APPLICATION SITE REPORT

FOR PPC APPLICATION

Chelson Meadow Leachate Treatment Plant

Plymouth City Council

September 2006

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Summary

This document represents the Site Report for Chelson Meadow Leachate Treatment Plant submitted as part of an application to the Environment Agency (Application No. CP3731LZ) for a permit to operate an installation under Regulation 10 of the Pollution Prevention and Control (England and Wales) Regulations 2000.

Records of the site and surrounding areas have been reviewed along with operational site records in order to describe the condition of the site and, in particular, to identify any substance in, on or under the land that may constitute a pollution risk to the land. Pollution prevention measures have been identified and an assessment of pollution potential to land has been undertaken.

1.0 Introduction

Leppitt Associates has been commissioned by Plymouth City Council to undertake an assessment of Chelson Meadow Leachate Treatment Plant Installation (LTPI) for the purpose of performing a desk top study of its environmental setting and land pollution history, and a conceptual site model as part of the Pollution Prevention Control Permit application submitted in July 2006.

1.1. Site Location

The installation is located at
Chelson Meadow Leachate Treatment Plant
Chelson Meadow Landfill
The Ride
Plymstock
Plymouth
PL9 7JA
The centre of the site is at National Grid Reference SX 50581 54466. The site covers an area of 0.4 Ha and can be seen in Drawing No. WD/W1/472 of Appendix A1.

The LTPI is situated immediately adjacent to the east bank of the River Plym (Drawing No WD/W1/473, Appendix A1) east of the city of Plymouth and south of the A38 trunk road. It was constructed on previous waste deposits as is most of the infrastructure at Chelson Meadow Landfill. The western boundary of the LTPI is formed by the Ride while the north western boundary is defined by the haul road into the Chelson Meadow Landfill waste facility. The glass bays and bulky waste reception area are located on the eastern boundary of the LTPI. The southern boundary is defined by the Chelson Meadow Landfill leachate storage lagoon and a glass skip storage area. The entire LTPI boundary is enclosed by a chain link fence with three sets of lockable gates.

The proposed installation is regulated at present by the Environment Agency (EA) as part of a larger waste management facility that includes: landfill with associated leachate collection and storage facility; Household Waste Recycling Centre, Municipal Recycling Facility; and Green Waste Composting area.

1.2. Details of Installation

The LTPI receives landfill leachate from Chelson Meadow Landfill leachate storage lagoon only, arising as a result of waste degradation within the landfill and the percolation of precipitation through the waste. Leachate is a generic term given to water that has come into contact with landfilled waste materials, and in doing so has dissolved contaminants from them (PPC Technical Guidance 2006). Further details describing the chemical constituents of leachate can be found in Appendix F1.

The focus for treatment is aerobic biological treatment within sequential batch reactors (SBRs). An SBR is a cyclically operated, suspended growth, activated sludge process, which carries out functions such as aerobic biological treatment, equalisation, settlement of solids, effluent clarification and decanting, over a time sequence rather than in spatially separate tanks as would occur in conventional activated sludge systems, such as those operated in a water treatment plant. The operating cycle comprises four main phases: fill, react, settle, decant. Once aerobic biological treatment is complete, effluent is discharged direct to the River Plym during high tide via an outfall pipe.

In order to comply with future permit conditions the LTPI will be modified according to the Improvement Plan provided in Folder 2, Section 3, of the Permit application.

2.0 Objectives

The objectives of this report are:

To satisfy the requirements of the PPC Regulations at time of permitting by:

- Identifying the environmental setting and land pollution history of the site;
- Identifying activities that will be conducted at the installation that may lead to land pollution;
- Identifying and assess the preventative measures that are in place to protect the land; and
- Assessing whether there is:

    1. little likelihood that land pollution or leaks to land will occur during the future life of the installation;

    or there is:

    2. a reasonable possibility that there is potential for current or future land pollution of the land from the installation.

3.0 Site Setting and Sources of Desk Study Information

3.1. Introduction

The following sections detail the sources of desk study information searched in order to describe the condition of the installation and, in particular, to determine the potential for substances to be present in, on or under the land associated with present and past uses of the site and its surrounding areas.

3.2 Environmental Consents, Licences, Authorisations, Permits and Designations for the Site and Surrounding Area

The Sitescope Environmental Database was used to provide records of any Discharge Consents, Waste Management Licences, Abstraction Licences, IPC Authorisations, PPC Permits and Land Drainage Consents for the site and within 1000 metres of the site boundary. The results are shown in Appendix C1.

There are no Trade Effluent Consents for the site.

English Nature and Plymouth County Council were requested to provide details of any Nature Conservation Designations for the site and within 2 kilometres of the site boundary and 5km European sites for Nature Conservation importance. The locations of Designated Sites within the vicinity of the site are shown in Appendix A4.

3.3 Geological, Hydrogeological and Hydrological Data

Geological and hydrogeological information for the site was obtained from the following sources and is reproduced in Appendix C2, and a geological map is included in Appendix A2.

BGS Sheet 340 & 349 1 to 50000 Scale map
Environment Agency Groundwater Vulnerability Map Sheet 49
Borehole Archive Data within the installation boundary, which is presented in Appendix C5.

A summary of the site hydrology has been taken from the Hydrogeological Risk Assessment for Chelson Meadow Landfill submitted as part of the IPPC Landfill Permit application in 2003 and is provided in Appendix C3. The location of water courses within 250m of the installation are shown on Drawing No. WD/W1/473, Appendix A1

3.4 Site Operational Records, Emergency Response Records and Records of any Land Pollution Incidents in the Vicinity of the Site

Operational records from the site have been reviewed and are summarised in Appendix C4. These data illustrate the quality of leachate entering the installation and effluent being discharged after treatment. These data are the sole source of data regarding potentially polluting substances arising from the operation of the installation. A chronology of the modifications to the installation to ensure compliance of effluent with a discharge consent has been produced. This does not relate to any incidents involving the loss of containment or the release of potentially polluting substances to land because the sole regulation on the installation is the volume of effluent released to the River. No effluent is released to land and no accidental release of effluent or untreated leachate has occurred other than that to the outfall pipe.

There have been no pollution incidents within the installation boundary but the installation is operated on top of former landfill and within the site boundary of an existing landfill, both of which have associated leachate. Beyond the installation boundary but within the landfill site boundary there is a single incident of pollution arising from the release of leachate into the Northern Leat from the

northern sector of the adjacent landfill in the early 1990s. Historically, the Southern Leat was polluted from lateral seepage of leachate until the southern cut off wall was completed in 2005. The landfill boundary is now encircled by peripheral engineered barriers and diffuse pollution to surface water has been controlled.

Site operational layout plans, including the location and nature of underground services and pipelines are shown on Drawing No. WD/W1/475 in Appendix A3.

The location of bulk storage tanks is shown on Drawing No. WD/W1/472 in Appendix A1.

Site drainage plans are included in Drawing No. WD/W1/472 in Appendix A1, which indicates that no foul drains are associated with the installation. There are two underground pipes serving the installation: one receives leachate from the pumping station and feeds the LTP; the second receives treated effluent and leads to the outfall. There is surface water drainage within the concrete hard standing surrounding the LTP, which enters the landfill leachate storage lagoon.

3.5 Existing Site Investigation and Assessment Reports

Prior to the construction of the pumping station and LTP trial pits and boreholes were undertaken. A summary of these investigations is provided in Appendix C5. Further details are covered under Section 6.1 of this document.

3.6 Other Information

Not applicable.

4.0 Site Reconnaissance

4.1. Introduction

The site reconnaissance was undertaken on numerous occasions during the fourteen months between July 2005 and September 2006 by Leppitt Associates on the area shown in Drawing No. WD/W1/472, Appendix A1.

The purpose of the reconnaissance was to inspect the site and surrounding area for indicators of potential land pollution. Site infrastructure was visually to assess its competence and potential to cause or have caused releases to land.

The SBRs and surrounding surface infrastructure were inspected and any indicators of potential sources of land pollution investigated. None were evident above ground. Photographs of the SBRs and other relevant infrastructure are included in Appendix B1 and Appendix F.

4.2 Storage Tanks and Associated Pipe Work

The LTPI is comprised of:

Description	Contents	Volume	Location	Integrity/Testing	Other Observations
SBR 1	Leachate/Effluent	700m^3	Above Ground	• Visual Monthly • Annual Engineering	Currently good condition
SBR 2	Leachate/Effluent	700m^3	Above Ground	• Visual Monthly • Annual Engineering	Currently good condition
SBR 3	Leachate/Effluent	700m^3	Above Ground	• Visual Monthly • Annual Engineering	Currently good condition
SBR 4	Leachate/Effluent	700m^3	Above Ground	• Visual Monthly • Annual Engineering	Currently good condition
Rising Main to LTP	Leachate	350mm diameter	Below Ground	• Annual CCTV	Currently good condition
Effluent Return Line from LTP	Effluent	350mm diameter	Below Ground	• Annual CCTV	Currently good condition
Pump Lifting Station wet well	Leachate	20m^3	Below Ground	• Visual Monthly	Currently good condition
Discharge Channel	Leachate/Effluent	N/A	Above & Below Ground	• Visual Monthly	Currently good condition
Outfall Pipe	Leachate/Effluent	N/A	Above Ground	• Visual Monthly	Currently good condition

The locations of the above are shown Drawing No. WD/W1/472 in Appendix A1. Construction details can be found in the Appendices to Appendix F.

There is no secondary or tertiary containment for any the above.

4.3 Hardstanding and Bunds

Drawing No. WD/W1/476 in Appendix A5 shows the various surface finishes within the LTPI, which are also illustrated by Plates in Appendix B1. The SBRs are surrounded by reinforced concrete, laid in slabs and with sealed joints. There is a gas proof membrane below the SBRs, the concrete service road and the control building. All engineered surfaces are inspected visually on a monthly basis and none have significant areas of cracking or other damage.

There are road gullies within the service road and these drain into the adjacent landfill leachate storage lagoon as shown on Drawing No. WD/W1/475 in Appendix A3.

4.4 Vegetation

Vegetation within the LTPI is concentrated on the north western boundary and provides screening against the site haul road for the adjacent landfill. The vegetation is comprised of a mosaic of shrubs and neutral grassland of medium diversity. The shrubs include hazel and hawthorn, which have been planted, and non-native Butterfly Bush which has invaded. Other than planted shrubs the vegetation has developed naturally on and adjacent to low bunds constructed of sub-soil. There is very little bare ground and the vegetation is lush and apparently healthy with no signs of die-back. Growth is sufficiently vigorous to require annual strimming. There are no plant species indicative of extreme edaphic conditions, e.g. sea plantain, thrift and buckshorn plantain etc.

4.5 Surface Water Features

Not applicable.

4.6 Nature of the Storage and Handling of Materials

On-site materials:
Anti-foaming silicone is contained within 25l drums located within the pump lifting station. When required these are moved to the top of the SBR. These are not stored within a bunded area but the contents are inert and pose no environmental hazard. A bunded store located close to the SBR is to be constructed in the future as part of the Improvement Plan (Folder 2, Section 3 of the Permit application).

Off-site materials:
A tanker may visit the LTPI on an annual basis to re-seed the SBRs if required. This tanker is parked on the concrete between the SBRs and control room. It contains activated sewage sludge from a municipal sewage works, which has the potential to pollute if spilt in an uncontrolled area. The concrete areas are served by gullies all of which feed the adjacent landfill leachate storage lagoon.

4.7 Surface Water and Foul Drainage

There is no foul drainage, soakaways or interceptors located within the LTPI. Surface run-off is channelled by gullies to the adjacent landfill leachate storage lagoon as mentioned above.

4.8 Other Observations

Not applicable.

5.0 Assessment of Land Pollution Potential

5.1. Polluting Substances and Relevant Activities

A list of all substances used, stored, generated by the treatment process is shown below. An assessment of their pollution potential has been made based upon their properties, toxicity and volume stored, used or manufactured. Those substances thus identified have been taken forward to 5.2 below.

Substance	Volume	Toxicity	Fate	Pollution potential
Landfill leachate	Maximum SBR cycle intake of 1320m^3	Variety of List 2 and a small number of List 1 substances	Zones 1 & 2	High
Effluent	Maximum SBR output of 1320m^3	Low provided treatment has occurred	Zones 1, 2 & 3	Low
Bacterial biomass/mixed liquor	Maximum SBR storage of 1320m^3	Low provided treatment has occurred	Zone 1	Low
Inorganic sediment	Maximum of 40m^3	Unknown	Contained within SBR	Unknown
Anti-foam	250l	Nil	Zones 1 & 2	Low
Lubrication oil	25l	List 1 hydrocarbons	Zone 1	High

Zone 1:
Landfill leachate storage lagoon, served by gullies in concrete hardstanding surrounding SBRs. Substances contained therein.

Zone 2:
Loss to groundwater from damaged below-ground pipes between SBRs and pump lifting station, contained within landfill site boundary by peripheral engineered barriers.

Zone 3:
Loss to groundwater and surface water beyond peripheral engineered barriers from damaged channel, excluding normal discharge point.

5.2. Preventative Measures

The pollution preventative measures (physical infrastructure and those relating to testing, inspection and maintenance) for each relevant activity associated with the potentially polluting substances have been identified and their extent and condition assessed. The results of this work are shown in Appendix D1.

Plans showing the location of these activities are shown in Appendix A1 and A6.

5.3. Assessment of the Likelihood of Land Pollution

Appendix D1 contains an assessment of the likelihood of land pollution from the installation.

For all relevant activities at the installation there is little likelihood that land pollution or leaks to the land will occur during the future life of the installation. It is the conclusion of this report that reference data for the site does not need to be collected.

6.0 Conceptual Site Model

6.1. Geology and Hydrogeology

A detailed account of the geology and hydrogeology of the entire waste management facility was prepared in 2003 (Pell Frishmann 2003) in support of the PPC Landfill Permit Application. The summary provided has been synthesised from this and borehole logs commissioned as part of the initial ground work investigations prior to the construction of the Pump Lifting Station and the Leachate Treatment Plant. Appendix A2 shows the geology of the locality taken from the British Geological Survey maps for Plymouth and Ivybridge, and a more detailed assessment submitted by Pell Frishmann (2003) based on borehole log data. Borehole logs relating to the installation are located in Appendix C5 and indicate that the underlying geology of the LTPI contains the following materials:

1. Made Ground (upper stratum across the entire LTPI)
2. Alluvium (lowest stratum for much of the LTPI)
3. Upper Devonian Slate (beneath Leachate Treatment Plant)
4. Middle Devonian Limestone (around Pump Lifting Station)

Alluvium deposited in the original Chelson Bay estuary area underlies much of the waste management facility although its depth varies depending on the location of the bed rock and the depth of the overlying Made Ground. The lithology of the Alluvium changes close to the LTPI to include a coarser fringing deposit on the edge of the former estuary area. These transition materials can be divided into three zones:

- Typical Alluvium zone: silts and clays in excess of 3m thickness (as below the majority of the site)
- Transition zone: angular gravels interbedded with silts
- Peripheral gravel zone: angular gravels with minor sand and silt

The peripheral gravel zone material is typically described on logs from the LTPI as "grey angular and sub angular coarse slate, limestone and calcite gravel with cobbles". It is probably a blend of weathered bedrock and locally reworked estuary perimeter sediment. The transition zone soils are the interbedded silts and gravels, with the granular soil layers typically forming about half of the overall thickness. This zoned pattern of estuary perimeter drift deposits is evidently present at least as far the eastern boundary of the LTPI.

