

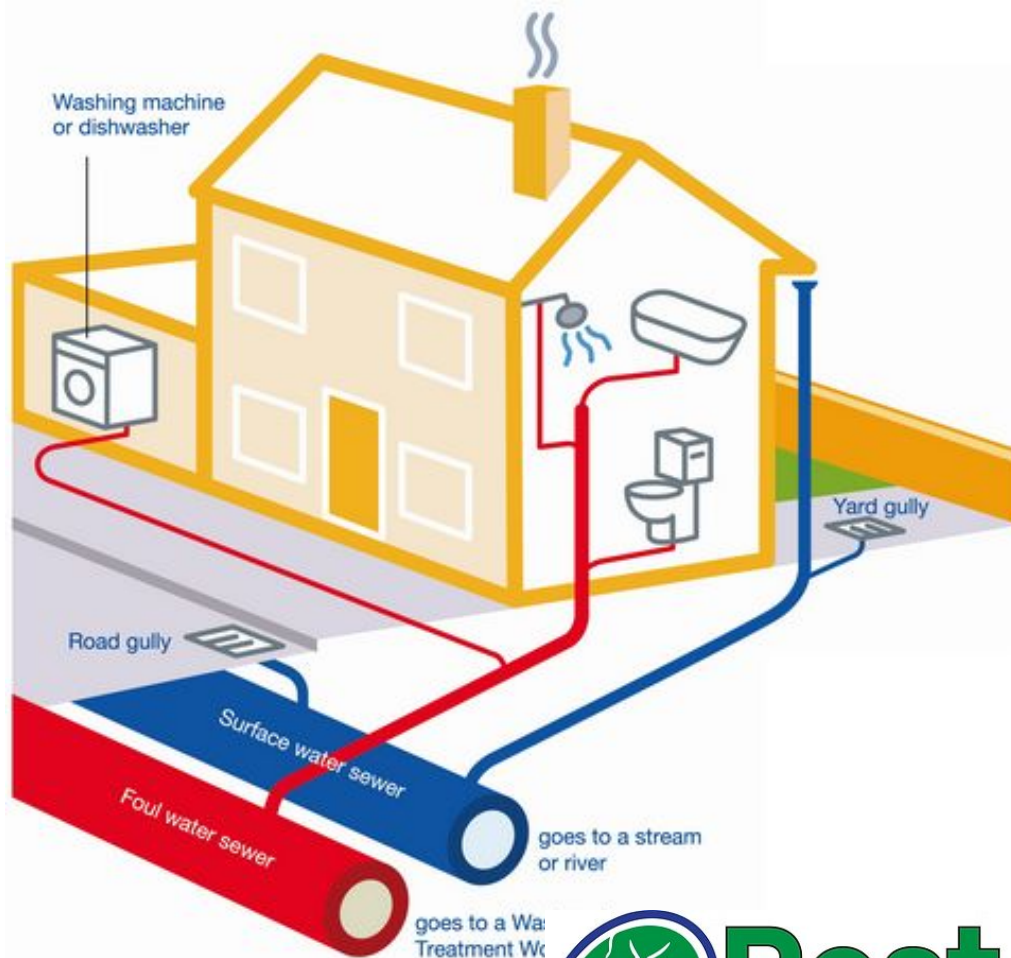
SEWER RODENT CONTROL



Rats physically transmit pathogens found in sewage to surface harbourages which may also include domestic premises.

Rats strong instinct to burrow and gnaw damages the sewer/ drainage infrastructure, particularly where defects already exist.

Sewer Connections



Surface/Roof water

Waste/Sewer Water

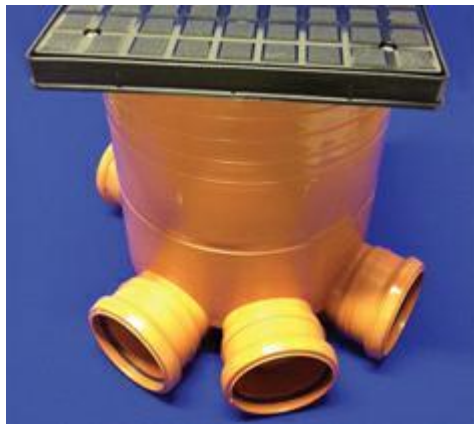


Pest NI
The Training Experts
IRELAND

Sewer Connections



Access to sewer pipelines is
through Manholes
or
Ajs (Armstrong junctions)
Near Houses



