administration), a Contact button, and a user profile for 'Niras admin Test Organization'. Below the navigation bar, the main content area shows 'Data Complete' with a progress bar. A red box highlights three summary boxes:

- Validation result:** Indicated by a checkmark icon, listing 'Name: hovedledninger' and 'Name: stikledninger'.
- Import result:** Indicated by a download icon, listing 'Name: hovedledninger' (Feature Count: 11725) and 'Name: stikledninger' (Feature Count: 10525).
- Analysis result:** Indicated by a person and document icon, listing 'Name: hovedledninger' and 'Name: stikledninger'.

At the bottom, a dark blue footer contains 'Version: 1.0.0', the Kingspan logo, and the text 'We are a Kingspan company'.

Appendix: Indexation

When the shapefile is uploaded to Pipe Invest, your GIS-data will automatically receive an index value according to our calculations of the data types in the four parameters:

- Quality of pipes Index
- Energy loss Index
- Joints Index
- Physical condition Index

A high index value describes a great condition, while a low value depicts a poor condition:

- 65-100 (Green)
- 33-64 (Yellow)
- 0-32 (Red)

In the subsequent pages, the used data from the shapefile are described with an indication of the differentiating index values. It is important to note, that:

- Some data are not used for the indexation, but is necessary to show and calculate information on the platform accurately.
- There are index values between the highest and the lowest indexations in the following overview.
- The indexation of the datainput is determined by a weighted ratio (E.g. X percent of DataInput1, and X percent of DataInput2).

Quality of pipes Index: PipeSystem and CreateDate

PipeSystem (Index from 40-100)

Lowest index values: Unknown pipe types, PexFlextra, etc.

Highest index values: AluFlextra, Twin AluFlextra, etc.

CreateDate (Index from 10-100)

Lowest index values: ≥ 50 years, etc.

Highest index values: ≤ 10 years, etc.

Energy loss Index: IsolationClass, PipeSystem, and CreateDate

IsolationClass (Index from 20-100)

Lowest index values: Unknown isolation classes, etc.

Highest index values: Serie 4, etc.

PipeSystem (Index from 40-100)

Lowest index values: Unknown pipe types, PexFlextra, etc.

Highest index values: AluFlextra, Twin AluFlextra, etc.

CreateDate (Index from 10-100)

Lowest index values: ≥ 50 years, etc.

Highest index values: ≤ 10 years, etc.

Joints Index: MuffType, JointCount, PipeSystem, and CreateDate

MuffType (Index from 20-100)

Lowest index values: Unknown muff types, etc.

Highest index values: Welded, etc.

JointCount (Index from 30-100)

Lowest index values: ≥ 10 pc., etc.

Highest index values: ≤ 2 pc., etc.

PipeSystem (Index from 40-100)

Lowest index values: Unknown pipe types, PexFlextra, etc.

Highest index values: AluFlextra, Twin AluFlextra, etc.

CreateDate (Index from 10-100)

Lowest index values: ≥ 50 years, etc.

Highest index values: ≤ 10 years, etc.

Physical condition Index: CreateDate

CreateDate (Index from 10-100)

Lowest index values: ≥ 50 years, etc.

Highest index values: ≤ 10 years, etc.