Purpose:
To have a standard documented process for everyone at WASCO to follow to ensure high data quality for the GIS. The most valuable on a GIS is the data. GIS holds a huge potential. Once all important data are in the GIS, much better planning, evaluation, interpretation and analysis of the water network is possible. These are strong tools for a non-revenue water reduction (NRWR) strategy.

SCOPE
This SOP describes the procedures of documentation of all network assets in GIS.

Responsibilities:
The Strategic Planning Manager is responsible for the performance of the whole process „Data input into GIS“. The Strategic Planning Manager is the linkage between all involved departments and units and, therefore, responsible that the workflow is efficient and effective and that everybody is supporting the process.

The GIS Supervisor is responsible for implementation of the process, i.e. organizing and managing the resources and the delivered quality.

The staff of all affected Departments is responsible that the procedure is implemented as described in this SOP and to suggest improvements.

Activities
The activities in the SOP are described below and schematically presented in the flowchart in figure 1 below.
be attached to the project area. Furthermore, all relevant Documentation for GIS Update has to be handed over to the SPD.

<table>
<thead>
<tr>
<th>Flowchart 2 – Documentation for Water Meter and Illegal Connections</th>
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<tbody>
<tr>
<td><strong>1</strong></td>
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<tr>
<th>Flowchart 3 – Documentation of changes in the network through repairs or preventive maintenance</th>
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</thead>
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<tr>
<td><strong>1</strong></td>
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<td><strong>2</strong></td>
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<td><strong>5</strong></td>
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<td><strong>6</strong></td>
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</table>
Figure 1: Flowchart of the SOP Data Input into GIS

Documentation for New Developments

Design and Construction

- New Construction is planned
- Construction is active
- Construction is completed

Strategic Planning (GIS Unit)

- Project Area in Online Maps
- Status updated in Online Maps
- Survey of location of all affected assets

GIS Technician

- Change status of Project in GIS Desktop App
- Notification to SPD

As-Built as PDF

- Change status of Project in GIS Desktop App and attach As-Built
- Status of Project is updated + As-Built

GIS Technician

- Hand over all relevant Documentation
- Documentation of Assets

GIS main database

Documentation for Water Meter and Illegal Connections

Customer Service

- Meter Reading Unit
- New Connection
- Water Meter Replacement
- Reconnection/DI sconnection

Add or Update

- Illegal Connections
- Add or Update

Photos of situation
Photo of illegal Verification Form - Drawing

GIS Field App for Customer Service

Strategic Planning (GIS Unit)

- Online Maps
- Regularly updates with quality check

GIS Technician

- GIS main database
- Online Maps
Documentation of changes in the network through repairs or preventive maintenance

All changes to the network have to be documented in GIS!
Responsibilities within the process

GIS Coordinator (Supervisor):

- Implementation of the process
- Stakeholder Consultation (internal and external: e.g. Support services, Water Services (GIS Assistance), Customer Services, Design & Construction)
- Technical Advisor to GIS Technician
- Receive results of data about the water network through: *Inspection Form IF, As-Builts from new constructions* → if not managed through the Apps
- Overlaying of information for analyze and generate needs
- Initiation of trainings for staff of other departments to ensure the workflow

GIS Technician:

- Survey of locations of network assets
- Update GIS by using all information from survey and from other departments (*Inspection Form IF, As-Builts from new constructions* → if not managed through the apps)
- Administration of the Apps
- Regular updates of GIS main database with the data from the online maps
- Quality checks

GIS Assistance:

- Update GIS by using all information from WOF and Field App for Leakage Report
- Analysis of data (leakages)
- Communication with GIS Coordinator

! The GIS Assistance is a new role. To facilitate communication, the GIS Assistance is physically located in the Data and Information Unit of Water Services but assigned to the Strategic Planning Department. This role is indispensable, as it requires close collaboration with Water Services to establish the information and data flow. Moreover, this role can analyze the data as needed by Water Services so that the benefits of GIS can be used from the very beginning.

Indicators:

The Manager of the Strategic Planning Department will set regular targets for the various categories of indicators mentioned below, with a view to monitor progress.

- To measure if the process “data input” is working well
  - Number of GIS updates within the specified time
  - The ratio of completed Work Orders to GIS updates (> 90%)
- To measure horizontal quality of data:
  - % of water network captured for the whole island
- To measure vertical quality of data:
  - % of mandatory attributes filled for the entered data
Accompanying FORMS and GUIDELINES:

<table>
<thead>
<tr>
<th>CF01</th>
<th>Work Order Form (WOF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF02</td>
<td>Illegal Verification Form (IVF)</td>
</tr>
<tr>
<td>CF03</td>
<td>Inspection Form (IF)</td>
</tr>
</tbody>
</table>

Links to other SOPs:
- SOP for Management & Communication of Water Disturbances
- SOP for Illegal Connections
- SOP for Preventive Maintenance
- SOP for New Developments

Abbreviations

<table>
<thead>
<tr>
<th>WOF</th>
<th>Work Order Form</th>
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</thead>
<tbody>
<tr>
<td>IVF</td>
<td>Illegal Verification Form</td>
</tr>
<tr>
<td>CS</td>
<td>Customer Services</td>
</tr>
<tr>
<td>DS</td>
<td>Disconnection Supervisor</td>
</tr>
<tr>
<td>CSM</td>
<td>Customer Services Manager</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operating Procedure</td>
</tr>
<tr>
<td>IF</td>
<td>Inspection Form</td>
</tr>
</tbody>
</table>

Revision of the SOP:

<table>
<thead>
<tr>
<th>Revision</th>
<th>date</th>
<th>Signature by SPD Manager and GM</th>
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