Estates Department Water Management Strategy 2017- 2022

Statement of Support

I support the commitment of the Estates Department to manage water sustainably and to reach our target to reduce our water consumption by 2% each year compared to the 2016/17 baseline.

Ron Moore (14th January 2019)

Ron Moore
Assistant Director of Estates: Maintenance and Compliance

1 Introduction

The Estates Water Management Strategy document is designed to support delivery of improvements under the University's Environmental Management System (EMS) certified to ISO14001:2015.

The Water Management Strategy provides an oversight of the reasons why it is necessary to reduce water consumption and improve water efficiency in our buildings. Further, the Strategy details the methodologies used, together with the underlying targets, to achieve the required reduction in overall water consumption.

2 Drivers for Sustainable Water Management

The following drivers are fundamental influences to the way in which we currently manage our water supply, use and discharge from the campus, and how this will be managed in the future.

2.1 Legal Compliance

2.1.1 Legislation

The University is required to ensure that pipework and fittings meet the requirements of the Water Regulation advisory scheme and the water supply regulations. This means that we must ensure that water fittings are installed, connected and arranged to prevent waste, misuse, undue consumption and contamination of the water supply.

2.1.2 Water Discharge Consents

The University is subject to limitations on the volumes of water discharge to the local authority sewer systems. Currently our agreed discharge rates should not exceed 35 l/s.

2.1.3 Abstraction

The University has access to a borehole for the abstraction of ground water. The University is required to monitor the volumes abstracted and to obtain an abstraction license should the daily volume exceed $20m^3$.

2.1.4 Internal Procedures

The Estates Maintenance Section follow set procedures to ensure compliance with relevant legislation. Approved Code of Practice (ACOP L8) is used for the testing of water systems. This ensures stagnant water levels in tanks are kept to a minimum by reducing the volumes of tanks through control levels reducing the need to run off or dump excessive water.

2.2 Environmental Impact

Using water purchased from the utility supplier results in CO^2 emissions from the energy used to abstract it, to treat it for drinking, to deliver it to the point of use, and to treat the wastewater so it can be discharged. The University's CO^2 emissions from potable water consumed and waste water treated in 2016/17 were calculated to be 273 tonnes of CO^2, 1.95% of the University's total (excluding travel).

2.3 Financial Implications

Decreasing water consumption will have a significant financial benefit through reductions in water bills. Based on the 2016/17 data, water consumption accounts for 16.9% of the total cost of utilities (including gas, electricity and water). A reduction in water consumption will have a significant impact on the University's utility bills.

2.4 Local Drivers

2.4.1 Environment Policy

The University of Kent's Environment Policy was last updated and signed by the Vice Chancellor and Chair of Council in October 2016 and sets out our objectives and commitments to environmental management including:

- Reduce carbon emissions in accordance with the University's Carbon Management Plan
- Improve energy and water efficiency and reduce reliance on fossil fuels

2.4.2 ISO14001:2015

The University of Kent operates an Environmental Management System (EMS) certified to ISO14001:2015. This system requires us to identify our significant environmental aspects and develop a programme of improvement, identify relevant legislative requirements and ensure operational control in order to achieve continuous improvement in environmental performance.

2.4.3 Energy Risk Management Group (ERMG)

In addition to reporting on performance against the targets and KPIs in this strategy under the EMS, the information arising from implementing this strategy will be fed back to the ERMG by the Head of Energy & Environment. This Group can instruct action be taken based on the information supplied.

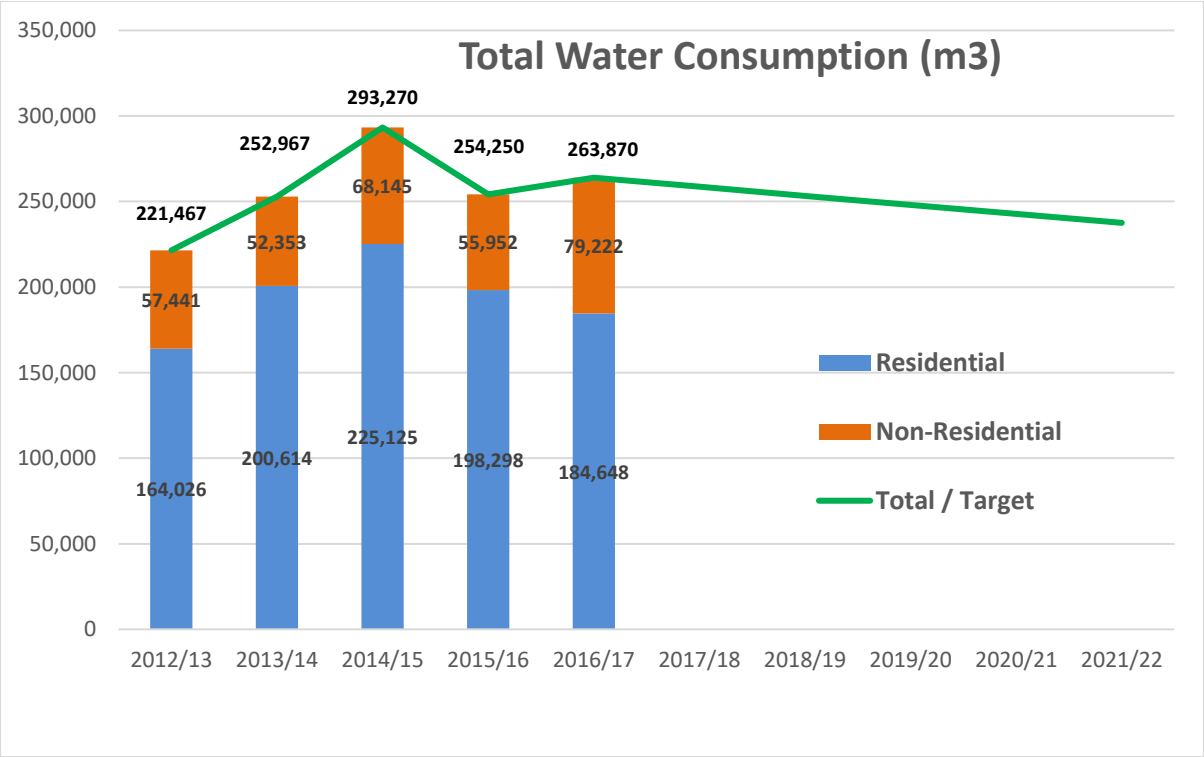
3 Progress 2012-2017

3.1 Performance against targets

Between 2012 and 2017 our total water consumption increased by 19%. However during that period, based on Gross Internal Floor Area, our Estate expanded by 8%.