Sewer Connections

Pipeline

- 15-60 cm diameter glazed stoneware/fireclay/PVC/cast iron
- >90cm concrete /brick/ cast iron



Rat Behaviour - sewers

- Flooding, Population growth – migrate to surface to feed / disperse
- Most surface activity is due to defective drains
- Rats can swim through water traps/bends
- They nest in hole in brickwork/surrounding earth/faulty joints

Rat Behaviour - sewers

- They cause Blockages/subsidence
- They can move to telecom/cable ducts



Behaviour - sewers

- Sewers are excellent habitats for rats
- Lots of water –food/shelter
- No predators
- Cool in Summer/Warm in winter
- Connections between Foul and Surface water drains can occur

Behaviour - sewers

- Rat prefer older structures. Newer structure less favourable
- Flow is slow at higher points –food may lodge rats will move up for drier nesting sites
- Need not swim too much – larger sections can be difficult to negotiate
- Distance between manholes varies >100m

Behaviour - sewers

- Food outlets in to Poor Sewers Perfect Conditions
- Competition in limited space /conflict–pressure to emigrate –move on / move up
- Clan members make limited sorties for food
- Home range bigger where food is scarce

Behaviour - sewers

- Home range has been measured at 340m
- Can be between 2 manholes – hard to treat
- Overcome “new object reactions” faster
- Conflict within clans and between clans can reduce feeding on baits

Repair and Maintenance



benching /sealing

Repair and Maintenance



Faulty manholes are usually
Identified by burrows in soil
or subsidance

Repair and Maintenance



Repair and Maintenance



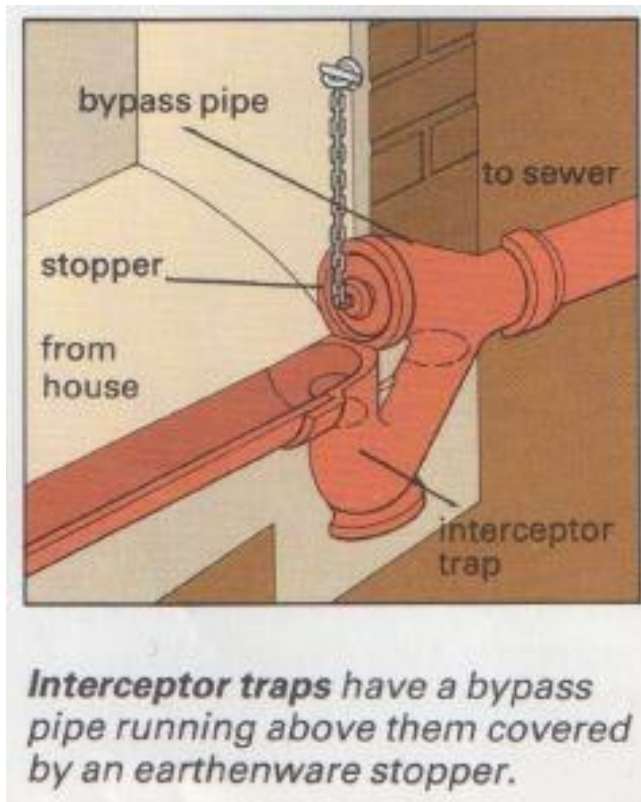
Poorly sealed manholes
Will allow rats to travel along
The outside of the sewer pipe
And into the surrounding soil

