

**Inflow and Infiltration** Environmental Data Services (EDS) has the capacity, experience and resources to undertake a full Inflow and Infiltration (I/I) study in your area. Typically a complete I/I project consists of four stages:

- Sewage Flow and Rainfall monitoring and Analysis,
- Source Detection and Analysis,
- Rehabilitation
- Evaluation

## EDS Inflow and Infiltration Methodology

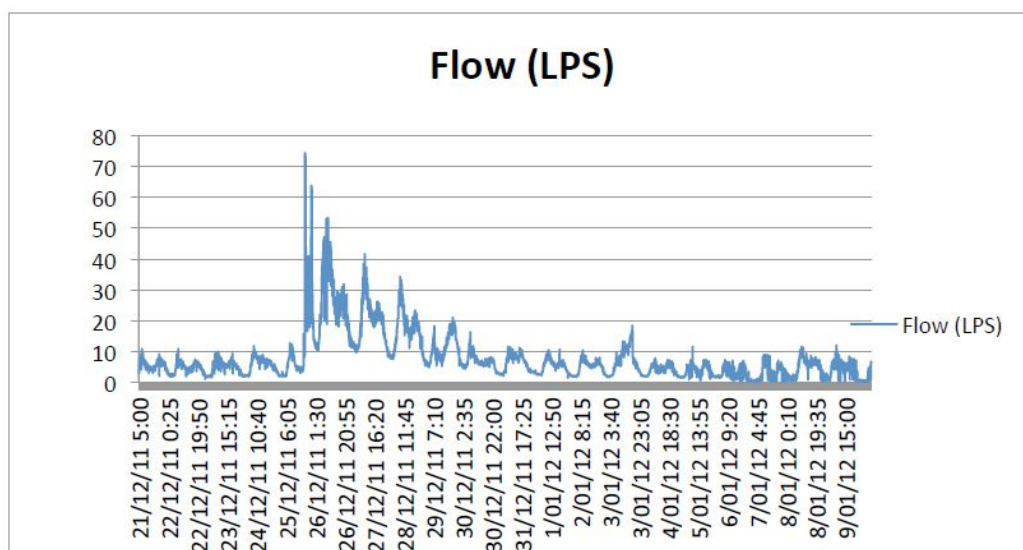
### Stage 1: Flow and Rainfall Monitoring & Analysis

An initial desk top assessment of your sewer is carried out to evaluate your flow monitoring needs to enable selection of the most suitable sites.

Following an inspection and assessment of the site, EDS choose the most appropriate meter considering all the site characteristics. EDS has the widest range of flow meters of supplier in the country and we believe in choosing the meter for the site and not the site for the meter. This allows our customers to be supplied with the best data possible for any given site.

EDS staff, who are fully trained and certified in confined space entry, will carry out all installation and maintenance of equipment right through to the end of the project.

To assess inflow and infiltration we need sufficient rain events. Normally we find that over a 12-week period enough rain has fallen to enable proper analysis, however on some occasions gauging has to be extended. We will keep you updated throughout the duration of the contract and discuss the progress, information attained and various alternatives.



**Evident I/I with increase of up to 6 times Average Dry Weather Flow (ADWF)**

At EDS we have the capacity to assess all of the catchments after the first one or two rain events and determine if a particular catchment may need more gauges installed, to give you a better indication of where the major sources of inflow and infiltration exist.

Once sufficient data has been attained, EDS's highly experienced data analyst Tim Fleming then analyses it. Tim has been specializing in I/I projects for over 20 years and uses Hydstra and Flow-Ware among other applications to ensure the highest levels of accuracy.

EDS can provide you with a I/I report that includes; an in-depth analysis of performance and findings (outlining specific events along with minimum, average and peak flows), an evaluation of the efficiency of the sewer system and recommendations.

### **Stage 2: Source Detection and Analysis**

Depending on the recommendations in the I/I report you may choose to proceed to the second stage and carry out source detection analysis.

Typical source detection analysis includes manhole inspections, CCTV inspections, smoke testing, dye testing, and isolation testing. EDS has the resources to carry out and/or project manage any source detection that may be required.



### **Smoke testing being conducted in residential areas**

Once the source detection and analysis phase is completed, in addition to recommendations of rehabilitation that needs to be undertaken, EDS will provide you with an overall strategy and development plan for a continuing maintenance program focussing on proactive solutions.

### **Stage 3: Rehabilitation**

Rehabilitation is only possible once the source has been accurately identified.

EDS have extensive experience and the capacity to source and project manage rehabilitation activities, these including; pipe replacement, pipe repairs (grouting, realigning, etc.), root cutting and/or root control, cleaning of the pipes, manhole repairs and eliminating sources of inflow (this includes fixing gutters and storm water drains that may be entering the sewer).



**High sediment evident in pipes**



**Tree roots and plant life evident**

Please note however that the timing of some of these activities may need to be prioritized depending on the specific circumstances and if our initial evaluations show that they may have an adverse influence on our analysis (for instance, root cutting and/or root control may be necessary in stage one, if we find that it is interfering with our ability to accumulate accurate data).

### **Stage 4: Evaluation**

Once the project has been completed we then follow through with a subsequent evaluation to determine the effectiveness of the work undertaken, this includes additional flow monitoring to evaluate rehabilitation/repairs carried out.

### **Finally**

At EDS we believe in good communication and are committed to regular consultation with our clients throughout a project to ensure that the best possible decisions are made at each of these stages.

EDS has the capability to provide their clients with ongoing data throughout the entire project. A dedicated web server is set up specifically for each client, which allows the client to access up to date data and reports at anytime.