In 2014 the University put in place a target to achieve an absolute reduction in water consumption of 2% per year. This was achieved in 2015/16 following a leak detection survey and subsequent identification and repair of nine leaks of varying sizes. Consumption increased in 2016/17and the target was not met. This was mainly due to a leak that took some time to resolve.

Details of water consumption per building for the 2015/16 and 2016/17 year are detailed in Appendix 1.



The percentage split between the Residential and Non Residential estate changed between 2015/16 and 2016/17 and this affected the consumption on the non-residential estate in 2016/17. The change in the splits is detailed below:

Building	15/16 Residential Percent	16/17 Residential Percent
Darwin	84.79%	41.2%
Eliot	83.66%	59.61%
Keynes	78.01%	75.37%
Rutherford	81.42%	66.09%

3.2 Baseline and Targets

Based on a 2% reduction per year (2016/17 – 2021/22) our target water consumption targets for the next 5 years are as follows.

Year	**Water Consumption (m^3)**
2016/17 (Baseline Year)	263,870
2017/18	258,593

2018/19	253,421
2019/20	248,353
2020/21	243,385
2021/22	238,518

3.3 Water Management successes

Since 2012, the main area for improvement has been in identifying and fixing leaks. A faulty valve at Ingram was replaced reducing water consumption by over 8,000 m3 p.a. A series of other leaks have been identified and repaired.

The University has a range of fittings and equipment within its buildings due to the age of the site. The result of this is that some of the older installations are less water efficient. Over time where washroom refurbishments have been undertaken water saving equipment has been fitted. Additionally where required this new equipment has been added on to existing maintenance agreements.

4 Vision for Water Management 2017-2022

The Estates Department's Water Management strategy has been broken down into three key categories which reflect the journey of water management on campus:

a) Water Supply
b) Water Use
c) Waste Water Discharge

Together they address sustainable water management through:

- identifying where water is used excessively, changing user behaviours to reduce usage and monitoring the effectiveness of water use strategies
- ensuring that University systems and procedures are in place to ensure supply and discharge infrastructure is managed effectively
- investing in water efficiency technologies

4.1 Water Supply

4.1.1 Water Leaks

Aim: To reduce leakage losses through swift identification and repair of significant water leaks on our supply network

Key objectives:

- The Head of Energy & Environment to monitor water supply meter readings on a monthly basis (comparing to previous month as well as same month in previous year) to identify potential leaks
- The Maintenance section to respond to all reports of leaks within I hour to investigate if further action should be taken

- All confirmed leaks to be reported to the current water supplier within 24 hours
- All significant leaks (e.g. large bore high volume pipes, pressurised systems) to be repaired within 24 hours where possible
- The Maintenance section to respond to all reports of water wastage such as dripping taps within a maximum of 20 days
- Carry out non-intrusive leak detection surveys at 5 yearly intervals, and repair any leaks found, to ensure the integrity of the water distribution mains is being maintained.
- The Maintenance section to monitor water volumes in the district heating system to ensure there are no significant leaks.
- The Maintenance section to ensure water storage is kept to a minimum by adjusting tank levels or removing tanks when required. This is part of the ACOP L8.
- Installation of check water meters by the Head of Energy & Environment.

4.1.2 Abstraction of Groundwater

Aim: To reduce consumption of potable water through utilisation of groundwater abstraction

Key objectives:

- Install borehole pump and meter at grounds maintenance yard
- Identify opportunities for potable water use to be replaced by groundwater

4.1.3 Water Supply Network

The University has a large water supply network on the Canterbury campus that needs to be maintained. The water supplies in to the site are metered. In addition to the University buildings these meters additionally supply 3rd party users e.g. UPP, and where there are issues with the water supply network the University works with these 3rd party users as required. The University has drawings showing the existing water supply network, including supplier meter locations. When new buildings are built these drawings are to be referred to.

Aim: To effectively manage our water supply network through ensuring service drawings are updated and third-party users water supplies are managed efficiently.

Key objectives:

- To work closely with the Estates Projects and Technical Services teams to ensure that services drawings are kept up-to-date including:
    - Keep the water services network drawing up to date
    - Refer to the water services network drawing when undertaking new builds
    - Update the water services network drawing when new builds are complete
- Where we have 3rd party users that are supplied off our network their consumption will be discounted from our assessments of the University's water consumption. We will inform them of any issues with their water meters. We will compare the relative performance of their buildings with the University buildings and standard benchmarks; if they deviate significantly from these comparators, we will advise the 3rd party of this to encourage them to reduce water consumption.
- Continue to assess the suitability and cost-effectiveness of water efficiency technologies such as grey-water and rainwater harvesting systems.

4.1.4 Purchasing water

The water and wastewater markets in England were de-regulated in 2017 giving the opportunity to purchase these services from alternative suppliers.

Aim: Manage the University's contract for purchase of water and wastewater services to ensure value for money.

Key objectives:

- Set up a single contract covering both water and wastewater services through the Energy Consortium's (TEC) OJEU compliant framework which is fully compliant with EU and UK Procurement Regulations.
- Review the contract arrangements on a regular basis, contingent on the framework agreement.

4.2 Water Use

4.2.1 Water Efficient Fixtures

Aim: Minimise water consumption through water efficient fixtures

Key objectives:

- The Technical Services team to develop minimum specifications for water fixtures and fittings using maximum flow rates where appropriate.
- The Technical Services team and Energy & Environment team to input in to new building projects to influence water consumption in these building (Medical School, Life Science, Economics)
- Ongoing servicing of automatic urinal flush controllers
- Replacement of shower heads across residential accommodation to more water efficient fittings.

4.2.2 Education and Awareness

Aim: Empower staff and students to take water reducing measures through awareness raising and educational activities.