Repair and Maintenance

Manhole covers can be faulty or poorly fitted



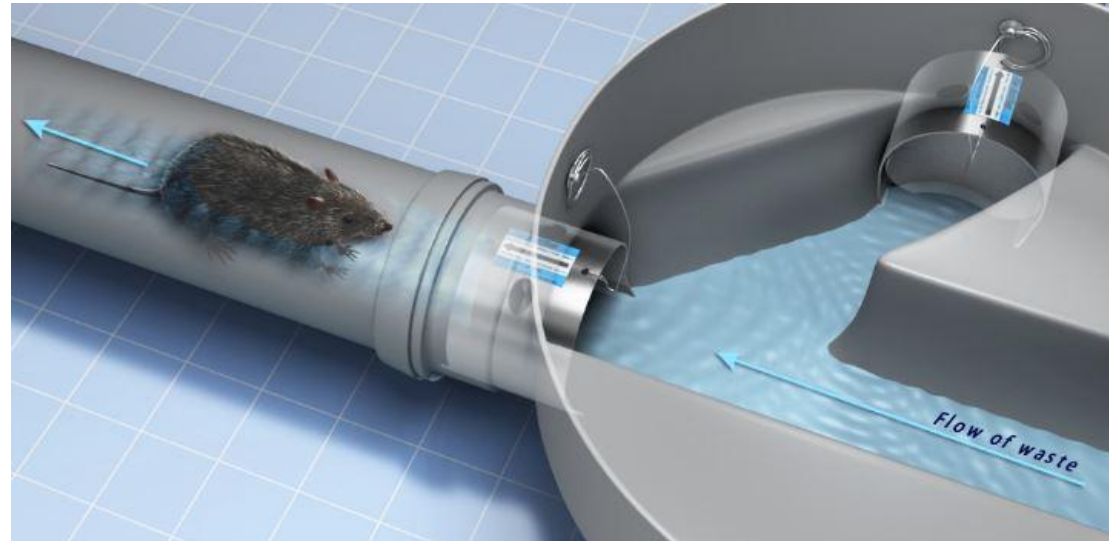
Interceptor Trap / Rodding Eye



Rats can negotiate interceptor bends

If rodding eyes are above ground and the cap is missing rats can exit to the surface

Rat Flap / Rat Blocker



This device is fitted to a pipe at the manhole and prevents rats moving Further up the pipe but allows waste to flow through

Sewer Access

Workers face conditions that may be immediately dangerous to life or health when entering sewer systems for repair or maintenance. Knowledge of the dangers involved, training in safe work procedures and the correct use of safety equipment is essential to ensure that workers are protected during work in sewers



- Confined Space Entry
- Breathing apparatus

>50% of surface problems in urban areas is associated with sewerage infestation

Sewer Baiting

- Cleared sewerage sections can be re-invaded quickly
- Planning important



PPE

- Safety shoes
- One-piece coverall
- High visibility jackets or waistcoats
- Good quality gloves (NBR-coated are the best and are hard-wearing)
- Visors or goggles for face/eye protection when manual force is required with hammers and chisels to loosen manhole covers
- Waterproof suits for wet weather protection
- Washing facilities
- First aid box adequately equipped



Vaccinations

Polio, Tetanus and Hepatitis prior to engaging operationally in sewer baiting activities and be subject to regular pro-active health monitoring

It is recommended that all staff carry a warning card for Weil's disease, Leptospirosis due to the increased risk

**LEPTOSPIROSIS
(WEIL'S DISEASE)**

MEDICAL INFORMATION

Holder Name:

The holder of this card is engaged in Pest Control activities which may bring them into contact with rodents or materials which may be contaminated with Weil's Disease (Leptospirosis).

Leptospirosis is an infection spread from contact with animal urine. There are several types. The most common is transmitted through contact with rat's urine and can lead to Weil's disease.

The infection may resemble influenza in the early stages. Should you suspect the holder may have been infected please arrange for the appropriate tests. If identified early enough, it can usually be treated with antibiotics.