The boreholes taken from around the Leachate Pumping Station area (see Appendix 2) encountered the upper surface of the drift deposits at variable elevation (range -0.15 to -3.0m AOD). The base of the drift deposits also deepens northwards in this area, from around -2.0 to -7.0m AOD close to the southern boundary of the LTPI. Accordingly, the actual thickness of the drift deposits at any location within the southern part of the LTPI is quite variable, ranging from around 1.0 to 6.5m.

In the south-western area of the site, exploratory hole records confirm the geological map evidence that a boundary between Upper Devonian Slate and Middle Devonian Limestone exists. Boreholes in the south-western part of the site show that the position of the geological contact between the limestone series (to the south) and the slate (to the north) roughly follows the southern boundary of the LTPI. Boreholes in the centre of the LTPI encounter consistent purple and grey slate, whilst boreholes to the west, south and east encounter interbedded grey slate and limestone. The limestones are commonly impure and cleaved, although some thicker beds of more pure fine grained limestone do exist. The limestone beds are interbedded with grey calcareous slates. In some cases the beds of slate reach quite considerable thickness and in some boreholes (especially where the depth of drilling into bedrock is short) it can become difficult to be clear as to whether such strata are correctly ascribed to the Middle Devonian.

The Groundwater Vulnerability Map of South Devon, Sheet 49, classifies both the Alluvium and the Upper Devonian Slate as Minor Aquifer (variably permeable) comprising 'fractured or potentially fractured rocks, which do not have a high primary permeability, or other formations of variable permeability including unconsolidated deposits', and which may be important for local supplies. Overlying soils are classified as having "intermediate leaching potential (I1)",and "can possibly transmit a wide range of pollutants". The Middle Devonian Limestone (Plymouth Limestone Formation), in keeping with Palaeozoic carbonates present elsewhere in the south-west of England, does not allow any large-scale intergranular flow. Groundwater movement is normally confined to solution features and solution-widened discontinuities where its movement is dependent on fracture spacing, aperture and degree of interconnection. The limestone formation is classified on the Groundwater Vulnerability Map as a Major Aquifer (High Permeability) with a soil vulnerability classification of I1. In urban areas its classification rises to HU, a worst-case vulnerability classification until proven otherwise (although it is likely that I1 will still apply). Groundwater flows within the basal limestone formation strata (limestone interbedded with slate) are also likely to be controlled by fractures/discontinuities.

6.2. Surface Water Features

The surface water features in the vicinity of the site are shown on Drawing No. WD/W1/473 of Appendix A1 and are as follows:

River Plym estuary, located west of the LTPI, flowing north to south. Mudflats are exposed at low tide and effluent is released into the River on an outgoing high tide.

The South Leat lies to the south of the LTPI on the far side of the peripheral engineered barrier. Water drains from east to west into the River Plym. The watercourse is now classified as an RE1 to RE2. The only hydrological link between the LTPI and the South Leat would be via loss of effluent from the discharge channel.

Surface water drainage for the site is shown on Drawing No. WD/W1/472 of Appendix A1.

Groundwater beneath the site is not in hydraulic continuity with either surface water feature because of the construction of the peripheral engineered barrier, which encircles the entire landfill site boundary. The only break in this barrier is where the discharge channel rises above it. The groundwater within the installation boundary is linked to the landfill leachate storage lagoon only.

6.3. Results of Previous Investigations/Assessments

Appendix C5 contains borehole logs from initial site investigations during preparation for the construction of installation infrastructure.

6.4. Other Receptors

The Plymouth Sound and Estuaries Special Area of Conservation lies within 5km of the installation. A full Habitat Risk Assessment is supplied with the application, see Folder 2, Section 7.

6.5. Land Pollution History

The entire installation was constructed on former landfill, which commenced in 1965. This is confirmed by the borehole logs and trial pits, which show the underlying geology to be made ground Appendix C5. The groundwater beneath the site is contaminated with leachate because of the hydraulic continuity with an unlined landfill operating under the principal of dilute and disperse.

6.6. Site Zoning

The site has been divided into a series of zones based upon the site setting and the possible location of potentially polluting substances. These zones are shown in Appendix A6. The following describes these Zones.

Zone 1:
Landfill leachate storage lagoon, served by gullies in concrete hardstanding surrounding SBRs. Substances contained therein.

Zone 2:
Loss to groundwater from damaged below-ground pipes between SBRs and pump lifting station, contained within landfill site boundary by peripheral engineered barriers.

Zone 3:
Loss to groundwater and surface water beyond peripheral engineered barriers from damaged channel, excluding normal discharge point.

6.7. Summary Conceptual Site Model (CSM)

6.7.1. Introduction

The findings of the desk study and site reconnaissance (detailed above) have been used to develop the conceptual site model (CSM) for the site. Uncertainties in the CSM are identified and their significance discussed.

6.7.2. Graphical Representation of the CSM

Graphical representations of the CSM have been produced and are shown in Appendix E1.

6.7.3. Uncertainties in the CSM

In developing the conceptual model for the site the following assumptions have been made:

- All losses to surface drainage migrate to the adjacent landfill leachate storage lagoon via gullies in engineered surfaces. This assumption has low significance since losses that disperse to groundwater will be contained according to assumption 2 below.
- All losses to groundwater in Zone 2 are contained by the peripheral engineered barrier serving the landfill site boundary. This is a significant assumption but there is strong evidence from monitoring of the adjacent landfill that the assumption is valid.
- All losses to ground or surface water in Zone 3 will ultimately be lost to the River Plym as if discharged through the outfall pipe, which lies within 10m of the point where the channel crosses the peripheral engineered barrier; groundwater boreholes in the vicinity have water tables that fluctuate according to tidal status, whereas groundwater boreholes surrounding the LTPI show no

such influence. This assumption is of low significance because all substances released via the outfall pipe are, at present, discharged legally under an existing discharge consent.

SITE REPORT
Appendix A

A1

Notes

RIVER PLYM

W1 (CMOUT38L)

Outfall Pipe

Discharge channel

Gate valves

Rising main to treatment plant

Treated effluent return line

SBR inlet valves

Dosing plant

SBR1

SBR2

SBR3

SBR4

Sequence batch reactors

Glass bays area

Control room

Security access gates

SBR blowers

De-sludge discharge pipe

Installation boundary

Adjacent landfill lagoon

WET WELL

PUMP LIFTING STATION

TIDAL SENSOR CHAMBER

ELECTRICITY SUB STATION

OUTFALL

OUTFALL

BARRIER

W/M FENCE

W/M FENCE

PIT TANK

TANK

SEPTIC TANK

100 dia F.W.

The Ride

Chelson Meadow Landfill entrance

PYLON

STEPS

RG

MH

scale

0 50

Key

RG Road gully

MH Manhole

No.	Date	Details
REVISIONS		
STATUS		

City of Plymouth

Department of Development
Civic Centre
Plymouth PL1 2EW
Tel: Plymouth 01752 668000

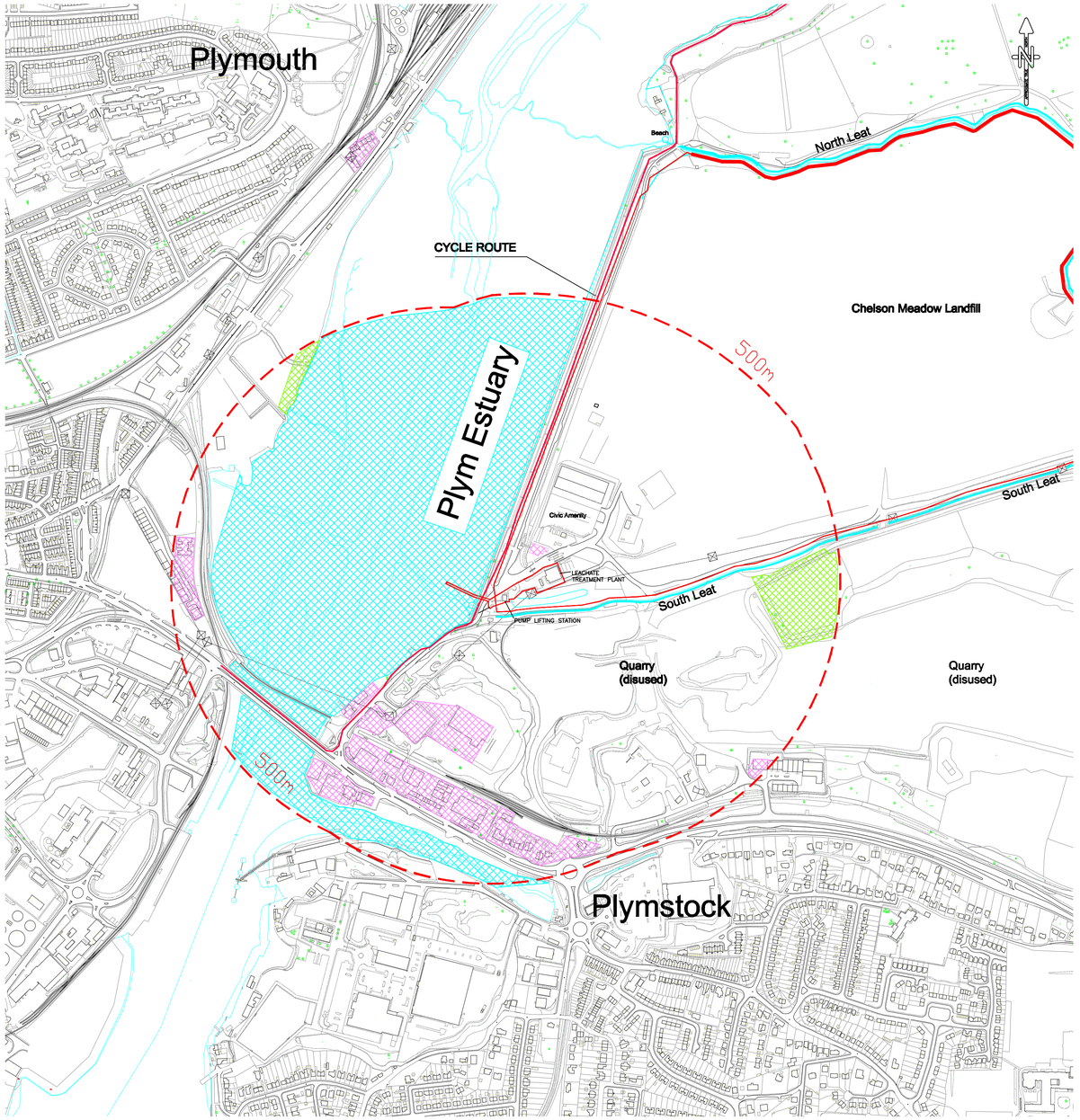
SCHEME

Chelson Meadow Leachate Treatment Plant

DRAWING TITLE

Installation boundary and layout

Drawn	PMJ	Traced	
Checked		Date	27/06/2006
Scale	as shown		
Drawing Number	WD/W1/472	Revision.	



Notes

KEY

- DISTANCE FROM INSTALLATION BOUNDARY
- DOMESTIC DWELLINGS/OFFICES
- FOOTPATHS / CYCLE ROUTES
- SURFACE WATER BODIES
- OPEN SPACES, PARKS AND FARMLAND

No.	Date	Details
REVISIONS		
STATUS		

City of Plymouth

Department of Development
Civic Centre
Plymouth PL1 2EW
Tel: Plymouth 01752 668000

SCHEME

Chelson Meadow
Leachate Treatment Plant

DRAWING TITLE

Location plan
and
surrounding development

Drawn	PMJ	Traced	
Checked	MSV	Date	26/06/2006
Scale	1:5000		
Drawing Number	WD/W1/473	Revision.	

A2

Figure 9(ii) shows the keys for the maps above.

British Geological Survey Maps 1:50,000

Map A: Plymouth Sheet 348, Drift Edition, 1977
Map B: Ivybridge Sheet 349, Drift Edition, 1974

Project Title:
CHELSON MEADOW LANDFILL PERMIT APPLICATION

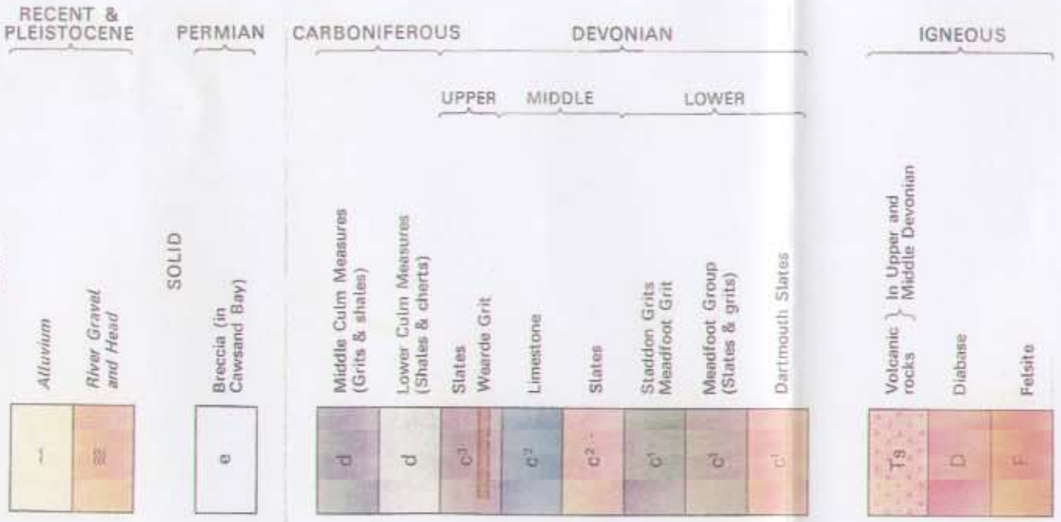
Figure Title:
EXTRACT OF GEOLOGICAL MAPS
Not to Scale

Date:	Designer:	Checked by:	PM Approval:	Figure No:
24/10/03	ACS	SW	JW	Figure 9(i)

PELL FRISCHMANN
Bumpton House
Peninsula Park
Exeter EX2 7NT
Telephone: 01392 444345
Facsimile: 01392 444880
E-mail: pfexeter@pellfrischmann.com

MAP A

EXPLANATION OF GEOLOGICAL SYMBOLS AND COLOURS



MAP B

EXPLANATION OF GEOLOGICAL SIGNS AND COLOURS

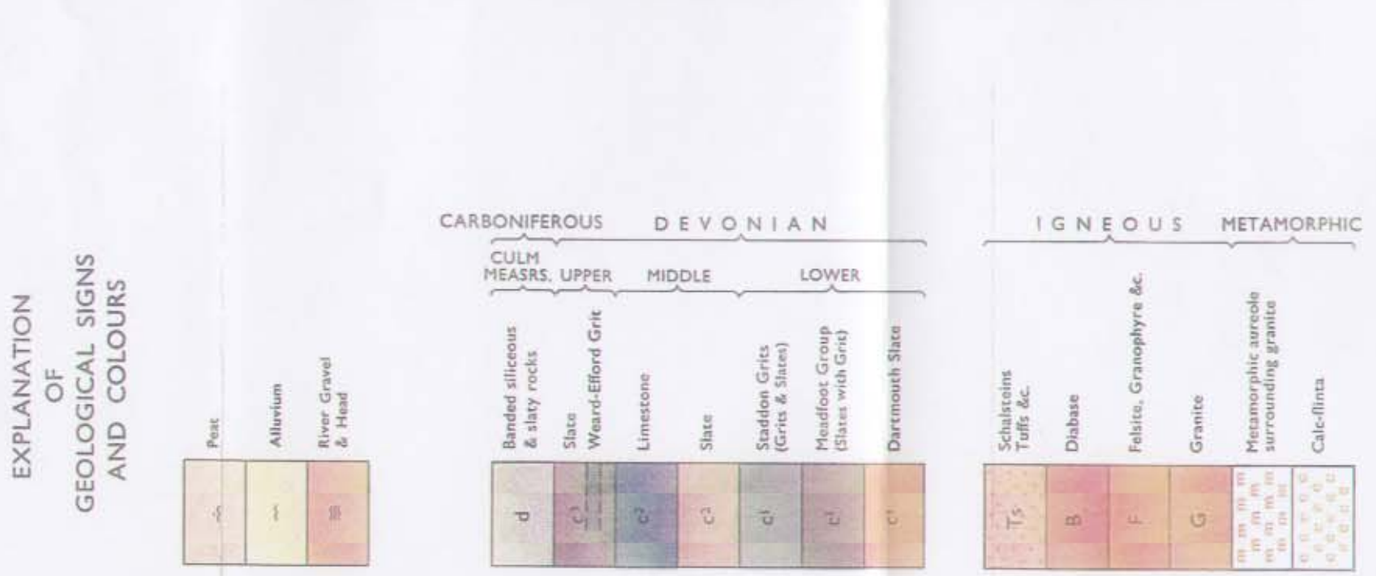


Figure 9(i) shows the maps for the keys above.