Key objectives:

- Ensure water efficiency is incorporated into the FutureProof programme to encourage staff and students to use less water.
- Work with Kent Hospitality and Kent Union to identify opportunities to raise awareness in students living on campus, especially around preventing fat, oil and un-flushable items entering the sewerage system.

4.2.3 Monitoring

Aim: Monitor water consumption to identify opportunities to reduce consumption

Key objectives:

- Automatic meter readings (AMR) – By having AMR meters and checking the recorded data it is possible to identify water leaks and wastage from observing water use during unoccupied periods, and by comparing current usage with that at the same time in the previous year.

- Install additional check water meters where existing metering is considered not to be sufficient.
- Benchmark water use across the University to be able to prioritise buildings with water use levels above a certain threshold; and spreading experience of successful water efficiency interventions at the University.
- Update the rolling 2 year energy and water action plan considering the following water efficiency options
    - fitting flush volume reduction devices on WCs;
    - fitting tap flow rate restrictors;
    - calibrating percussion tap timers so they deliver 1.5l per operation;
    - devising solutions for preventing lime scale build-up on taps which impedes the functioning of some water saving devices over time;
    - fitting urinal control devices;
    - investigate installing water reducing valves if pressure is high.
- Use CIBSE guidelines for water consumption by building type to develop a set of benchmark water consumptions per building. Based on this, compare actual consumptions to the benchmark consumptions on an annual basis.

4.3 Waste Water Discharge

4.3.1 Infrastructure

The University has a large foul sewerage network for wastewater on the Canterbury campus, which needs to be maintained. The foul sewerage network additionally connects to buildings operated by 3rd party users e.g. UPP, and where there are issues with the foul sewerage network the University works with these 3rd party users as required. The University has drawings showing the existing foul sewerage network, and the surface water network. When new buildings are built these drawings are to be referred to.

The foul sewerage network incorporates a series of pipes and pumping stations. Further the flow offsite is metered at the main outfall. Maintenance of the pumping stations and the main outfall is essential to prevent possible uncontrolled discharges of wastewater from the system.

Aim: To effectively manage our foul sewerage network through ensuring service drawings are updated, infrastructure is maintained and third-party users foul water services are managed efficiently.

Key objectives:

- Put in place arrangements to maintain the waste water flow rate below the limit level of 35 litres/second in line with planning discharge consents
- To work closely with the Estates Projects team to ensure that services drawings are kept up-to-date including:
    - Keep the foul sewerage services network drawings up to date
    - Refer to the foul sewerage services network drawings when undertaking new builds
    - Update the foul sewerage services network drawing when new builds are complete

- Where we have 3rd party users that have drains connected in to the foul water network on site the material from these will flow through the foul outfall monitoring station. We will install flow inhibits at large local pumping stations to inhibit flow in peak flow situations. We will advise the 3rd party users if we see any significantly high usage through their water meters. We will advise them if we note any rainwater entering their foul mains.
- Undertake a review of high risk areas on the foul drainage system
- Plan and undertake a programme of repairs to the foul drainage system
- Identify where surface water may be entering the foul water drainage system, and take action to prevent this
- When new buildings are being developed assess the effect on the foul drainage system to prevent the flow limit being exceeded

4.3.2 Emergency Procedures

For the Foul Drainage System at the Canterbury Campus there are 2 types of emergency condition that can occur:

1) **Exceeding Flow Rate:** The main foul wastewater outfall is monitored and shows an alarm if the flow rate exceeds the flow limit of 35 l/s. The inhibit system is set up to turn off the foul wastewater pumping stations in stages if the flow rate approaches the flow limit.
2) **Local Pumping Station Failure:** The foul wastewater pumping stations have alarms fitted and have emergency procedures in place. These include High Limit alarms in the Storage Tanks, and pump failure alarms.

The Foul Drainage System – Details and Emergency Procedure details how the alarms for these issues are signalled, and the action to be taken in the event that either or both occur. A copy of this document is included as Appendix 2. In addition there is an escalation process EP04 and this is included as Appendix 3.

Aim: Ensure Emergency procedures are reviewed, tested and communicated regularly to maintain compliance

Key objectives:

- Assistant Director of Estates (Maintenance & Technical Services) to ensure there is a robust procedure in place to deal with emergency situations.
- Head of Maintenance to ensure regular checks of the operation of the inhibit system for the pumping stations
- Head of Maintenance to check emergency procedures in the event of a Pumping station failure supported by the Head of Energy & Environment.
- Head of Maintenance to put in place arrangements to monitor flow rate and keep auditable records of planned maintenance and emergency incidents
- Head of Energy & Environment to procure a feasibility study for expanding the coverage of the inhibit system to include the foul pumping stations at Parkwood, and Nickel Court.

4.3.3 Surface Water Run-Off

Aim: Where new buildings are constructed the possibility of installing Sustainable Urban Drainage systems is to be assessed, and installed as appropriate.

SUDs provide a method for allowing surface water drainage to be collected, stored and released in to the natural environment (ponds, watercourses, the ground) over a period of time helping to prevent the surface water system being overwhelmed and helps prevent local flooding as a result.

Gulleys are maintained on a 6-monthly basis in accordance with a procedure (P23e) produced as part of the new PPM system.

Key objectives:

- Investigate surface water pathways across campus to identify if surface water runs in to foul drains.
- Investigate options for and implement a system for identifying and marking vulnerable surface water drains using the yellow fish mark or similar
- Ensure system for marking vulnerable drains is incorporated into the spill response training

4.3.4 Trade Effluent

Aim: Maintain the existing Trade Effluent consents.

Key objectives:

- The Head of Energy and Environment will ensure records for trade effluent consents up to date and are available on request.
- The Head of Energy and Environment will update the consents where changes in use/new buildings result in changes to where and what type of Trade effluent is discharged by the University.