Equipment

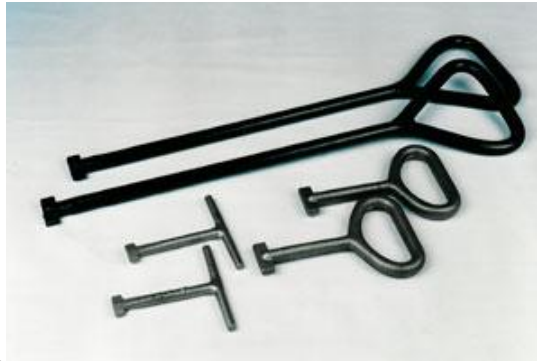
- Gougers



- Sledge (stuck manholes)



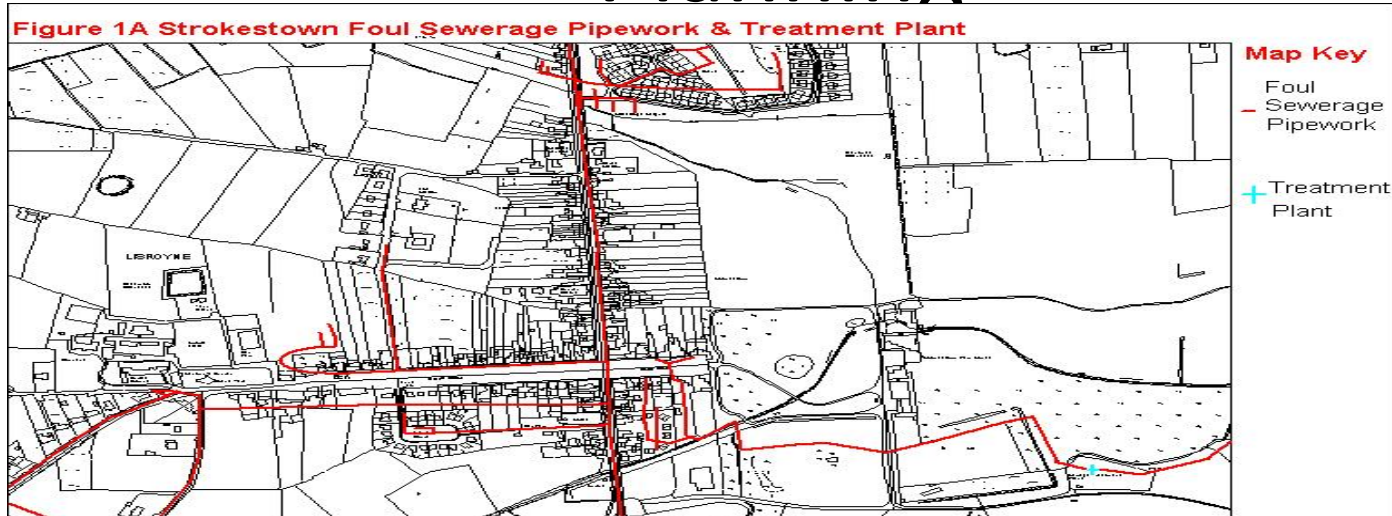
- T Keys



- Lifting Equip Manual,
Hydraulic, Electromagnetic



Planning



- Drainage maps / direction of flow/test baiting (10-15% manholes)
- **Agree plan with local authority**
- Street licence
- Ventilation plan / traffic plan
- History – surface activity/drains problems/ renewal/ food premises
- Start furthest from outfall
- Problem Home range between manholes if food from food premises - consider other ways

Sewer –Surface treatment

- Treat surface activity at same time to prevent re-entry to sewers from above

A history of surface activity in urban areas is an effective tool in planning sewer baiting programmes

The less urban an area becomes the less likelihood there is that such high levels of infestation from the sewers would exist



Sewer bait formulations

ONLY USE BAIT PRESCRIBED FOR SEWERS

- loose grain
- bagged bait
- blocks.



loose grain bait is more palatable
but special application equipment
is required for deep manholes

Block baits have holes for tie wires

ALWAYS FOLLOW LABEL INSTRUCTIONS

Methodology

- It is essential to achieve as high mortality as possible.
- Population recovery of poorly controlled rat populations in the sewers can be at a rate of 3% a week, but with re-invasion this can be as high as 12%.
- possible for populations to recover within six months of treatment

Methodology

- WEEK 1 - Initial baiting
- WEEK 2 - Revisit after 7 days
 - a) Each manhole with complete takes – re-bait (+neighbouring manholes) as in week 1
 - b) Top up partial takes & revisit till clear
- WEEK 3 & 4 Continue if required as in a & b
- Identify “wash offs”
- Rest wired blocks/bags/grain on benching