British Geological Survey Maps 1:50,000

Map A: Plymouth Sheet 348, Drift Edition, 1977
Map B: Ivybridge Sheet 349, Drift Edition, 1974

Project Title:
CHELSON MEADOW LANDFILL PERMIT APPLICATION

Figure Title:
EXTRACT OF GEOLOGICAL MAPS - KEY
Not to Scale

Date:	Designer:	Checked by:	PM Approval:	Figure No:
24/10/03	ACS	SW	JW	Figure 9(ii)

PELL FRISCHMANN
Burnator House
Peninsula Park
Exeter EX2 7NT
Telephone: 01392 444346
Facsimile: 01392 444880
E-mail: pfexeter@pellfrischmann.com

A3

Notes

W1 (CMOUT38L)

RIVER PLYM

Outfall Pipe

Gate valves

Discharge channel

OUTFALL

OUTFALL

TIDAL SENSOR CHAMBER

BARRIER

ELECTRICITY SUB STATION

PUMP LIFTING STATION

WET WELL

The Ride

Chelson Meadow Landfill entrance

SEPTIC TANK

PIT TANK

TANK

100 dia F.W.

STEPS

W/M FENCE

SBR inlet valves

Dosing plant

Glass bays area

Sequence batch reactors

SBR1

SBR2

SBR3

SBR4

Rising main to treatment plant (U'ground)

Treated effluent return line (U'ground)

Electricity (U'ground)

Control room

Security access gates

SBR blowers

De-sludge discharge pipe

Installation boundary

PYLON

Adjacent landfill lagoon

W/M FENCE

RG

MH

Key

RG Road gully

MH Manhole

scale

0 50

No.	Date	Details
REVISIONS		
STATUS		

City of Plymouth

Department of Development
Civic Centre
Plymouth PL1 2EW
Tel: Plymouth 01752 668000

SCHEME

Chelson Meadow Leachate Treatment Plant

DRAWING TITLE

Underground services and pipelines

Drawn	PMJ	Traced	
Checked		Date	06/09/2006
Scale	as shown		
Drawing Number	WD/W1/475	Revision.	

A4

ENGLISH NATURE

natu

MAPS NEWS HELP

Nature Reserves

Sites of Special Scientific Interest (SSSI)

International Sites

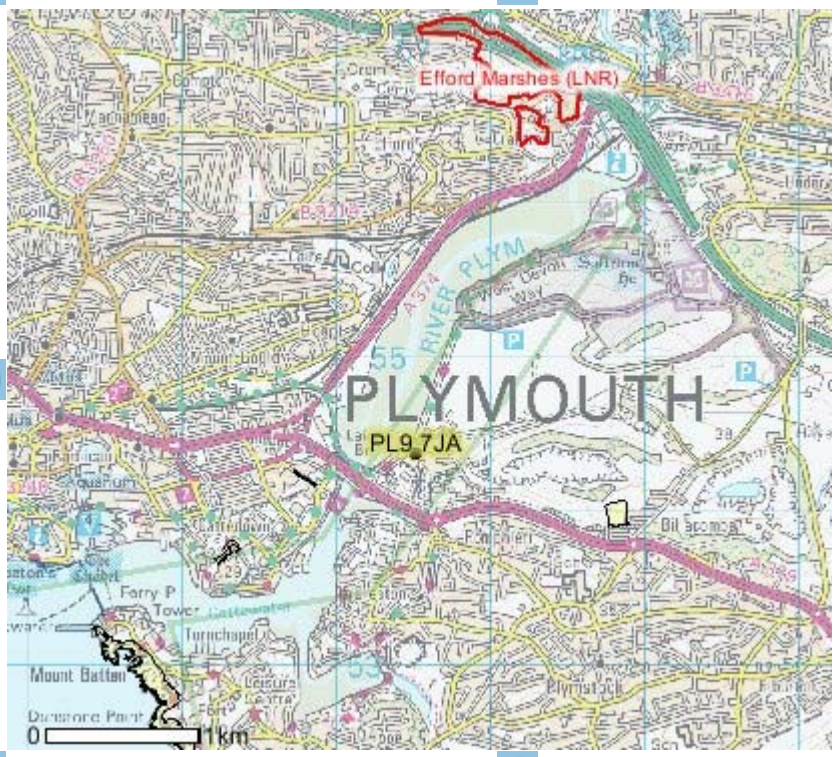
Biodiversity Action Plan Priority Habitats

Geological Sites Map

Targeting and Planning Map

Search maps for English postcodes, places, sites and more... GO Tips

Make page smaller



Click on the map with the mouse to get information about map features

ENGLISH NATURE

MAPS NEWS HELP

nature on the map

English Nature Home

- Nature Reserves
- Sites of Special Scientific Interest (SSSI)
- International Sites
- Biodiversity Action Plan Priority Habitats
- Geological Sites Map
- Targeting and Planning Map

Lullington Heath NNR, Erica cinerea sward, Peter Wakely

Information:

<< back to the map

Local Nature Reserves (13 June 2006. The LNRs are currently being updated with the addition of around 100 new sites, so if your site does not appear, it is likely to be added soon. This work is due for completion by September 2006. Queries regarding LNR boundaries or any new or amended boundaries should be sent to sally.pinnegar@english-nature.org.uk Thank you.)

Site Code	Name	Area (Ha)
1008883	EFFORD MARSHES	25.07

English Nature Area Teams

Team	Details
Devon	More...

Natural Areas

Name	Details
South Devon	More...

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- Targeting and Planning Map

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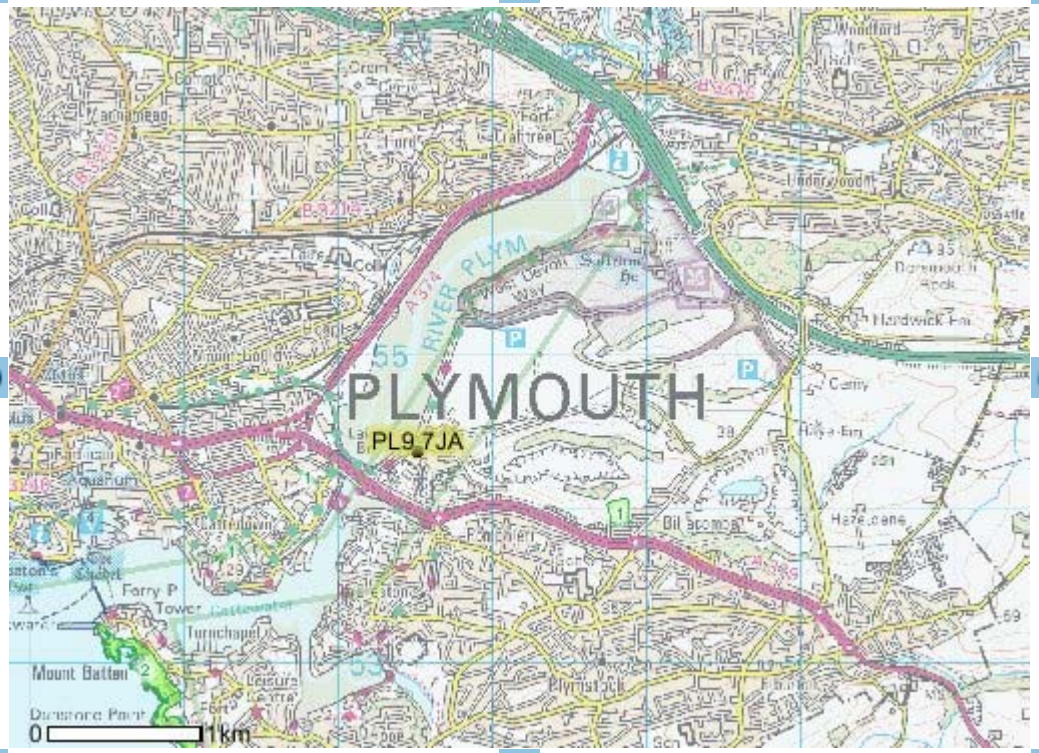

Overview map

Key

- English Nature Offices
- SSSI Live Management Agreements
- SSSI Unit condition - last updated 15 August 2006
  - Favourable Condition
  - Unfavourable Recovering
  - Unfavourable no change
  - Unfavourable Declining
  - Part Destroyed
  - Destroyed
  - Not Assessed
- Sites of Special Scientific

Click on the map with the mouse to get information about map features

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SSSI Unit condition - last updated 15 August 2006 (Click here for more information on known data issues affecting some sites)

SSSI Name	Unit Number	Condition	Details
BILLACOMBE	1	FAVOURABLE	More...

Sites of Special Scientific Interest (For information about access to the site and other details - click on the 'more...' link below)

Site Code	Name	Area (Ha)	Details
1001032	BILLACOMBE	1.96	More...

English Nature Area Teams

Team	Details
Devon	More...

Natural Areas

Name	Details
South Devon	More...

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Sites of Special Scientific Interest

SSSI unit information

Billacombe - Unit 1

back View Map

Staff member responsible for SSSI unit:	Chris Davis (DEVON Team)
Unit ID:	1004011
Unit area:	1.96 hectares
Main habitat:	Neutral grassland - lowland
Condition:	Favourable
Latest assessment date:	07 August 2003
Condition assessment comment:	Dog fouling not such an issue, site forms part of a large area bins provided! Good areas of Eryngo campestre found but difl due to tall vegetation. Rest of field diverse with good range o pyramidal orchid (according to nature conservation officer), k agrimony, yellow rattle, wild carrot, field scabious. lot of Arrh confirmed no use of fertilisers. need to set up a monitoring sy GIS to map areas of plant rather than count spikes or both.

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Information:

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SSSI Unit condition - last updated 15 August 2006 (Click here for more information on known data issues affecting some sites)

SSSI Name	Unit Number	Condition	Details
PLYMOUTH SOUND SHORES & CLIFFS	2	FAVOURABLE	More...

Sites of Special Scientific Interest (For information about access to the site and other details - click on the 'more...' link below)

Site Code	Name	Area (Ha)	Details
1006541	PLYMOUTH SOUND SHORES & CLIFFS	44.28	More...

Natural Areas

Name	Details
Start Point to Land's End	More...

<< back to the map

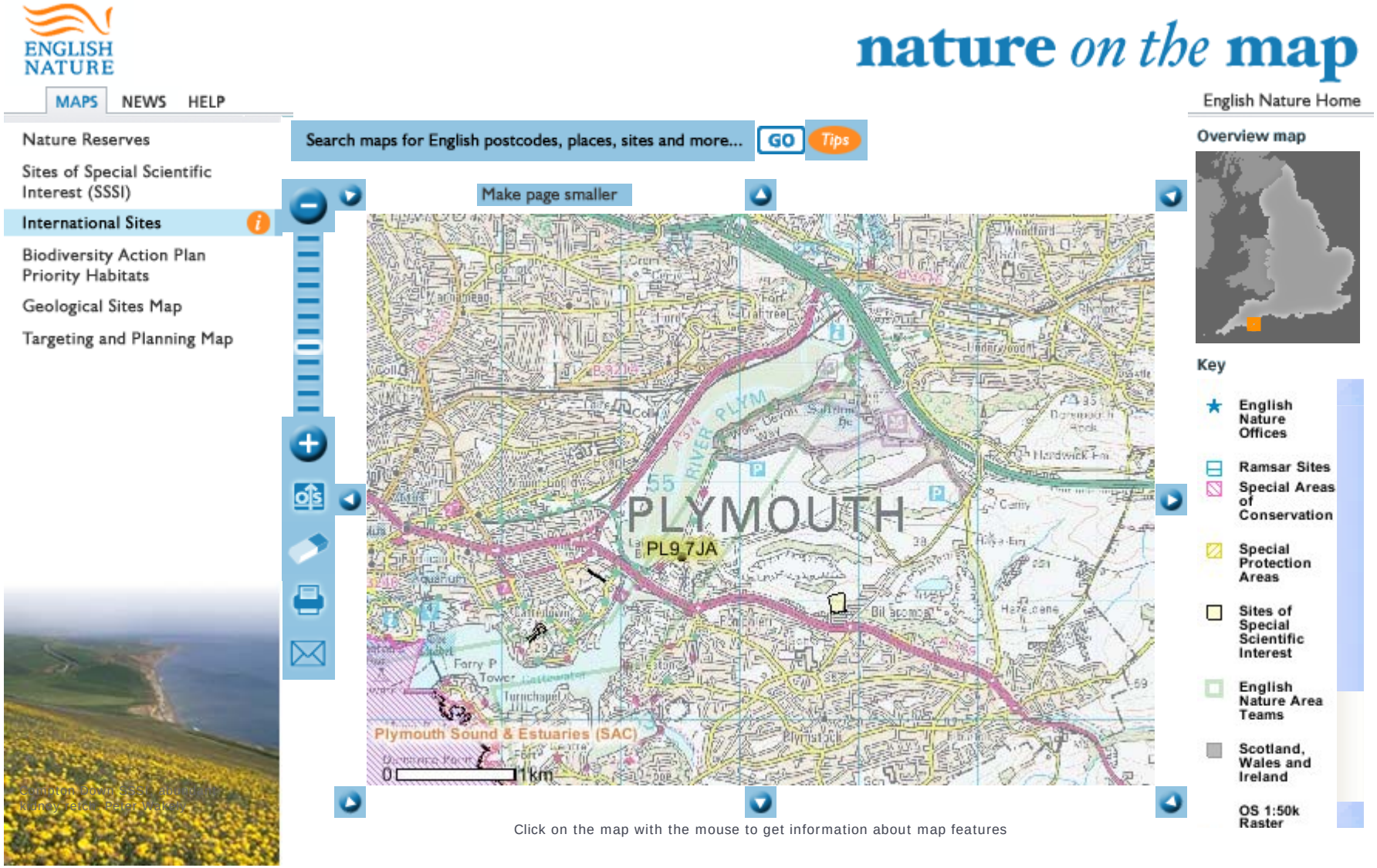
Sites of Special Scientific Interest

SSSI unit information

Plymouth Sound Shores And Cliffs - Unit 2

back View Map

Staff member responsible for SSSI unit:	Chris Davis (DEVON Team)
Unit ID:	1018377
Unit area:	6.6 hectares
Main habitat:	Littoral sediment
Condition:	Favourable
Latest assessment date:	13 December 2004
Condition assessment comment:	No adverse human impact seen.