APPENDIX 1

Details of water consumption per building for the 2015/16 and 2016/17 years

Water 2015-16

University water consumption (Supplier Meters)
Note supplier meters highlighted in blue

Water - Monthly consumption 2015/16	Total
BOILER HOUSE	856
CHEMISTRY EXTERNAL	-
HIGHLANDS, GILES LANE	136
HILLTOP HOUSE, GILES LANE	32
BELMONT	59
TANGLEWOOD	228
HOTHE COURT	1
OLIVE COTTAGE	57
PARKWOOD SITE (NEW MAIN NOV 12)	101,286
PUMPING STATION	139,275
ROTHFORD (OLD MEDICAL CENTRE)	160
FARM TROUGHS	-
UNIVERSITY ROAD (11H760234)	46,625
WOODLANDS	95
CROSSWAYS (Read taken every 3rd Thursday) READ DATE: 01/08/14	210
Total	**289,020**

University water consumption (University sub meters)
Note Residential supply meters highlighted in orange
Non University supplies highlighted in pink

	Total
GROUNDS MAINTENANCE	162

GROUNDS WASHDOWN AREA	44
GROUNDS MAINTENANCE RED DIESEL TANK	-
NEW OAKS NURSERY BUILDING	574
EAST OAST	93
WEST OAST 1 (HOUSE)	-
WEST OAST 2 (GARDEN)	-
DICE TAP (AT WEST OAST)	-
NEW SPORTS PAVILION	61
SPORTS PAVILION	223
PARKWOOD 6 BOSSENDEN COURT - 16/9	4,407
PARKWOOD 6 KEMSDALE COURT - 16/9	14,564
PARKWOOD 6 NICKLE COURT - 16/9	7,737
PARKWOOD 6 STOCK COURT - 16/9	2,189
PARKWOOD 6 LAUNDRY ROOM - 16/9	79
PARK WOOD ADMIN	2,067
PARKWOOD WOODYS BAR	457
DARWIN HOUSES I	4,416
DARWIN HOUSES II	4,572
DARWIN WORKSHOP	14,212
TYLER COURT	4,634
TYLER COURT 2	15,857
RUTHERFORD ANNEX (New Temp.Meter Feb13)	472
RUTHERFORD EXTENSION	1,430
RUTHERFORD SOUTH FIRE PATH	11,322
REGISTRY	1,433

REGISTRY EXTENSION	591
CORNWALLIS - COMPUTNG 2	474
CORNWALLIS - CENTRAL	437
CORNWALLIS - GEORGE ALLEN	312
CORNWALLIS - INVICTA	-
CORNWALLIS - NORTH EAST	108
CORNWALLIS - NORTH WEST	877
CORNWALLIS - SOUTH	491
GULBENKIAN (NEW 05/07/2013)	1,908
GULBENKIAN BACK STAGE (new July 2010)	90
COLYER FERGUSSON (OUTSIDE BUILDING)	2,178
GRIMOND	1,155
DRAMA, Lumley	29
TELEPHONE EXCHANGE	76
SANTANDER (IN UELT BUILDING) New July 2013	15
LIBRARY	5,028
SENATE	689
ELIOT	9,450
ELIOT EXTENSION	40
ELIOT SOUTH WING (new July 2010)	-
BECKET COURT	5,614
MANDELA	175
BLACKWELLS (New July 2012)	1,846
ESSENTIALS CAMPUS SHOP	360
EXTRAS (STA TRAVEL)	-

UNIQUE (ENDSLEIGH)	174
THE VENUE	1,495
OLD NURSERY	-
JARMAN SDFVA DRAMA BUILDING METER	692
SPORTS HALL	3,144
BIOLOGY PLANT ROOM	1,571
CHEMISTRY PLANT ROOM	5,133
PSB 1 BASEMENT MARLOWE 1	944
PSB 2 BASEMENT MARLOWE 2	134
ELECTRONICS	1,164
RESEARCH & DEVELOPMENT	310
KBS EXTENSION (Temp.Meter Feb 2013)	144
KENT BUSINESS SCHOOL	640
ESTATES	7,335
INNOVATION CENTRE (NEW) CHECK METER	950
BEVERLY FARM HOUSE	310
KEYNES UPP	13,091
Turing UPP Hub Block	1,843
Turing UPP (Beverly Farm)	23,059
KEYNES EXTENSION	1,062
KEYNES NEW METER	13,775
KEYNES CAREERS	139
WOODLANDS ANNEX (Temp.Meter Feb 2013)	95
Sub meter totals (not all supplies are sub metered)	200,152

Medway

Water consumption 2015/16	Total, m3
Medway	711
Gillingham	509
Rochester	393
Bridge Wardens	717
Medway Sub total	2,330

Non University Supplies

Innovation Centre	950
KEYNES UPP	13,091
Turing UPP	23,059
Non University Supplies Sub total	37,100

University Total water consumption (Supplier Meters)	289,020

UoK Total	254,250

Water 2016-17

University water consumption (Supplier Meters)
Note supplier meters highlighted in blue

Water - Consumption 2016/17	Total
BOILER HOUSE	276
CHEMISTRY EXTERNAL	-
HIGHLANDS, GILES LANE	210
HILLTOP HOUSE, GILES LANE	59
BELMONT	140
TANGLEWOOD	204
HOTHE COURT	-
OLIVE COTTAGE	60
PARKWOOD SITE (NEW MAIN NOV 12)	104,558
PUMPING STATION	139,136
ROTHFORD (OLD MEDICAL CENTRE)	150
FARM TROUGHS	-
UNIVERSITY ROAD (11H760234)	62,239
WOODLANDS	47
CROSSWAYS (Read taken every 3rd Thursday) READ DATE: 01/08/14	141
Total	**307,220**

University water consumption (University sub meters)
Note Residential supply meters highlighted in orange
Non University supplies highlighted in pink

Water - Consumption 2016/17	Total
GROUNDS MAINTENANCE	152

GROUNDS WASHDOWN AREA	45
GROUNDS MAINTENANCE RED DIESEL TANK	
NEW OAKS NURSERY BUILDING	597
EAST OAST	64
WEST OAST 1 (HOUSE)	6
WEST OAST 2 (GARDEN)	-
DICE TAP (AT WEST OAST)	-
NEW SPORTS PAVILION	54
SPORTS PAVILION	414
PARKWOOD 6 BOSSENDEN COURT - 16/9	4,873
PARKWOOD 6 KEMSDALE COURT - 16/9	12,587
PARKWOOD 6 NICKLE COURT - 16/9	9,505
PARKWOOD 6 STOCK COURT - 16/9	2,211
PARKWOOD 6 LAUNDRY ROOM - 16/9	81
PARK WOOD ADMIN	2,231
PARKWOOD WOODYS BAR	512
DARWIN HOUSES I	4,485
DARWIN HOUSES II	4,344
DARWIN WORKSHOP	13,944
TYLER COURT	4,445
TYLER COURT 2	16,883
RUTHERFORD ANNEX (New Temp.Meter Feb13)	376
RUTHERFORD EXTENSION	1,675
RUTHERFORD SOUTH FIRE PATH	11,144
REGISTRY	1,317