ENGLISH NATURE

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Special Areas of Conservation

Site Code	Name	Area (Ha)	Details
UK0013111	PLYMOUTH SOUND & ESTUARIES	6386.97	More...

Natural Areas

Name	Details
Start Point to Land's End	More...

<< back to the map

Plymouth Sound and Estuaries

Site details

Location of Plymouth Sound and Estuaries SAC/SCI/cSAC

Country	England
Unitary Authority	Cornwall; Devon; Plymouth
Grid Ref*	SX472506
Latitude	50 20 06 N
Longitude	04 08 51 W
SAC EU code	UK0013111
Status	Designated Special Area of Conservation (SAC)
Area (ha)	6402.03

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Marine areas. Sea inlets (50%)
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (40%)
Salt marshes. Salt pastures. Salt steppes (5%)
Coastal sand dunes. Sand beaches. Machair (2%)
Shingle. Sea cliffs. Islets (3%)

Boundary map and associated biodiversity information on the NBN Gateway.

Natura 2000 data form for this site as submitted to Europe (PDF format, size 30kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).

Annex I habitats that are a primary reason for selection of this site

1110 Sandbanks which are slightly covered by sea water all the time

Plymouth Sound and Estuaries, on the south-west coast of England, has been selected for its extensive areas of sublittoral **sandbanks**, which consist of a range of sandy sediments within the inlet and on the open coast. These sediments include tide-swept sandy banks in estuarine habitats, sandy muds north of the Breakwater, muddy sands in Jennycliff Bay, fine sands with eelgrass *Zostera marina* and a rich associated flora and fauna in the Yealm entrance, as well as tide-swept sandy sediments with associated hard substrates colonised by distinctive communities of algae and invertebrates.

1130 Estuaries

Plymouth Sound and Estuaries is representative of ria **estuaries** in south-west England. The Rivers Tamar and Lynher are linked at their mouths. The upper parts of the Tamar and Lynher include a very well-developed estuarine salinity gradient. As a consequence, they exhibit one of the finest examples in the UK of changing estuarine communities with changing salinity regime. Rocky reefs in low salinity estuarine conditions far inland on the Tamar are very unusual and support species such as the hydroid *Cordylophora caspia*. The Tamar is one of few estuaries where zonation of rocky habitats (intertidal and subtidal) can be observed along an estuarine gradient.

1160 Large shallow inlets and bays

Plymouth Sound and Estuaries on the south-west coast of England includes the rias of the rivers Tavy, Tamar, Lynher and Yealm. The first three of these join at the wide, rocky inlet of Plymouth Sound and the Yealm enters the adjacent Wembury Bay. The Yealm has good examples of habitats and communities characteristic of sheltered marine inlets with little freshwater input, including a range of sponge- and worm-dominated communities on lower shore mixed sediments. The Plymouth Sound complex has a high diversity of habitats and communities characteristic of different salinities, in contrast to the Fal and Helford. Some of these support extremely rich marine flora and fauna, which include abundant southern Mediterranean-Atlantic species rarely found in Britain, such as the carpet coral *Hoplangia durotrix*. Particularly notable habitats include (i) littoral and sublittoral limestone reefs extensively bored by bivalves and harbouring a rich fauna; (ii) offshore sublittoral tide-swept reefs; (iii) tide-swept limestone channels with animal communities rarely encountered in other marine inlets; and (iv) subtidal sediments with rich and often diverse invertebrate communities.

1170 Reefs

Plymouth Sound in south-west England has a wide variety of intertidal and subtidal reef biotopes. Of particular importance are the limestone reefs running along the northern shore from West Hoe to Batten Bay, which are one of only two coastal areas in south-west Britain with Devonian limestone. This relatively soft rock is extensively bored by the bivalve *Hiatella arctica* and the spionid worms *Polydora* spp., and harbours a rich fauna. In the sublittoral this steep-sided, wave-sheltered reef is dominated by a dense hydroid and bryozoan turf with anemones and ascidians. A number of rarely-recorded low shore biotopes also occur along the shores from Devil's Point to Batten Bay, at Wembury, Penlee, Hoo Lake Point, and in the mouth of the River Yealm. The sublittoral is of particular importance for its kelp- and animal-dominated habitats. The area off Batten Bay contains the south-western kelp *Laminaria ochroleuca*, together with

other uncommon species including the rare sea slug *Okenia elegans* and trumpet anemone *Aiptasia mutabilis*. Most circalittoral rocky reefs occur in areas of the Outer Sound, such as off Wembury, the Mewstone, Penlee Point and south of the breakwater. In the approaches to Plymouth Sound, abundant populations of the slow-growing, long-lived, nationally important pink sea-fan *Eunicella verrucosa* occur.

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

This site is representative of a ria system in south-west England. The well-developed salinity gradient supports **Atlantic salt meadow** together with natural transitions to brackish and freshwater communities, including reedbeds supporting the only UK population of triangular club-rush *Schoenoplectus triqueter*. Some stands of saltmeadow are structurally and botanically diverse and include sea club-rush *Scirpus maritimus* and saltmarsh rush *Juncus gerardii*, with red fescue *Festuca rubra*, sea rush *J. maritimus* and thrift *Armeria maritima* at higher levels. The locally common parsley water-dropwort *Oenanthe lachenalii* is also found in some parts of the site, and there are stands of sea-purslane *Halimione portulacoides*, which is unusual in Cornwall. The **Atlantic salt meadows** make a vital contribution to the structure and function of the estuary and the other habitats within it.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

1140 Mudflats and sandflats not covered by seawater at low tide

Annex II species that are a primary reason for selection of this site

1441 Shore dock *Rumex rupestris*

One of the chief rocky-shore strongholds for **shore dock *Rumex rupestris*** on the UK mainland, in 1999 comprising 15 colonies and 42 plants. The site also holds a sizeable area of additional suitable habitat.

Annex II species present as a qualifying feature, but not a primary reason for site selection

1102 Allis shad *Alosa alosa*

Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.

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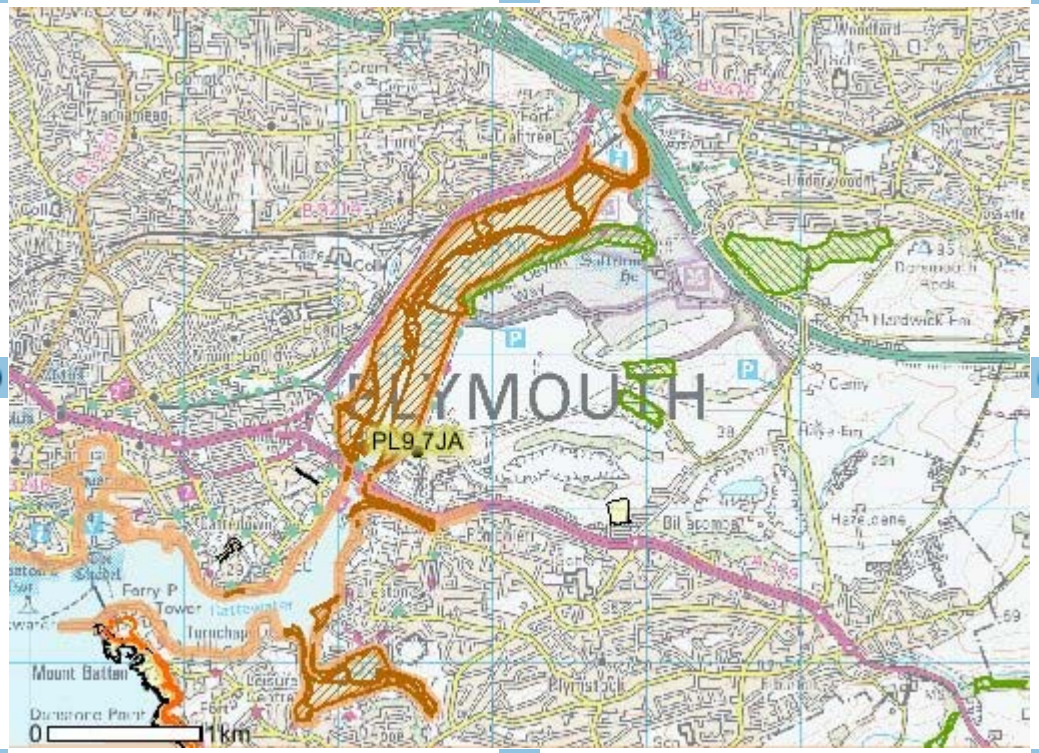


Overview map

Key

- Mudflat
- Coastal Vegetated Shingle
- Coastal, Floodplain Grazing Marsh
- Maritime Cliffs and Slopes
- Saline Lagoons
- Coastal Sand Dunes
- Purple Moor Grass and Rush Pasture
- Lowland Meadow

Click on the map with the mouse to get information about map features

ENGLISH NATURE

nature on th

Lowland mixed deciduous woodland:

Incremental ID:	0131:0018195
Habitat definition version:	1.1
Priority Habitat:	Lowland mixed deciduous woodland
Priority qualifier:	Probably the Priority Habitat but some uncertainty of interpretation
Reliability of priority habitat interpretation:	Average
Determination comment:	#Lowland mixed deciduous woodland 53.3%#Upland mixed ashwoods 28.0%#Lowland beech and yew woodlar 18.7%
Additional habitat features comment:	

Source One Information:

Title of source:	ESC v5.1 model
Capture date:	22 December 2003
Classification:	National Vegetation Classification
Type:	Fagus sylvatica-Deschampsia flexuosa woodland, Fagus sylvatica-Deschampsia flexuosa woodland, Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woo, Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woo, Quercus robur-Pteridium aquilinum-Rubus frutico woodland, Quercus robur-Pteridium aquilinum-Rubus fruticosus woodland
Boundary:	None
Habitat ID:	Primary

Source Two Information:

Title of source:	Ancient Woodland Inventory
Capture date:	01 January 1995
Classification:	N/A
Type:	
Boundary:	Primary
Habitat ID:	None

Source Three Information:

Title of source:	
Capture date:	-
Classification:	
Type:	
Boundary:	
Habitat ID:	

Description:
This category spans woodland growing on a wide range of soil conditions, from very acidic to base-rich, and includes most semi-natural woodland in southern in parts of lowland Wales and Scotland. Most woods of this type were traditionally coppiced, particularly those on moderately acid to base-rich soils. Quercus commoner oak (although Quercus petraea may be abundant locally), and may occur with virtually all combinations of other locally native tree species, such a ash and hornbeam. Most sites are relatively small and have well-defined boundaries

Links:
Habitat definition v1.1 (pdf)
Habitat metadata (pdf)

ENGLISH NATURE

nature on th

Lowland beech and yew woodland:

Incremental ID:	0131:0018133
Habitat definition version:	1.1
Priority Habitat:	Lowland beech and yew woodland
Priority qualifier:	Probably the Priority Habitat but some uncertainty of interpretation
Reliability of priority habitat interpretation:	Average
Determination comment:	#Lowland beech and yew woodland 100.0%
Additional habitat features comment:	

Source One Information:

Title of source:	ESC v5.1 model
Capture date:	22 December 2003
Classification:	National Vegetation Classification
Type:	Fagus sylvatica-Deschampsia flexuosa woodland, Fagus sylvatica-Deschampsia flexuosa woodland
Boundary:	None
Habitat ID:	Primary

Source Two Information:

Title of source:	Ancient Woodland Inventory
Capture date:	01 January 1995
Classification:	N/A
Type:	
Boundary:	Primary
Habitat ID:	None

Source Three Information:

Title of source:	
Capture date:	-
Classification:	
Type:	
Boundary:	
Habitat ID:	

Description:
This includes a variety of vegetation types reflecting soil and topographical differences. The canopy can include mixtures of beech, ash, sycamore, yew and w

Links:
Habitat definition v1.1 (pdf)
Habitat metadata (pdf)
UKBAP Action Plan

ENGLISH NATURE

nature on th

Mudflats:

Incremental ID:	0092:0008288
Habitat definition version:	1.3
Priority Habitat:	Mudflats
Priority qualifier:	Definitely present within polygon but not mappable
Reliability of priority habitat interpretation:	Average
Determination comment:	OS10k mud
Additional habitat features comment:	

Source One Information:

Title of source:	OS 10K raster
Capture date:	24 May 2002
Classification:	N/A
Type:	
Boundary:	Secondary
Habitat ID:	Primary

Source Two Information:

Title of source:	OS Mastermap
Capture date:	31 October 2003
Classification:	N/A
Type:	
Boundary:	Primary
Habitat ID:	Secondary

Source Three Information:

Title of source:	Biodiversity Key Resources Inventory - (Environment Agency R&D Technical Report E2A)
Capture date:	01 January 2002
Classification:	N/A
Type:	
Boundary:	None
Habitat ID:	Secondary

Description:
Sediment shores that are regularly inundated by the tide, forming in estuaries and other sheltered areas. Their sediment consists mostly of silts and clays wit

Links:
Habitat definition v1.3 (pdf) (v1.2) (v1.1)
Habitat metadata (pdf)
UKBAP Action Plan

A5

Notes

Key

RG Road gully
MH Manhole

Hardcore/stone

macadam surfacing

mud

grassed area

concrete

RIVER PLYM

W1 (CMOUT38L)

Outfall Pipe

Discharge channel

Gate valves

Rising main to treatment plant

Treated effluent discharge pipe

SBR inlet valves

Dosing plant

Control room

Sequence batch reactors

Security access gates

SBR blowers

De-sludge discharge pipe

Installation boundary

Glass bays area

SBR1

SBR2

SBR3

SBR4

PIT TANK

TANK

SEPTIC TANK

100 dia F.W.