REGISTRY EXTENSION	609
CORNWALLIS - COMPUTNG 2	431
CORNWALLIS - CENTRAL	377
CORNWALLIS - GEORGE ALLEN	299
CORNWALLIS - INVICTA	24
CORNWALLIS - NORTH EAST	66
CORNWALLIS - NORTH WEST	459
CORNWALLIS - SOUTH	392
GULBENKIAN (NEW 05/07/2013)	2,131
GULBENKIAN BACK STAGE (new July 2010)	97
COLYER FERGUSSON (OUTSIDE BUILDING)	1,763
GRIMOND	1,175
DRAMA, Lumley	43
TELEPHONE EXCHANGE	96
SANTANDER (IN UELT BUILDING) New July 2013	17
LIBRARY	5,586
SENATE	476
ELIOT	11,782
ELIOT EXTENSION	-
ELIOT SOUTH WING (new July 2010)	-
BECKET COURT	3,281
MANDELA	180
BLACKWELLS (New July 2012)	262
ESSENTIALS CAMPUS SHOP	407
EXTRAS (STA TRAVEL)	-

UNIQUE (ENDSLEIGH)	144
THE VENUE	1,499
OLD NURSERY	-
JARMAN SDFVA DRAMA BUILDING METER	1,792
SPORTS HALL	3,451
BIOLOGY PLANT ROOM	1,883
CHEMISTRY PLANT ROOM	4,608
PSB 1 BASEMENT MARLOWE 1	1,153
PSB 2 BASEMENT MARLOWE 2	197
ELECTRONICS	782
RESEARCH & DEVELOPMENT	228
KBS EXTENSION (Temp.Meter Feb 2013)	148
KENT BUSINESS SCHOOL	517
ESTATES	7,560
INNOVATION CENTRE (NEW) CHECK METER	1,032
BEVERLY FARM HOUSE	243
KEYNES UPP	18,552
Turing UPP Hub Block	1,814
Turing UPP (Beverly Farm)	27,166
KEYNES EXTENSION	1,271
KEYNES NEW METER	15,246
KEYNES CAREERS	134
WOODLANDS ANNEX (Temp.Meter Feb 2013)	1
CROSSWAYS	141
Wigoder	135

Sibson	455
Sub meter totals (not all supplies are sub metered)	212,050

Medway

Water - Consumption 2016/17Water consumption	Total, m3
Medway Building	684
Gillingham Building	548
Rochester Building	387
Bridge Wardens	530
Smithery unit B	17
Central Boiler House	8
Engineer's Workshop	61
Old Fire Station	10
Old Surgery	124
Cargo	915
Church	116
Medway Sub total	3,400

Non University Supplies

Innovation Centre	1,032
KEYNES UPP	18,552
Turing UPP	27,166
Non University Supplies Sub total	46,750

University Total water consumption (Supplier Meters), m3	307,220

UoK Total, m3	263,870

APPENDIX 2

Foul Drainage System – Emergency Procedure

1. Introduction

The foul drainage system at the University comprises a network of drains from the buildings to the outfall from the site. (The outfall is located on the Southern slopes and drains under gravity).

The drains from the buildings either discharge under gravity, or are connected to one of the 5 local pumping stations (Nickel, Parkwood, Turing, Woolf, and Keynes). Note Keynes is operated by UPP.

There is a central control system for the 3 main pumping stations (Turing, Woolf and Keynes), and this is designed to limit the flowrate offsite to 35 l/s. The system monitors the flowrate at the outfall and at set flowrates sends signals to the main 3 pumping stations to turn as the flowrate increases from 30 l/s up to 35 l/s.

There is additionally local control at each of the five pumping stations, including high-level tank alarms, and pump failure alarms.

This procedure defines the emergency procedures associated with operation of the Foul Drainage System to minimise the risk of incidents occurring that have the potential to damage the environment.

2. Definitions

There are two types of issues that can occur are:

2.1 Pumping Stations Exceeding Site Limit Flowrate – If the flowrate exceeds 30l/s than one or more of the local pumping stations will have its pumps turned off automatically As the storage tanks will fill to higher levels than in normal operation the spare capacity will be reduced, and if the pumping station fails the response time before there is an escape of wastewater would be reduced.

Note: If a local pumping station is turned off by the system as a result of the high flowrate off the site for an extended period of time, then this may result in the local pumping station's alarm being triggered. In this event the local high limit alarm will automatically turn the local pumps on to prevent the local storage tanks from overflowing. The flowrate offsite may well exceeded the limit in this situation, but this is unavoidable and the system is operating correctly. Eventually the flow rate should then return to normal levels.

2.2 Local Pumping Station Failure – This is a failure at a local pumping station resulting in a High limit alarm, or a pump failure alarm.

3. Scope

This procedure is for the site drainage system external to buildings.

4. Responsibility

4.1 Security Team

The Security Team are responsible for:

- monitoring the foul drainage alarms that reports to the BMS in the Security Control Room on the Canterbury Campus
- contacting the Estates Duty Manager in the event one of three alarms in 2.1 and 2.2 being activated outside normal operational hours
- contacting the Head of Maintenance should the alarms in 2.1 and 2.2 being activated during normal operational hours
- contacting the emergency contact for the University's Safety, Health and Environment Unit if there is a leak of foul sewerage on campus outside normal operational hours. It is critical that if no one from the SHE Unit can be contacted then the Estates Duty Manager needs to be alerted to this fact and informed that they need to make a decision on whether the Environment Agency needs to be notified.
- follow up reporting of the incident

4.2 On-call Estates Duty Manager

The on-call Estates Duty Manager is responsible for:

- responding to the foul drainage alarms outside normal operational hours
- organising urgent repairs as necessary
- arranging for the supply of tankers on site as and when required.
- reporting incidents to the Environment Agency if the SHE unit are unavailable and if the incident has resulted in significant volumes of foul water entering the surface water drainage system, or foul water has entered controlled waters (ponds, streams, rivers).
- notifying the Assistant Director of Estates (Maintenance & Technical Services) and the member of the on-call Senior Management Team (see 4.6 below).