The Ride

Chelson Meadow Landfill entrance

W/M FENCE

PYLON

Adjacent landfill lagoon

OUTFALL

OUTFALL

BARRIER

TIDAL SENSOR CHAMBER

WET WELL

PUMP LIFTING STATION

ELECTRICITY SUB STATION

scale

0 50

No.	Date	Details
REVISIONS		
STATUS		

City of Plymouth

Department of Development
Civic Centre
Plymouth PL1 2EW
Tel: Plymouth 01752 668000

SCHEME

Chelson Meadow Leachate Treatment Plant

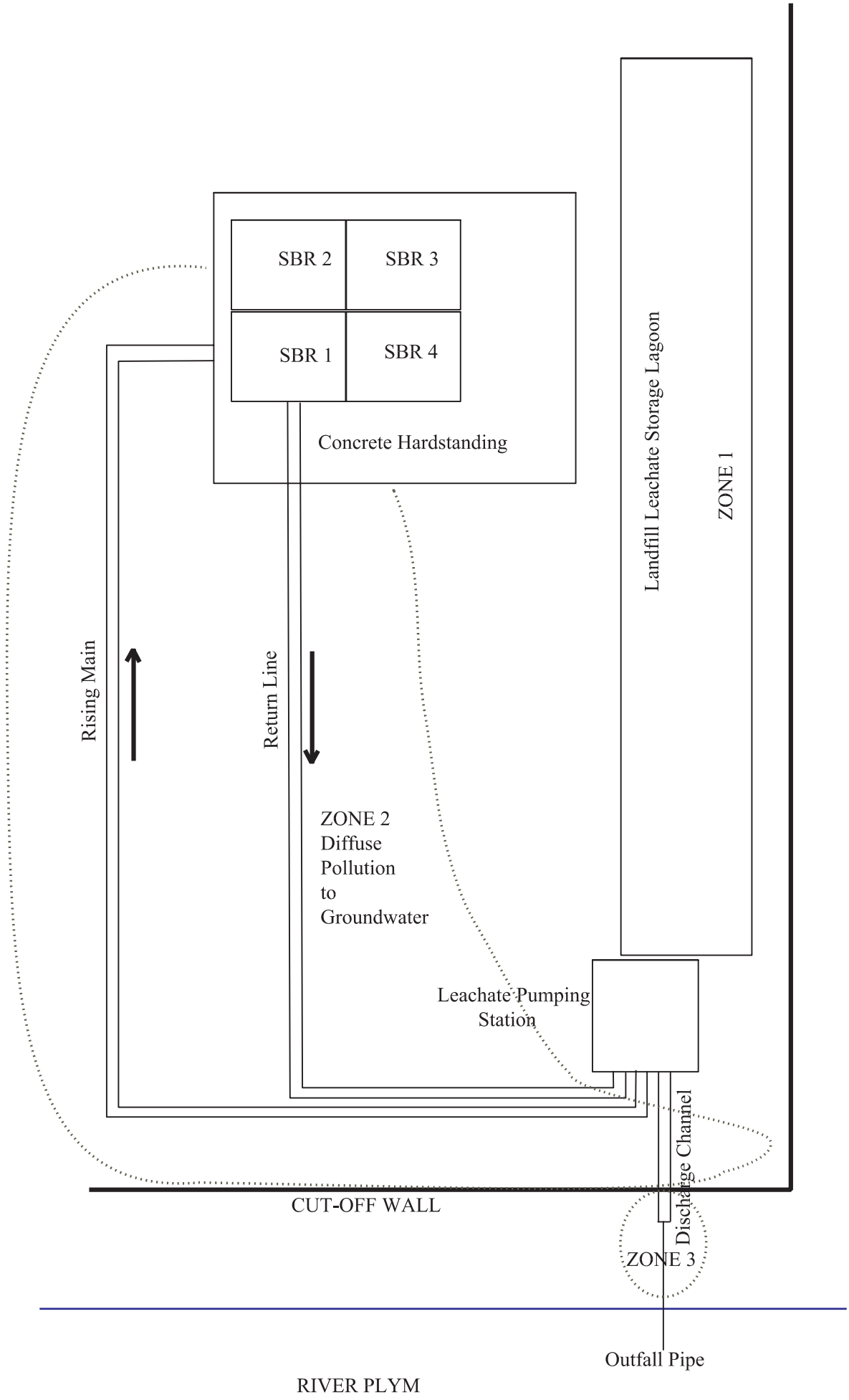
DRAWING TITLE

Surface finishes

Drawn PMJ	Traced
Checked	Date 06/09/2006
Scale as shown	
Drawing Number WD/W1/476	Revision.

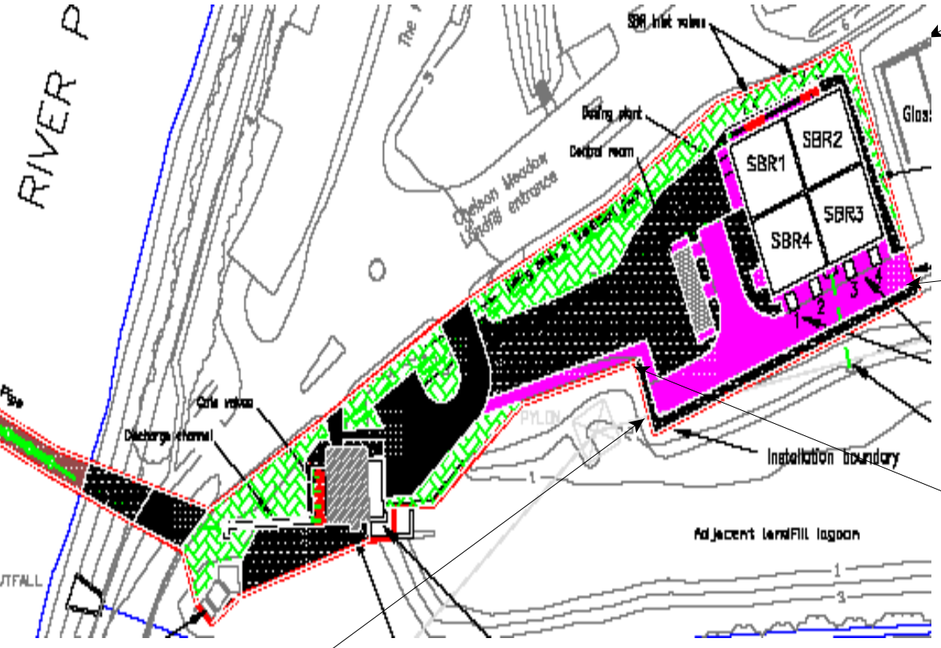
A6

Appendix A6: Plan showing Potential Pollution Receptor Zones



SITE REPORT
Appendix B

Appendix B1 - Photographs of Surface Areas



Key

RG Road gully

MH Manhole

Hardcore/stone

macadam surfacing

mud

grassed area

concrete

SITE REPORT
Appendix C

C1

sitescope

Technical Report

Statutory Registers
Geology and Hydrology

Property Location
Chelson Meadow Landfill Site
The Ride
Plymstock
Plymouth
PL9 7JQ
Grid Reference: 251140E 54900N

Requested by
Pell Frischmann
Burrator House
Peninsula Park
Rydon Lane
Exeter
Devon
EX2 7NT

Search Number: 786241
Your Reference: Z60180
Purchase Order Number: 51694

14 August 2003

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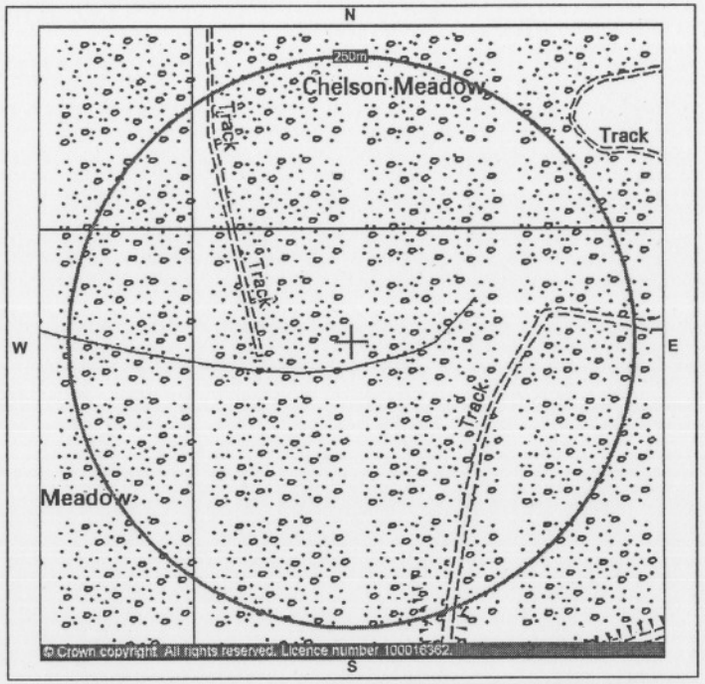
Sitescope is a value added reseller for

Environment Agency
British Geological Survey
Ordnance Survey Licensed Partner
English Nature
The Coal Authority

Introduction

The sitescope environmental search is a due-diligence report designed to provide a cost-effective environmental overview. The report is designed to be used by environmental specialists and covers a search area of up to 1000m.

The report covers the following sections;



Map Legend

Site location | Search Band | Water Feature | Building Outline

Search Details

Search Address	Chelson Meadow Landfill Site The Ride Plymstock Plymouth PL9 7JQ
Grid Reference:	251140E 54900N
Date of Report:	14/8/2003

Statutory Registers

Information concerning Statutory Registers and Others		0-250m	250-500m	500-1000m
B.1	Current Landfill	1	1	1
B.2	Former Landfill	5	5	7
B.3	Abstraction Licenses	-	-	6
B.4	Discharge Consents	-	2	25
B.5	IPPC Part A Authorisations	-	-	4
B.6	IPC Part B Consents	-	-	-
B.7	Fuel Sites	-	-	-
B.8	River Quality Survey	-	-	-
B.9	COMAH Sites	-	-	-
B.10	Pollution Inventory (formerly Chemical release)	-	-	-
B.11	Hazardous Substance Consents	-	-	-
B.12	Water Industry Referrals	-	-	-
B.13	NIHHS Sites	-	-	-
B.14	Radioactive Consents	-	-	-
B.15	Scrapyards	-	-	-
B.16	Waste Treatment Sites	-	-	-
B.17	Radio Masts	-	-	1

Footnotes:

Questions B.1, B.2, B.3, B.4, B.5, B.8, B.10, B.12, B.14, B.15, B.16 This data has been supplied by the Environment Agency. Where records are deemed to be inaccurate or incomplete Sitescope Ltd has updated them accordingly.

Geology and Hydrology

Information concerning Geology and Hydrology		0-250m	250-500m	500-1000m
C.3	Mines and Quarries Survey 1998	1	2	2
C.4	Landslip	-	-	-
C.5	Groundwater Vulnerability	1	2	5
C.6	Protected Water Source	-	-	-
C.7	Source Protection Zones	-	-	-
C.9	Solid Geology	1	1	2
C.10	Borehole Index	-	7	48

C.1	Radon	3-10 percent of homes above the action level.
C.2	Radon Protection Measures	-
C.8	Indicative Flood Plains	Yes
C.11	Natural Subsidence Risk	-
C.12	Shallow Mining	-
C.13	Coal Mining Areas	No

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.1 - Current Landfill - Records within 0 - 250m

Current Landfill

Map ID	1
Grid Reference	251125E 54875N
Direction	-
Licence Number	WR/L/LF/W/52
Operator	Plymouth City Council
Site Address	The Ride Billacombe Road Plymouth Devon TQ7 4
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Co-disposal landfill sites
Data Quality	The location and boundary for this landfill have been drawn from plans of the site but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries, roads and in most cases will be within 5 metres of the actual boundary.
Size Band	Medium
Date Licence Issued	21/10/1982

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.1 - Current Landfill - Records within 250 - 500m

Current Landfill

Map ID	2
Grid Reference	251025E 54675N
Direction	South
Licence Number	WR/L/LF/W/52
Operator	Plymouth City Council
Site Address	The Ride Billacombe Road Plymouth Devon TQ7 4
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Co-disposal landfill sites
Data Quality	The location and boundary for this landfill have been drawn from plans of the site but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries, roads and in most cases will be within 5 metres of the actual boundary.
Size Band	Medium
Date Licence Issued	21/10/1982

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.1 - Current Landfill - Records within 500 - 1000m

Current Landfill

Map ID	3
Grid Reference	251603E 55090N
Direction	East
Licence Number	WR/L/LF/W/52
Operator	Plymouth City Council
Site Address	The Ride Billacombe Road Plymouth Devon TQ7 4
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Co-disposal landfill sites
Data Quality	The location and boundary for this landfill have been drawn from plans of the site but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries, roads and in most cases will be within 5 metres of the actual boundary.
Size Band	Medium
Date Licence Issued	21/10/1982

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.2 - Former Landfill - Records within 0 - 250m

Former Landfill

Map ID	4
Grid Reference	251125E 54875N
Direction	-
Licence Number	WR L/LF/W 52
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not Available

Map ID	4
Grid Reference	251125E 54875N
Direction	-
Licence Number	N/8/39/82
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Large

Map ID	4
Grid Reference	251125E 54925N
Direction	-

Licence Number	WR L/LF/W 52M01/91
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	4
Grid Reference	251125E 54875N
Direction	-
Licence Number	WR L/LF/W 5203/96
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	4
Grid Reference	251125E 54925N
Direction	-
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other

	sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not available

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.2 - Former Landfill - Records within 250 - 500m

Former Landfill

Map ID	5
Grid Reference	251025E 54675N
Direction	South
Licence Number	WR L/L.F/W 52
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not Available

Map ID	5
Grid Reference	251025E 54675N
Direction	South
Licence Number	N/8/39/82
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive Plymouth Devon PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Large

Map ID	5
Grid Reference	251025E 54675N
Direction	South

Licence Number	WR L/LF/W 52M01/91
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	5
Grid Reference	251025E 54675N
Direction	South
Licence Number	WR L/LF/W 5203/96
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	5
Grid Reference	251025E 54675N
Direction	South
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other

	sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not available

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.2 - Former Landfill - Records within 500 - 1000m

Former Landfill

Map ID	6
Grid Reference	251015E 54376N
Direction	South
Licence Number	WR L/W6/2/78/M/9/91
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Limestone
Soil Type	The site is located in an area where there is the possibility of soils of high leaching potential with little ability attenuate diffuse source pollutants and in which non-absorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or shallow groundwater.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not Available

Map ID	6
Grid Reference	251015E 54376N
Direction	South
Licence Number	L 8/9/78
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Limestone
Soil Type	The site is located in an area where there is the possibility of soils of high leaching potential with little ability attenuate diffuse source pollutants and in which non-absorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or shallow groundwater.
Waste Type	Landfill which accepted non-hazardous types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not available

Map ID	7

Grid Reference	251603E 55089N
Direction	East
Licence Number	WR L/LF/W 52
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not Available

Map ID	7
Grid Reference	251603E 55089N
Direction	East
Licence Number	N/8/39/82
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Large

Map ID	7
Grid Reference	251603E 55089N
Direction	East
Licence Number	WR L/LF/W 52M01/91
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated

Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	7
Grid Reference	251603E 55089N
Direction	East
Licence Number	WR L/LF/W 5203/96
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Landfill which accepted difficult types of waste
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Very Large

Map ID	7
Grid Reference	251603E 55089N
Direction	East
Operator	Plymouth City Council or its predecessor
Site Address	Broxton Drive
	Plymouth
	Devon
	PL9 7BG
EA Region	South West Region (01392) 444000
EA Area	Devon - South West (01392) 444 000
Local Authority	South Hams District Council
Geology	Argillaceous rocks, undifferentiated
Soil Type	The site is located in an area where there is the possibility of soils of intermediate leaching potential which can possibly transmit a wide range of pollutants.
Waste Type	Waste type unknown
Data Quality	The location and boundary for this landfill have been drawn from plans of the site and other sources by Homecheck but the small scale of the maps and inevitable transposition errors make it difficult to be 100% accurate. Generally, the boundaries follow other features, such as field boundaries or roads or the outlines of quarries and other holes and in most cases will be within 25 metres of the actual boundary. As this is an older landfill site the licence may only relate to part of the area shown on the map with other portions having been filled under separate licence.
Size Band	Not available

Please see map 2

Section B - Information concerning Statutory Registers and Others

B.3 - Abstraction Licenses - Records within 500 - 1000m

Abstraction Licenses

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161
Status	Lapsed/Varied
Address	Plymstock Works
	Plympton
	Plymouth
	Devon
Use	Industrial, Commercial and Public Services
	Extractive
	Non-evaporative cooling
Original Effective Date	31/03/1966
Version Start Date	01/04/1993
Source Of Supply	Ground water - fresh
Region	SW Region
Date Stamp	31 Dec 2001