4.3 The Safety, Health and Environment Unit (SHE Unit)

The SHE Unit are responsible for:

- notifying the relevant authorities (Environment Agency, Water Company, and any other notifiable body that the particular incident needs to be reported to) in the event of a leak of foul sewerage on campus
- keeping the Estates Duty Manager updated on their actions formally in writing (email)
- updating the Head of Maintenance, the Head of Technical Services and the Assistant Director of Estates (Maintenance & Technical Services) in writing (email) at the earliest opportunity
- reviewing incident reports and checking that all appropriate actions have been taken by the Maintenance Department in the days following the incident.

4.4 The Head of Maintenance

The Head of Maintenance is responsible for:

- ensuring a co-ordinated response to the foul drainage alarms during normal operational hours
- ensuring they have nominated one of the Maintenance Managers to responding to incidents during normal operational hours if they are unavailable
- ensuring all necessary steps are taken to mitigate any risk/damage to the campus, the environment and the University's reputation
- notifying the University's Insurance Officer in writing at the earliest opportunity (email)
- notifying the Assistant Director of Estates (Maintenance & Technical Services)
- reviewing incident reports

4.5 The Head of Energy and Environment

The Head of Energy and Environment is responsible for:

- reviewing incident reports and making any necessary recommendations to the Head of Maintenance

4.6 The Assistant Director of Estates (Maintenance & Technical Services)

The Assistant Director of Estates (Maintenance & Technical Services) is responsible:

- for notifying Corporate Communications should there be a significant incident associated with the Foul Drainage system which could affect the reputation of the University and/or be in the local/national press.
- for briefing the Director of Estates and Deputy Director of Estates
- for deciding if a major incident needs to be declared.

If the Assistant Director of Estates (Maintenance & Technical Services) is unavailable/uncontactable then the above responsibilities fall to the member of Estates SMT on-call at the time. If the event is during normal operational hours these responsibilities will be taken up by the Deputy Director of Estates or Director of Estates or their nominee (contingent on availability).

5. Emergency Preparedness

5.1 The operation of the central control system that monitors the flowrate off site and controls 3 of the pumping stations is to be checked annually. This is the responsibility of the Head of Maintenance.

5.2 The Foul Drainage system equipment is to be maintained, and their operation checked in line with the appropriate PPM tasks. This is the responsibility of the Head of Maintenance.

5.3 Contact details for contractors to assist with a major failure will be produced by the Head of Maintenance and held by the Security Team.

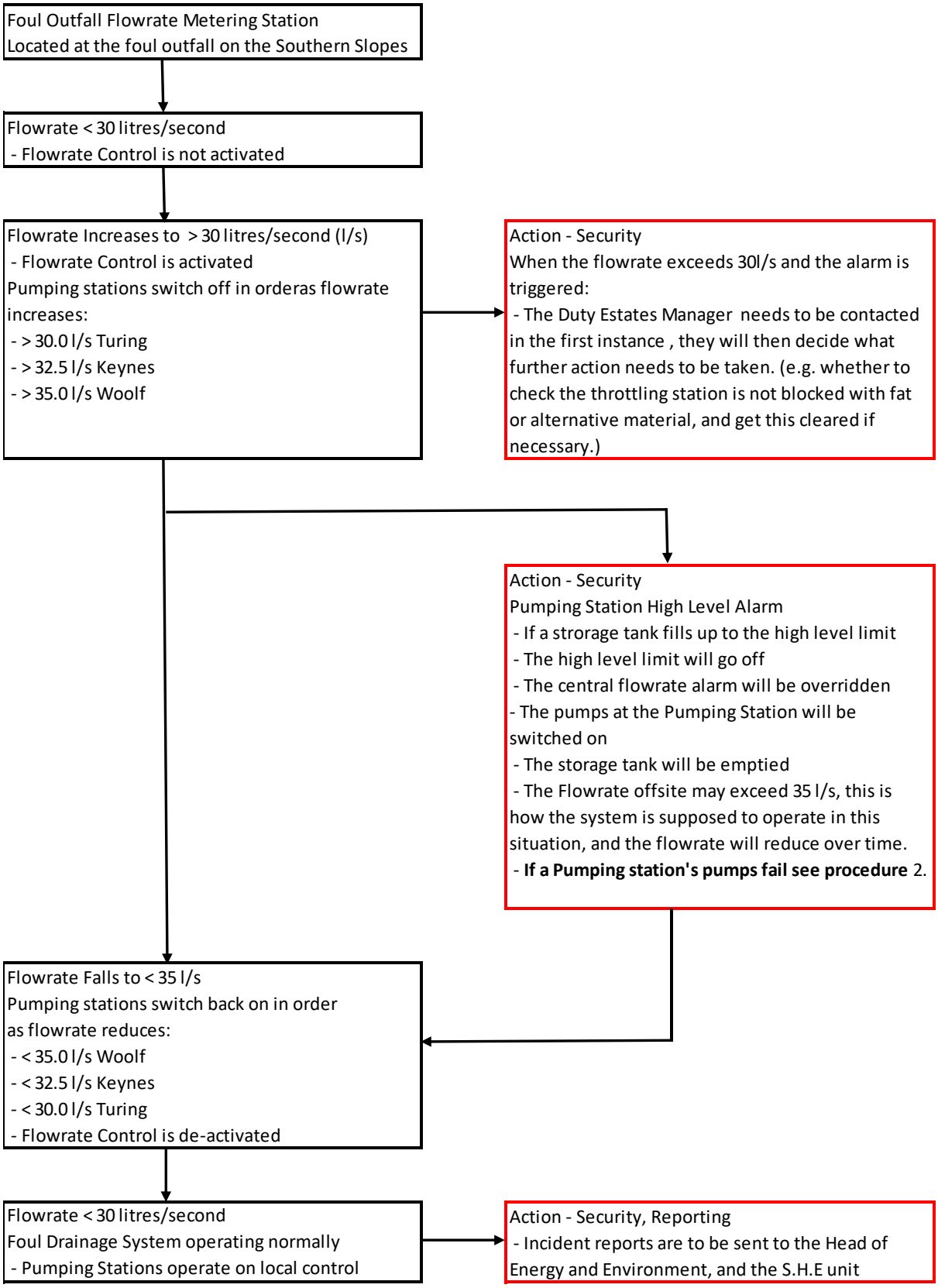
5.4 It is the responsibility of the Head of Security to ensure the Security team are fully briefed on how to recognise and respond to alarms on the Foul Drainage System.

5.5 It is the responsibility of the Compliance Auditor to audit this procedure and ensure all named parties fully understand their responsibilities under this procedure.

5.6 The Head of Technical Services is responsible for critical services including the foul drainage system.

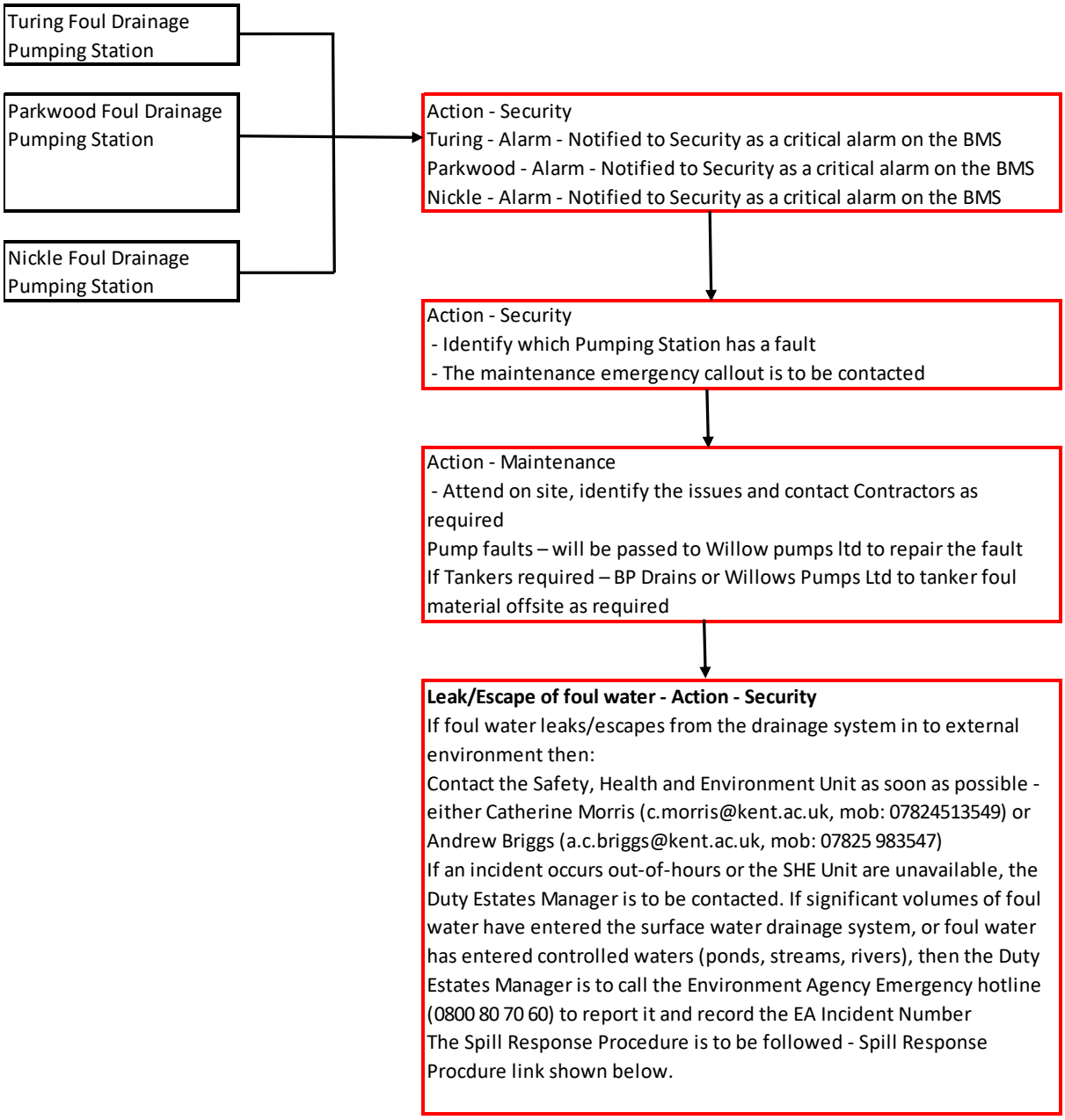
6.1 Emergency Drainage Process 1 - Pumping Stations Exceeding Site Limit Flowrate

Emergency Drainage Process 1 - Pumping Stations Exceeding Site Limit Flowrate

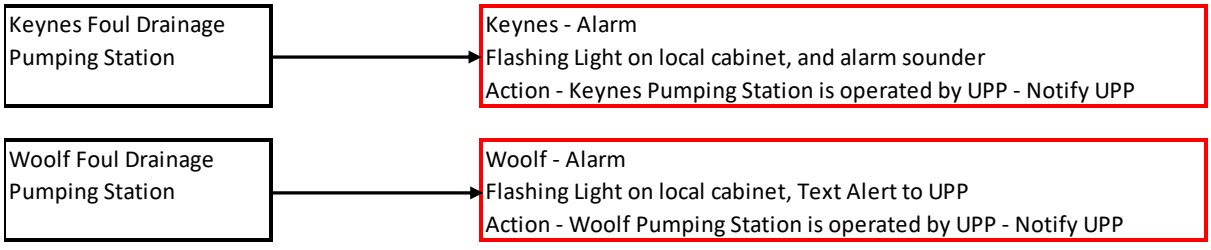


6.2 Emergency Drainage Process 2 - Local Pumping Station Failure

Emergency Drainage Process 2 - Local Pumping Station Failure



UPP Pumping Stations



Link to Spill Response Procedure:
https://www.kent.ac.uk/estates/files/sustainability/EMS%20Documents/Supporting%20Documents/Spill_Response_Procedure_(2.1).pdf

7. Reporting Incidents

7.1 Pumping Stations Exceed Site Limit Flowrate, no leaks or escapes of wastewater

Report this to:
Head of Maintenance, Phil Whittal, P.R. (Whittall@kent.ac.uk)
Head of Energy and Environment, John Kingsland (j.e.kingsland@kent.ac.uk)
Copy to (c.morris@kent.ac.uk, a.c.briggs@kent.ac.uk).