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161
Status	Lapsed/Varied
Address	Plymstock Works
	Plympton
	Plymouth
	Devon
Use	Industrial, Commercial and Public Services
	Extractive
	Evaporative cooling
Original Effective Date	31/03/1966
Version Start Date	01/04/1993
Source Of Supply	Ground water - fresh
Region	SW Region
Date Stamp	31 Dec 2001

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161

Status	Lapsed/Varied
Address	Plymstock Works
	Plympton
	Plymouth
	Devon
Use	Industrial, Commercial and Public Services
	Other industrial/commercial/public services
	Process water
Original Effective Date	31/03/1966
Version Start Date	01/04/1993
Source Of Supply	Ground water - fresh
Region	SW Region
Date Stamp	31 Dec 2001

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161
Status	Current
Operator	Pacemaker Developments Ltd
Address	Frays Court
	71 Cowley Road
	Uxbridge
	Middlesex
	UB8 2AE
Use	Industrial, Commercial and Public Services
	Extractive
	Evaporative cooling
Original Effective Date	31/03/1966
Version Start Date	01/01/2002
Source Of Supply	Ground water - fresh
Point Name	Plymstock Works (Pomphlett Quarry)-Borehole
Region	SW Region
Date Stamp	18 June 2002

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161
Status	Current
Operator	Pacemaker Developments Ltd
Address	Frays Court
	71 Cowley Road
	Uxbridge
	Middlesex
	UB8 2AE
Use	Industrial, Commercial and Public Services
	Extractive
	Non-evaporative cooling
Original Effective Date	31/03/1966
Version Start Date	01/01/2002
Source Of Supply	Ground water - fresh

Point Name	Plymstock Works (Pomphlett Quarry)-Borehole
Region	SW Region
Date Stamp	18 June 2002

Map ID	1
Grid Reference	251100E 54000N
Direction	South
Data Quality	Grid Reference as supplied by the Environment Agency.
Licence Number	15/47/002/G/015
Application Number	8161
Original Application Number	8161
Status	Current
Operator	Pacemaker Developments Ltd
Address	Frays Court
	71 Cowley Road
	Uxbridge
	Middlesex
	UB8 2AE
Use	Industrial, Commercial and Public Services
	Other industrial/commercial/public services
	Process water
Original Effective Date	31/03/1966
Version Start Date	01/01/2002
Source Of Supply	Ground water - fresh
Point Name	Plymstock Works (Pomphlett Quarry)-Borehole
Region	SW Region
Date Stamp	18 June 2002

Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Road)
	Plymouth
Catchment Area	Tidal Plym
Permit Number	301733
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Lanhydrock Rd
	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301728
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301788
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company

Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301739
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301738
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301732
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary

Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301736
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Junct Beaumont Road Cso
	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301735
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	8
Grid Reference	250162E 54782N
Direction	West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Junct Salisbury Road Cso
	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301734
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company

Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250415E 55313N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301776
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250415E 55360N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Trefusis Park Cso
	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301709
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250420E 55340N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	2896/35
Date Issued	15/10/1987
Date Revoked	3/7/2001

Discharge Type	Sewage Discharges - Final/treated Effluent - Water Company
Receiving Watercourse	River Plym
Status	Revoked - Unspecified
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250420E 55340N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Embankment Road
	Laira
	Plymouth
	Devon
Catchment Area	Tidal Lynher & Hamoaze
Permit Number	301988
Date Issued	26/7/2001
Discharge Type	Sewage Discharges - Pumping Station - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250415E 55360N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Junct. Bernice Road
	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301774
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250415E 55360N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Junct. Bernice Road
	Plymouth
	Devon
Catchment Area	Tidal Plym

Permit Number	301775
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Map ID	9
Grid Reference	250415E 55313N
Direction	North-West
Data Quality	Grid Reference as supplied by the Environment Agency.
Operator	South West Water Limited
Property Type	Sewerage network - sewers - water company
Site Address	Plymouth
	Devon
Catchment Area	Tidal Plym
Permit Number	301713
Date Issued	1/10/2000
Discharge Type	Sewage Discharges - Sewer Storm Overflow - Water Company
Receiving Environment	Saline estuary
Receiving Watercourse	River Plym (E)
Status	New Consent (WRA 91, S88 & Sched 10 as amended by Env Act 1995)
District Council	C Plymouth
Region	SW Region
Date Stamp	30 June 2002

Please see map 2

Section B - Information concerning Statutory Registers and Others

B.5 - IPPC Part A Authorisations - Records within 500 - 1000m

IPPC Part A Authorisations

Map ID	10
Grid Reference	250520E 54366N
Direction	South-West
Data Quality	Sitescope Ltd has improved the accuracy of Grid Reference using the details supplied. This data should not be regarded as Environment Agency data as it has been altered during Sitescope's QA process.
Legislation	IPC
Status	Superseded by variation
Operator	Blue Circle Industries Plc
Delivery Point	Plymstock Works
Town	Plymouth
Permission Number	AI0284
Process Schedule	Cement/lime manuf. and assoc. Processes
Environment Region	SW Region
Environment Area	Cornwall
Local Authority	Plymouth City Council
Original Permission	AI0284
Date When Application Duly Made	01/03/1993
Date When Permissions Apply	12/07/1993
Date When Permission Was Withdrawn	05/05/1994
Tariff Type	Process originally regulated by HMIP for Air releases
Date When Application Was Approved	12/07/1993
Date Stamp	August 2002

Map ID	10
Grid Reference	250520E 54366N
Direction	South-West
Data Quality	Sitescope Ltd has improved the accuracy of Grid Reference using the details supplied. This data should not be regarded as Environment Agency data as it has been altered during Sitescope's QA process.
Legislation	IPC
Status	Superseded by variation
Operator	Blue Circle Industries Plc
Delivery Point	Plymstock Works
Town	Plymouth
Permission Number	AN1505
Process Schedule	Cement/lime manuf. and assoc. Processes
Environment Region	SW Region
Environment Area	Cornwall
Local Authority	Plymouth City Council
Original Permission	AI0284
Date When Application Duly Made	04/05/1994
Date When Permissions Apply	05/05/1994
Date When Permission Was Withdrawn	24/08/1994
Tariff Type	IPC minor (non-substantial) variation
Date When Application Was Approved	05/05/1994
Date Stamp	August 2002

Map ID	10
Grid Reference	250520E 54366N

Direction	South-West
Data Quality	Sitescope Ltd has improved the accuracy of Grid Reference using the details supplied. This data should not be regarded as Environment Agency data as it has been altered during Sitescope's QA process.
Legislation	IPC
Status	Superseded by variation
Operator	Blue Circle Industries Plc
Delivery Point	Plymstock Works
Town	Plymouth
Permission Number	AO3228
Process Schedule	Cement/lime manuf. and assoc. Processes
Environment Region	SW Region
Environment Area	Cornwall
Local Authority	Plymouth City Council
Original Permission	AI0284
Date When Application Duly Made	23/08/1994
Date When Permissions Apply	24/08/1994
Date When Permission Was Withdrawn	30/11/1998
Tariff Type	IPC minor (non-substantial) variation
Date When Application Was Approved	24/08/1994
Date Stamp	August 2002

Map ID	10
Grid Reference	250520E 54366N
Direction	South-West
Data Quality	Sitescope Ltd has improved the accuracy of Grid Reference using the details supplied. This data should not be regarded as Environment Agency data as it has been altered during Sitescope's QA process.
Legislation	IPC
Status	Revoked
Operator	Blue Circle Industries Plc
Delivery Point	Plymstock Works
Town	Plymouth
Permission Number	BC9909
Process Schedule	Cement/lime manuf. and assoc. Processes
Environment Region	SW Region
Environment Area	Cornwall
Local Authority	Plymouth City Council
Original Permission	AI0284
Date When Application Duly Made	16/11/1998
Date When Permissions Apply	30/11/1998
Date When Permission Was Withdrawn	31/12/1999
Tariff Type	IPC minor (non-substantial) variation
Date When Application Was Approved	24/11/1998
Date Stamp	August 2002

Please see map 1

Section B - Information concerning Statutory Registers and Others

B.17 - Radio Masts - Records within 500 - 1000m

Radio Masts

Map ID	8
Grid Reference	250720E 54250N
Direction	South-West
Reference	659

Section C - Information concerning Geology and Hydrology

C.1 - Radon - Records within 0 - 250m

Radon

Grid Reference	251125E 54875N
Direction	-
Radon Level	3-10 percent of homes above the action level.
Date Stamp	February 1999

Section C - Information concerning Geology and Hydrology

C.1 - Radon - Records within 250 - 500m

Radon

Grid Reference	250875E 54875N
Direction	West
Radon Level	3-10 percent of homes above the action level.
Date Stamp	February 1999

Section C - Information concerning Geology and Hydrology

C.1 - Radon - Records within 500 - 1000m

Radon

Grid Reference	250625E 54875N
Direction	West
Radon Level	3-10 percent of homes above the action level.
Date Stamp	February 1999

Section C - Information concerning Geology and Hydrology

C.3 - Mines and Quarries Survey 1998 - Records within 0 - 250m

Mines and Quarries Survey 1998

Grid Reference	251075E 54775N
Direction	South
Commodity	Common clay & shale
Planning Region	South West
Unitary	Devon
Pit Name	Plymstock (Shale)
Products	Cement
Location	Plymouth
Operator	Blue Circle Industries PLC
Chronostrat Unit Name	Upper devonian
Lithostrat Unit	Upper Devonian Slates
Coal Field Name	N/a
	Plymstock
Site Town	Plymouth
Site County	Devon
Site Postcode	PL9 7JA
	305 London Rd
Operator Town	Greenhithe
Operator County	Kent
Operator Postcode	DA9 8JQ
Date Stamp	Nov 1999

Section C - Information concerning Geology and Hydrology

C.3 - Mines and Quarries Survey 1998 - Records within 250 - 500m

Mines and Quarries Survey 1998

Grid Reference	251025E 54675N
Direction	South
Commodity	Common clay & shale
Planning Region	South West
Unitary	Devon
Pit Name	Plymstock (Shale)
Products	Cement
Location	Plymouth
Operator	Blue Circle Industries PLC
Chronostrat Unit Name	Upper devonian
Lithostrat Unit	Upper Devonian Slates
Coal Field Name	N/a
	Plymstock
Site Town	Plymouth
Site County	Devon
Site Postcode	PL9 7JA
	305 London Rd
Operator Town	Greenhithe
Operator County	Kent
Operator Postcode	DA9 8JQ
Date Stamp	Nov 1999

Grid Reference	250975E 54675N
Direction	South-West
Commodity	Limestone
Planning Region	South West
Unitary	Devon
Pit Name	Plymstock
Products	Cement
Location	Plymouth
Operator	Blue Circle Industries PLC
Chronostrat Unit Name	Middle devonian
Lithostrat Unit	Torquay & Plymouth Limestone
Coal Field Name	N/a
	Plymstock
Site Town	Plymouth
Site County	Devon
Site Postcode	PL9 7JA
	305 London Rd
Operator Town	Greenhithe
Operator County	Kent
Operator Postcode	DA9 8JQ
Date Stamp	Nov 1999

Section C - Information concerning Geology and Hydrology

C.3 - Mines and Quarries Survey 1998 - Records within 500 - 1000m

Mines and Quarries Survey 1998

Grid Reference	250875E 54475N
Direction	South-West
Commodity	Common clay & shale
Planning Region	South West
Unitary	Devon
Pit Name	Plymstock (Shale)
Products	Cement
Location	Plymouth
Operator	Blue Circle Industries PLC
Chronostrat Unit Name	Upper devonian
Lithostrat Unit	Upper Devonian Slates
Coal Field Name	N/a
	Plymstock
Site Town	Plymouth
Site County	Devon
Site Postcode	PL9 7JA
	305 London Rd
Operator Town	Greenhithe
Operator County	Kent
Operator Postcode	DA9 8JQ
Date Stamp	Nov 1999

Grid Reference	250875E 54475N
Direction	South-West
Commodity	Limestone
Planning Region	South West
Unitary	Devon
Pit Name	Plymstock
Products	Cement
Location	Plymouth
Operator	Blue Circle Industries PLC
Chronostrat Unit Name	Middle devonian
Lithostrat Unit	Torquay & Plymouth Limestone
Coal Field Name	N/a
	Plymstock
Site Town	Plymouth
Site County	Devon
Site Postcode	PL9 7JA
	305 London Rd
Operator Town	Greenhithe
Operator County	Kent
Operator Postcode	DA9 8JQ
Date Stamp	Nov 1999

Section C - Information concerning Geology and Hydrology

C.5 - Groundwater Vulnerability - Records within 0 - 250m

Groundwater Vulnerability

Grid Reference	251125E 54874N
Direction	-
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants
Drift Deposits	No drift deposits present
Date Stamp	November 1999 (One-off Survey)

Section C - Information concerning Geology and Hydrology

C.5 - Groundwater Vulnerability - Records within 250 - 500m

Groundwater Vulnerability

Grid Reference	250875E 54874N
Direction	West
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants
Drift Deposits	No drift deposits present
Date Stamp	November 1999 (One-off Survey)

Grid Reference	251125E 55375N
Direction	North
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of high leaching potential (H1) which readily transmit liquid discharges because they are either shallow or susceptible to rapid flow directly to rock, gravel or groundwater
Drift Deposits	Low permeability drift deposit present
Date Stamp	November 1999 (One-off Survey)

Section C - Information concerning Geology and Hydrology

C.5 - Groundwater Vulnerability - Records within 500 - 1000m

Groundwater Vulnerability

Grid Reference	251375E 54374N
Direction	South-East
Aquifer Type	Major Aquifer
Soil Permeability	Soils of high leaching potential (U) with little ability to attenuate diffuse source pollutants and in which non-absorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or shallow groundwater.
Drift Deposits	No drift deposits present
Date Stamp	November 1999 (One-off Survey)

Grid Reference	251125E 54374N
Direction	South
Aquifer Type	Major Aquifer
Soil Permeability	Soils of intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants
Drift Deposits	No drift deposits present
Date Stamp	November 1999 (One-off Survey)

Grid Reference	251625E 54624N
Direction	South-East
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants
Drift Deposits	No drift deposits present
Date Stamp	November 1999 (One-off Survey)

Grid Reference	251375E 55375N
Direction	North-East
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of high leaching potential (H1) which readily transmit liquid discharges because they are either shallow or susceptible to rapid flow directly to rock, gravel or groundwater
Drift Deposits	Low permeability drift deposit present
Date Stamp	November 1999 (One-off Survey)

Grid Reference	250375E 55375N
Direction	North-West
Aquifer Type	Minor Aquifer
Soil Permeability	Soils of high leaching potential (U) with little ability to attenuate diffuse source pollutants and in which non-absorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or shallow groundwater.
Drift Deposits	Low permeability drift deposit present
Date Stamp	November 1999 (One-off Survey)

Please see map 3

Section C - Information concerning Geology and Hydrology

C.8 - Indicative Flood Plains - Records within 250 - 500m

Indicative Flood Plains

Flood Risk	Tidal flood plain The map shows the extent of the indicative tidal (coastal) flood plain, where there is at least one in two hundred (or 0.5%) chance of flooding each year. A tidal floodplain is where high tides or storms may cause flooding of low-lying areas by sea water. Properties within the indicative flood plain are at risk from flooding, although the risk varies. The maps do not take account of local flood defences because they are built to varying standards. For example, much of London is in a tidal floodplain, but the risk of flooding is reduced to one in one thousand by the Thames Barrier. For further information your client should contact the Environment Agency Flood Line on 0845 988 1188.

sitescope Additional Information

Please see map 3

Section C - Information concerning Geology and Hydrology

C.8 - Indicative Flood Plains - Records within 500 - 1000m

Indicative Flood Plains

Flood Risk	Fluvial flood plain The map shows the extent of the indicative fluvian (river) flood plain, where there is at least one in one hundred (or 1%) chance of flooding each year. A fluvian floodplain is where a river naturally spills over when it rises above its banks. Properties within the indicative flood plain are at risk from flooding, although the risk varies. The maps do not take account of local flood defences because they are built to varying standards. For further information your client should contact the Environment Agency Flood Line on 0845 988 1188.
Flood Risk	Tidal flood plain The map shows the extent of the indicative tidal (coastal) flood plain, where there is at least one in two hundred (or 0.5%) chance of flooding each year. A tidal floodplain is where high tides or storms may cause flooding of low-lying areas by sea water. Properties within the indicative flood plain are at risk from flooding, although the risk varies. The maps do not take account of local flood defences because they are built to varying standards. For example, much of London is in a tidal floodplain, but the risk of flooding is reduced to one in one thousand by the Thames Barrier. For further information your client should contact the Environment Agency Flood Line on 0845 988 1188.

Section C - Information concerning Geology and Hydrology

C.9 - Solid Geology - Records within 0 - 250m

Solid Geology

Grid Reference	251125E 54874N
Direction	-
Formation Name	Upper devonian and lower carboniferous rocks undifferentiated
Rock Type	Argillaceous rocks, undifferentiated
Date Stamp	As at January 1999

Section C - Information concerning Geology and Hydrology

C.9 - Solid Geology - Records within 250 - 500m

Solid Geology

Grid Reference	250875E 54874N
Direction	West
Formation Name	Upper devonian and lower carboniferous rocks undifferentiated
Rock Type	Argillaceous rocks, undifferentiated
Date Stamp	As at January 1999

Section C - Information concerning Geology and Hydrology

C.9 - Solid Geology - Records within 500 - 1000m

Solid Geology

Grid Reference	250625E 54874N
Direction	West
Formation Name	Upper devonian and lower carboniferous rocks undifferentiated
Rock Type	Argillaceous rocks, undifferentiated
Date Stamp	As at January 1999

Grid Reference	251125E 54374N
Direction	South
Formation Name	Middle and upper devonian limestones
Rock Type	Limestone
Date Stamp	As at January 1999

Please see map 3

Section C - Information concerning Geology and Hydrology

C.10 - Borehole Index - Records within 250 - 500m

Borehole Index

Map ID	1
Grid Reference	251160E 54490N
Direction	South
Reference	SX 51160 54490
Borehole Name	.
Date Stamp	26 November 2002

Map ID	2
Grid Reference	251290E 54520N
Direction	South
Reference	SX 51290 54520
Borehole Name	.
Date Stamp	26 November 2002

Map ID	2
Grid Reference	251370E 54570N
Direction	South-East
Reference	SX 51370 54570
Borehole Name	.
Date Stamp	26 November 2002

Map ID	2
Grid Reference	251270E 54480N
Direction	South
Reference	SX 51270 54480
Borehole Name	.
Date Stamp	26 November 2002

Map ID	3
Grid Reference	251510E 54580N
Direction	South-East
Reference	SX 51510 54580
Borehole Name	.
Date Stamp	26 November 2002

Map ID	4
Grid Reference	251390E 54540N
Direction	South-East
Reference	SX 51390 54540
Borehole Name	.
Date Stamp	26 November 2002

Map ID	4
Grid Reference	251360E 54600N
Direction	South-East
Reference	SX 51360 54600
Borehole Name	.
Date Stamp	26 November 2002

Please see map 3

Section C - Information concerning Geology and Hydrology

C.10 - Borehole Index - Records within 500 - 1000m

Borehole Index

Map ID	5
Grid Reference	251010E 54200N
Direction	South
Reference	SX 51010 54200
Borehole Name	.
Date Stamp	26 November 2002

Map ID	5
Grid Reference	250950E 54240N
Direction	South
Reference	SX 50950 54240
Borehole Name	.
Date Stamp	26 November 2002

Map ID	5
Grid Reference	251070E 54270N
Direction	South
Reference	SX 51070 54270
Borehole Name	.
Date Stamp	26 November 2002

Map ID	6
Grid Reference	251240E 54290N
Direction	South
Reference	SX 51240 54290
Borehole Name	.
Date Stamp	26 November 2002

Map ID	6
Grid Reference	251250E 54350N
Direction	South
Reference	SX 51250 54350
Borehole Name	.
Date Stamp	26 November 2002

Map ID	6
Grid Reference	251240E 54340N
Direction	South
Reference	SX 51240 54340
Borehole Name	.
Date Stamp	26 November 2002

Map ID	6
Grid Reference	251210E 54200N
Direction	South
Reference	SX 51210 54200
Borehole Name	.
Date Stamp	26 November 2002

Map ID	6
Grid Reference	251310E 54300N

Direction	South
Reference	SX 51310 54300
Borehole Name	.
Date Stamp	26 November 2002

Map ID	7
Grid Reference	251900E 54280N
Direction	South-East
Reference	SX 51900 54280
Borehole Name	.
Date Stamp	26 November 2002

Map ID	7
Grid Reference	251820E 54250N
Direction	South-East
Reference	SX 51820 54250
Borehole Name	.
Date Stamp	26 November 2002

Map ID	7
Grid Reference	251880E 54290N
Direction	South-East
Reference	SX 51880 54290
Borehole Name	.
Date Stamp	26 November 2002

Map ID	7
Grid Reference	251900E 54350N
Direction	South-East
Reference	SX 51900 54350
Borehole Name	.
Date Stamp	26 November 2002

Map ID	8
Grid Reference	251480E 54320N
Direction	South-East
Reference	SX 51480 54320
Borehole Name	.
Date Stamp	26 November 2002

Map ID	8
Grid Reference	251440E 54350N
Direction	South-East
Reference	SX 51440 54350
Borehole Name	.
Date Stamp	26 November 2002

Map ID	8
Grid Reference	251570E 54350N
Direction	South-East
Reference	SX 51570 54350
Borehole Name	.
Date Stamp	26 November 2002

Map ID	9
Grid Reference	251640E 54370N
Direction	South-East
Reference	SX 51640 54370
Borehole Name	.
Date Stamp	26 November 2002

Swallows End is a generally level piece of grassland to the east of the palisade fence which has ground elevation around +9m AOD. The Northern Leat bounds the area to the north and the Southern Leat bounds the area to the South. Despite the drainage afforded by the leats, parts of Swallows End contain shallow pools of surface water throughout the winter seasons and areas of marsh grass exist.

Plate 6 - The plateau area and Swallows End; viewed from the Southern Sector

Wixenford Bottom is also triangular in shape. The Southern Leat runs around the area. The land surface within this area is relatively level at around +9m AOD, having been re-profiled in 2002. Rough vegetation has naturally seeded across the area.

3.2 ENVIRONMENTAL SETTING

3.2.1 Sitescope Environmental Database

Sitescope is a regularly updated Internet-based product providing access to current and historical information of potential environmental significance. Sitescope's sources include:

- Environmental Agency (EA)
- British Geological Survey (BGS)
- Department of the Environment, Food and Rural Affairs (DEFRA)
- Ordnance Survey (OS)
- Health & Safety Executive (HSE)
- English Nature (EN)

A Sitescope search has been carried out for the area of Chelson Meadow. The table below summarises the results for this search (Number 786241). Details from the reports are discussed below. The complete report and corresponding maps are presented in Appendix A.

Distances quoted are to the approximate centre of the study site. It should be noted that independent validation has not been undertaken to verify the accuracy of the Sitescope derived records.

Information concerning Statutory Register and Others		0-250m	250-500m	500-1000m
B.1	Current Landfill	1	1	1
B.2	Former Landfill	5	5	7
B.3	Abstraction Licences	-	-	6
B.4	Discharge Consents	-	2	25
B.5	IPPC Part A Authorisations	-	-	4
B.6	IPC Part B Consents	-	-	-
B.7	Fuel Sites	-	-	-
B.8	River Quality Survey	-	-	-
B.9	COMAH Sites	-	-	-
B.10	Pollution Inventory (formerly Chemical release)	-	-	-
B.11	Hazardous Substance Consents	-	-	-
B.12	Water Industry Referrals	-	-	-
B.13	NIHHS Sites	-	-	-
B.14	Radioactive Consents	-	-	-
B.15	Scrapyards	-	-	-
B.16	Waste Treatment Sites	-	-	-
B.17	Radio Masts	-	-	1
Information concerning Geology and hydrology		0-250m	250-500m	500-1000m
C.3	Mines and Quarries Survey 1998	1	2	2
C.4	Landslip	-	-	-
C.5	Groundwater Vulnerability	1	2	5
C.6	Protected Water Sources	-	-	-
C.7	Source Protection Zones	-	-	-
C.9	Solid Geology	1	1	2
C.10	Borehole Index	-	7	48

C.1	Radon	3-10% of homes above the action level.
C.2	Radon Protection Measures	-
C.3	Indicative Flood Plains	Yes
C.11	Natural Subsidence Risk	-
C.12	Shallow Mining	-
C.13	Coal Mining Areas	No

All three Current Landfill records refer to Chelson Meadow co-disposal landfill site, Licence Nr WR/L/LF/W/52. The issue data of the licence is recorded as 21 October 1982. The boundary and extent of Chelson Meadow Landfill are clearly shown on the 'Statutory Registers and Others - 1' map which accompanies the Sitescope report in Appendix A.

The Former Landfill records within 0 - 1000m of the centre of the site also refer to Chelson Meadow except Map ID, which is shown within Saltram Quarry, south of Chelson Meadow, on the 'Statutory Registers and Others - 1' map. The nature of the waste is recorded as 'unknown' and 'non-hazardous types of waste'.

Although six abstraction licence records are detailed within 500 - 1000m of the site. they all refer to the same point of abstraction. The Abstraction Licence, Number 5/47/002/G/015, relates to the abstraction of fresh groundwater for industrial process cooling. The original effective date of the licence was 31 March

1966, with versions dated 01 April 1993 and 01 January 2002. The location of the abstraction is shown on the 'Statutory Registers and Others - 2' map as Map ID 1 approximately 0.5km south of Chelson Meadow's southern boundary. The status of the abstraction is recorded as 'current'.

Five discharge consent locations (map: Statutory Registers and Others – 2) are located within the boundary or in close proximity to Chelson Meadow, referred to by Map ID 2, 3, 4, 5 and 6:

- Map ID 2: discharge of site drainage from the Blue Circle Cement works south of Chelson Meadow into the Southern Leat.
- Map ID 3: final/treated effluent discharge from multiple domestic properties into the River Plym.
- Map ID 4: discharge of final/treated effluent and process effluent into the Southern Leat.
- Map ID 5: discharge from Chelson Meadow Landfill to the Estuary of the River Plym.
- Map ID 6: final/treated effluent discharge into the Southern Leat from Pacemakers Developments Ltd. (manufacturer of cement and lime plaster).

All the IPPC Part A Authorisations within 500 - 1000m of the site have been superseded or revoked.

The Groundwater Vulnerability record within 0 - 250m of the site indicates that the underlying stratum is a Minor Aquifer and the overlying soils are of 'intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants'.

The Groundwater Vulnerability records within 250 - 500m of the site both record the underlying strata to the west and north as Minor Aquifers. They indicate soils of 'intermediate leaching potential (I1) which can possibly transmit a wide range of pollutants' to the west and 'soils of high leaching potential (H1) which readily transmit liquid discharges because they are either shallow or susceptible to rapid flow directly to rock, gravel or groundwater' to the north.

The Groundwater Vulnerability records within 500 - 1000m of the site record the underlying strata as Major Aquifer to the south and southeast and Minor Aquifer to the northeast and northwest. Soils of high leaching potential (U) with little ability to attenuate source pollutants and in which non-absorbed diffuse source pollutants and liquid discharges have the potential to move rapidly to underlying strata or shallow groundwater are recorded to the southeast and northwest. Soils of intermediate leaching potential (I1) are recorded to the south and southeast and soils of high leaching potential (H1) to the northeast. Groundwater vulnerability and aquifer classification is covered further in Section 5.4.2 of this report.

The tidal flood plain for the River Plym (Sitescope map: Geology and Hydrology – 3) is shown immediately west of The Ride. It does not encroach within the boundaries of Chelson Meadow.

The solid geology is reported by Sitescope to be Upper Devonian and Lower Carboniferous undifferentiated argillaceous rocks with Middle and Upper Devonian limestones in the south. The site geology is described in some detail in Section 5.1 of this report.

Chelson Meadow landfill is not within any of the following[3]:

Nitrate Vulnerable Zones	National Nature Reserves
Ramsar Sites	Special Protection Areas
Special Areas of Conservation	Sites of Special Scientific Interest
Nitrate Sensitive Areas	Areas of Outstanding Natural Beauty
Environmentally Sensitive Areas	National Parks

Plymouth Sound and the Tamar Estuary have been designated as a Special Area of Conservation due to the habitats they support. The Plym Estuary has been excluded from the designation.

A 1.9 ha site south of Chelson Meadow has been designated as a Site of Special Scientific Interest. The site was notified in 1989, under Section 28 of the Wildlife and Countryside Act 1981 because the site supports a population of nationally rare field eryngo *Eryngium campestre* plant[4].

3.3 SITE HISTORY & SEQUENCE OF LANDFILL OPERATIONS

3.3.1 Data sources

The following site history has been compiled from reference to historic maps, archive reports and anecdotal information. The site history information is presented in chronological order.

The following historic maps have been referenced. Extracts of the maps are included as figures in this report.

Sheet	Scale	Survey	Published
Devon 124	1:10,560	1856	1869
Devon 124 NW	1:10,560	1893	
Devon 124 SW	1:10,560	1905	1907
Devon 124 NW	1:10,560	1905	1907
Devon 124 SW	1:10,560	1933	
Devon 124 NW	1:10,560	1933	
SX 55 NW	1:10,560	1950	1951
SX 55 SW	1:10,560	1951	1954
SX 55 SW	1:10,000	1973	1974
SX 55 SW	1:10,000	1973	1974
SX 55 SW	1:10,000	1988	1989
SX 55 NW	1:10,000	1993	1994

3.3.2 History Prior to Landfilling

Until 1806 the area now occupied by Chelson Meadow Landfill was known as Chelson Bay. It consisted of a tributary of the River Plym and was occupied by inter-tidal mud flats, probably similar in form to those which currently border the River Plym at low tide.