Details to include:
Location:
Time/Date:
Responder:
Details on whether the site outfall was blocked, and when it was cleared

7.2 Local Pumping Station Failure, no leaks or escapes of wastewater

Report this to:
Head of Maintenance, Phil Whittal, P.R. (Whittall@kent.ac.uk)
Head of Energy and Environment, John Kingsland (j.e.kingsland@kent.ac.uk)
Copy to (c.morris@kent.ac.uk, a.c.briggs@kent.ac.uk).

Location:
Time/Date:
Responder:
What was the issue:
Were tankers required (details of numbers of Lorries, volume wastewater required)
Details of where the tinkered material was discharged

7.3 In the event that there is a leak/escape of wastewater

Report this to:
During normal operating hours the decision to notify incidents to the Environment Agency lies with the Safety, Health and Environment Unit and all incidents should be notified to either Catherine Morris (c.morris@kent.ac.uk, mob: 07824513549) or Andrew Briggs (a.c.briggs@kent.ac.uk, mob: 07825 983547) as soon as possible. All spill incidents will be recorded by the Safety, Health and Environment Unit on the University's online reporting system (iCASS).

If an incident occurs out-of-hours or the SHE Unit are unavailable, the Duty Estates Manager is to be contacted. If significant volumes of foul water have entered the surface water drainage system, or foul water has entered controlled waters (ponds, streams, rivers), then the Duty Estates Manager is to call the Environment Agency Emergency hotline (0800 80 70 60) to report it and record the EA Incident Number.

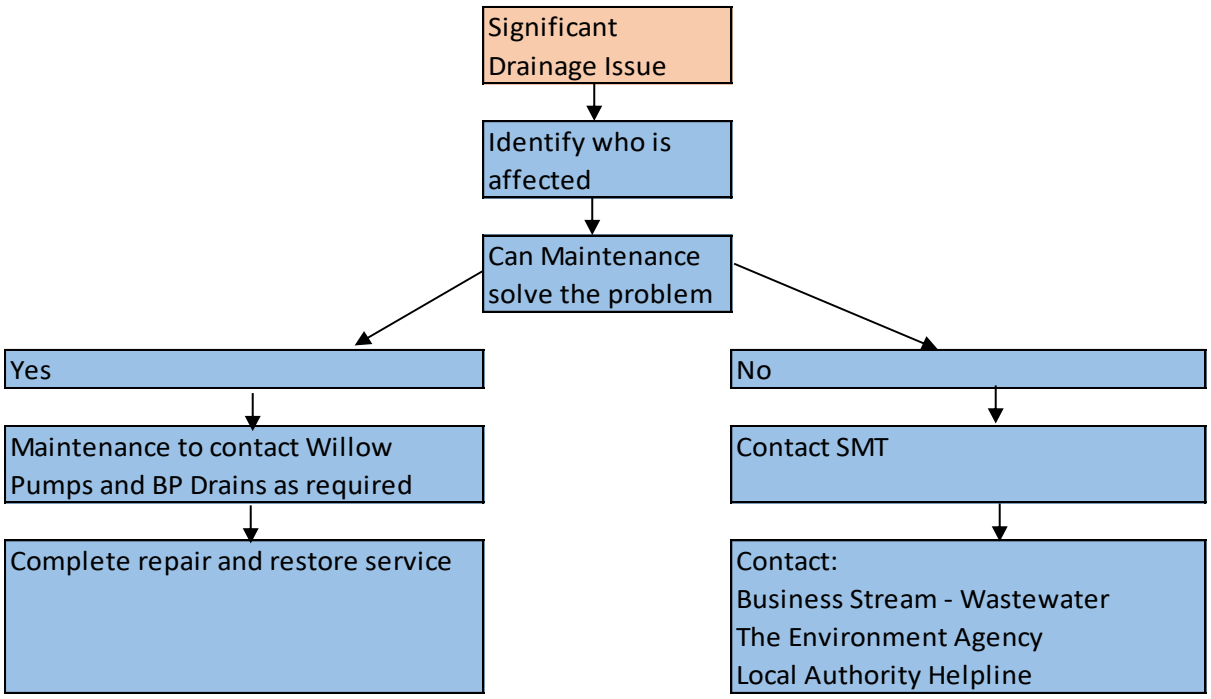
Follow up Reports:
All spills and near-misses should be reported to the Safety, Health and Environment Unit (c.morris@kent.ac.uk, a.c.briggs@kent.ac.uk)
Head of Maintenance, Phil Whittal, P.R. (Whittall@kent.ac.uk)
Head of Energy and Environment, John Kingsland (j.e.kingsland@kent.ac.uk)

Location:
Time/Date:
Responder:
Material Spilled:
Quantity:
Did any spilled material enter drains or surface waters?
Were drain protector mats used?
Description of how spill occurred (if known):
Was the spill adequately cleaned up?

APPENDIX 3 -Escalation Process EP04

Escalation Process

EP04



Contact Details

Estates Maintennace
Phil whittall - 07921487643
Joy Varghese - 07921487911
Colin Flux - 07921487624
Paul Potter - 07738726486

Willow Pumps
Main Line - 01634 201111

BP Drains
Main line - 08005677459

Estates Customer Services
Main line - 3209, 01227 816666

Security
Head of security - 3829
Duty Manager - 3060
Site office - 7215

SMT
Peter Czarnomski - 01227 823611
Helen Ellis - 07525 268009
Gary Law - 07921 487914
Ron Moore - 07860 846795
Juliet Thomas - 07805 854638
Neil Higginson - 07894752327
John Morley - 07894 752325

The Environment Agency
Emergency Hotline - 0800 80 70 60
Main Line - 0370 850 6506

Local Authority Help Line
Main line - 03000 418181

Business Stream
Main Line - 0330 123 2000