In Spring 1806, under instruction from Lord Boringdon, work commenced on a 2,910 feet long, stone faced, earth filled embankment to prevent the River Plym from flooding the alluvial flats of Chelson Bay. The embankment was completed in 1817 and later became known as The Ride. The 175 acres gained from The Ride's construction was "for the most part, rich argillaceous loam, in many placed

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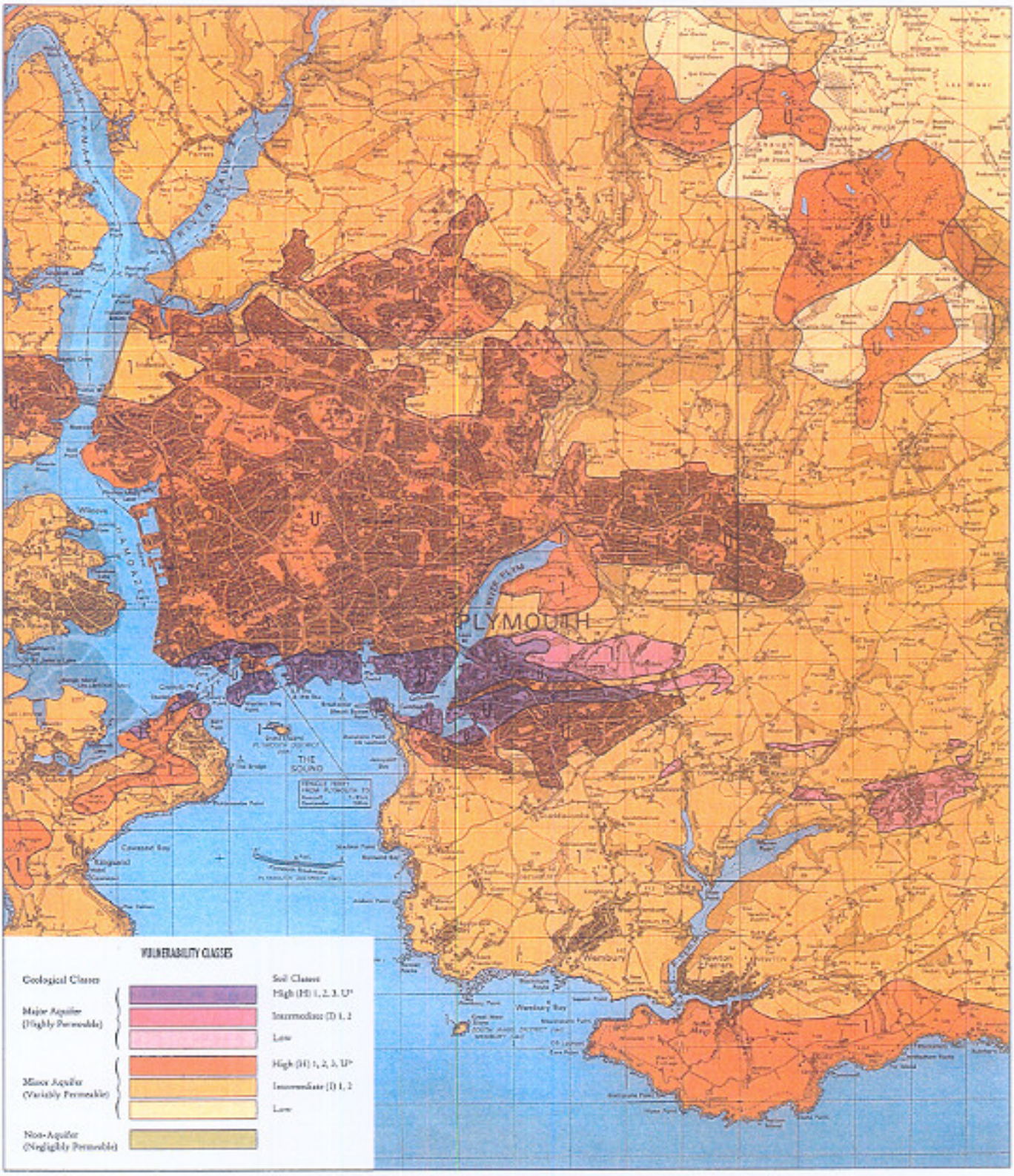

Project Title:
CHELSON MEADOW LANDFILL PERMIT APPLICATION

Map Title:
EXTRACT OF GROUNDWATER VULNERABILITY (1:100,000) MAP SHEET 49 SOUTH DEVON
Not to Scale

PELL FRISCHMANN
Bureau House
Peninsula Park
Exeter EX2 7NT
Telephone: 01392 444345
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E-mail: pfexeter@pellfrischmann.com

Date:	Designer:	Checked by:	PM Approval:	Figure No:
27/11/03	ACS	SW	JW	Figure 16

C3

likely that the heavily quarried limestone in the quarry correlates with the Cattedown Member. If this is the case, an intermediate fault zone would need to be present at this location to explain the absence of the Prince Rock Formation. As noted in Section 5.1 above, at least one geologist has speculated the presence of a further thrust to explain this. However, again based on the geological structure identified to the west, the observed structure could also quite feasibly result from a second ENE trending normal fault. Given the lack of definitive BGS information in this respect, no second discontinuity line has been indicated on the geological plan D2657G014.

To the south of the boundary zone described above, the now disused Pomphlett Quarry is situated within the massive limestones (presumed to primarily correlate with the Cattedown Member in the BGS literature). The following three paragraphs on the general geological sequence in the quarry are taken from the Blue Circle Cement Hydrogeological Report[33]:

"Made Ground: In the area around the former main cement works the Made Ground consists of concrete over a sub-base of silty, sandy gravel. Along the boundary with the western end of Chelson Meadow the Made Ground is described as firm brown sandy silty clay with occasional limestone gravel (possibly a natural deposit). Maximum thickness of Made Ground proved in earlier reports is 4.5m.

Clay: Clay underlies the Made Ground in the north-west corner of the cement works site although the distinction between the natural deposits and the Made Ground is indistinct. The clays are described as firm brown sandy silty clays with occasional gravel. Maximum depth proved is 4.3m.

Middle Devonian 'Plymouth' Limestone: The majority of Pomphlett Quarry comprises grey fresh to weathered crystalline limestone, described as strong to moderately strong with occasional discontinuities in-filled with brown clay, and becoming interbedded with mudstone down sequence. A thick bed of tuff is present in the lower part of the sequence, outcropping close to the northern boundary of the quarry and extending at depth to the south. The limestone outcropping in the quarry has been folded into a gentle anticline whose axis trends WSW and ENE through the middle of the quarry and approximately parallel to the thrust faulting. The dip of the strata in both limbs varies between 6° and 30° and the anticline has a westerly pitch of approximately 9°. There are several prominent sets of discontinuities, including a well-developed cleavage and frequent calcite veining. Maximum limestone thickness exceeds 70 m."

Based on the classification of strata in the Cattedown area, the thick bed of tuff mentioned in the text above could indicate that the junction between the Cattedown Member and Prince Rock Member is present close to the base of the quarry.

5.3 HYDROLOGY

5.3.1 Surface Drainage

As indicated previously, prior to landfilling, the Chelson Meadow area was drained by a network of ditches and streams. Flow from these watercourses accumulated in a lagoon in the south-western corner of the site and was discharged to the River Plym via a sluice gate at low tide.

Presently, the Northern and Southern Leats are the only surface watercourses draining the catchment (ref D2657G011).

The Northern Leat appears to have invert levels approximately 0.5 to 0.8m above mean summer groundwater levels (ref Section 5.4.4). Accordingly, it is an influent (losing) stream. This explains the observed absence of flow within the Northern Leat in mid-August 2003, since it receives no base flow contribution from the groundwater within the slate.

The Southern Leat has been realigned and elevated with regard to its original course and now flows partially through an artificial channel towards its western discharge point into the River Plym estuary.

Adjacent to the eastern part of the Southern Sector, the invert level of the Southern Leat is below both the Upper Devonian Slate and the leachate groundwater level (ref Section 5.4.4), suggesting that the leat is an effluent (gaining) stream, receiving groundwater in this area. To the west, the leat flows within an artificial channel, made of Armco sections, starting from just west of the location of borehole CMBH111 and extending to its final westernmost discharge point. Although the lining reduces the base flow contribution, it is likely to provide only a partial hydraulic barrier and accordingly it is believed that some groundwater and/or leachate still recharges the Southern Leat in the initial part of this lined section.

Observations made in August 2003 indicated that the summer Southern Leat water levels are typically around 0.1 - 0.3m above invert. Sections of the Leat are slow flowing to stagnant around Wixenford Bottom in the east.

It is expected that the leats exercise significant control of surface runoff from the hills to the north, east and south of the site, intercepting it and channelling it offsite.

It is likely that the leats will ultimately be classified under the Environment Agency's River Ecosystem Classification System. The system comprises five classes in order of decreasing quality, from RE1 (the highest quality) to RE5 (the lowest quality). Based on the classification criteria, the Northern Leat would be expected to classify as Class RE1 - RE2. However, the Southern Leat could be classified as RE4 - RE5.

Surface water quality in the Northern and Southern Leats is described in Section 5.6.

5.3.2 Rainfall

Values for annual total and effective rainfall were taken from the Environment Agency website, compiled from Meteorological Office data by the Centre for Ecology and Hydrology (Wallingford).

Environmental Facts and Figures
Environment Agency

Figure 4: Total and effective rainfall in England and Wales, 2002

Units: millimetres (mm)

Environment Agency region	Total rainfall	Actual evapotranspiration	Effective rainfall
Anglian	725	562	163
Midlands	878	548	330
North West	1430	532	898
North East	991	533	458
Southern	982	562	420
South West	1221	574	647
Thames	884	550	334
Welsh	1530	556	974

Effective rainfall (mm) = Total rainfall minus Actual evapotranspiration (Uncertain if runoff accounted for)

Source: Compiled by Centre for Ecology and Hydrology - Wallingford using data supplied by the Met Office

Effective rainfall is total rainfall subtracting actual evapotranspiration (assuming typical soil moisture and root constant conditions).

The southwest region ranks third in England and Wales for both total rainfall and effective rainfall, at 1221mm and 647mm respectively.

Daily rainfall records were obtained for the meteorological station at Maristow Gardens (NGR SX 474 640), 12km away to the north of Chelson Meadow, to assess short-term variations and rainfall intensities, and groundwater response to such variations.

Daily data has been recorded at Maristow Gardens from January 1965 to July 2003, a period of nearly 40 years (ref Figure 11). Annual average over this period is 1281mm, with a range between 942 and 1698mm (55 - 133% of mean). Monthly average values are shown in Figure 12 and the table overleaf (together with ranges).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Monthly mean rainfall (mm)	151.5	113.8	96.6	77.5	79.7	75.4	72.4	85.0	100.7	130.1	138.8	158.2
Max	297.6	245.5	207.3	213.6	188.8	203.5	183.0	178.7	261.0	312.9	280.7	313.4
(% of mean)	*196.5*	*215.6*	*214.6*	*275.5*	*236.9*	*270.0*	*252.6*	*210.4*	*259.1*	*240.4*	*202.3*	*198.1*
Min	15.7	1.1	22.6	5.1	6.0	11.6	12.9	8.5	5.6	11.2	56.9	31.2
(% of mean)	5.3	0.4	10.9	2.4	3.2	5.7	7.0	4.8	2.1	3.6	20.3	10.0

Annual rainfall 5-year running means (Figure 13) show a declining trend from 1965 to the early 1980s, from around 1500mm to 1200mm. Since then rainfall has been increasing again towards annual values of around 1400mm.

Monthly averages are over 150mm in December and January, declining to around 75mm in the four dry months of April - July. Almost any month can have very low rainfall (less than 10% of the average), and the winter months can have maximum monthly rain of twice the monthly average.

Analysis of the 24-hour and 48-hour rainfall intensities (Figures 14 and 15) shows the following:

	Return period		
	1 year	**10 years**	**100 years**
24-hour rainfall (mm)	37	56	74
48-hour rainfall (mm)	52	74	95

On average, there will be one day per year with about 37mm (1.5 inches) of rain, and one occasion with about 52mm (2 inches) in 48 hours; and every ten years on average there will be an event of about 56mm (2 inches) in 24 hours and 74mm (3 inches) in 48 hours. In fact, over 70mm fell in one day on two occasions within the record, on 25 October 1976 and 31 December 2000.

On 28 July 1969 the Maristow record shows a rainfall of 124.5mm. This is suspected to be a recording or reporting error (in the context of the other data it would represent an event with a return period of between 10,000 and 100,000 years).

Because the Maristow gauging station is 12km to the north, the rainfall amounts and intensities will be different in detail from the Chelson Meadow site because of spatial variation, particularly of storm events. However, the long-term averages and general patterns are expected to be very similar, such that the data can reasonably be used in respect of conditions at Chelson Meadow.

A permanent weather monitoring station was installed at Chelson Meadow in June 2002. This incorporates rainfall, windspeed and direction, temperature, pressure and humidity. The data (in digital format) have not been reviewed for the purposes of this study, and long-term conclusions would have been prevented by the short duration of the record to date. However, future monitoring should include evaluation of the Chelson data, and this should incorporate a comparison between Chelson and Maristow with a view to deriving a synthetic long-term record for the site which can be used in future updates of water balance studies.

MHE Report 50154/R1 calculated the annual effective rainfall at Chelson Meadow using MORECS data in 1992 as 734mm/yr assuming grass cover and soil of medium soil moisture deficit. Both this and the Wallingford effective rainfall value are used in the water balance assessment in this report to represent a potential range of annual effective rainfall at the site.

5.3.3 Climate Change

The following is reproduced from Hulme, 1999 (Climatic Challenge Conference, Cornwall).

"Future changes in climate in the South West have been interpreted from the UK Climate Impacts Programme '98 (UKCIP98) climate scenarios Hulme M, 'Exploratory Regional Climate Change Scenarios for the Southwest Peninsula', Climatic Challenge conference, Cornwall, October 1999. The rate of future climate warming in the South West for these scenarios is between 1.0ºC to 2.9ºC per century. 'Hot' summers that presently occur once a decade may occur 70 per cent of the time by the 2050s and the one-in-ten 'cold' winter may virtually disappear in the future.

Winter precipitation over the South West is predicted to increase by between 7 and 15 per cent by the 2050s, whereas summer precipitation remains unchanged or decreases by up to about 10 per cent by the same period. 'Dry' summers that presently occur once a decade may double in frequency by the 2080s, whereas 'wet' winters may become three times more frequent than at present. The UKCIP98 scenarios also suggest that daily precipitation intensities will increase, most notably in winter. Thus as well as experiencing wetter winters, the South West may expect to see more of this increased winter precipitation falling in more intense storm events than at present."

In terms of this assessment, the considerations with regard to climate change are uncertain. The overall effect could well prove to be minimal, as capping of the landfill will preclude infiltration and increased winter rainfall, especially if more intense, will increase surface runoff. With warmer temperatures, evapotranspiration is likely to increase and the annual effective rainfall available for recharge is likely to decrease.

5.4 HYDROGEOLOGY

5.4.1 Introduction

The following text summarises the information available on the hydrogeology of the site using the most recent hydrogeological monitoring data from the PCC's ongoing monitoring programme. It also compiles the aquifer characteristics from supplementary data in the MHE reports referenced herein and the Blue Circle Hydrogeological Report.

5.4.2 Aquifers, Vulnerability Classification and Mode of Groundwater Flow

Groundwater exists at Chelson Meadow within the Made Ground as leachate (discussed in Section 5.4.4 below) and within the Upper Devonian Slate underlying the landfill. Beneath much of the landfill the groundwater is hydraulically separated from the leachate by clayey Alluvium deposits, which form a low permeability barrier. Towards the edges of the landfill where the Alluvium tapers out there is increasing hydraulic continuity between the Made Ground and the slate.

The Groundwater Vulnerability Map of South Devon, Sheet 49 (Figure 16), classifies both the Alluvium and the Upper Devonian Slate as Minor Aquifer

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Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	Leachate Lagoon						
CMLEL1L	29-Sep-86	103.00		4.00	97.00	7.10	
CMLEL1L	18-Mar-87	85.20		7.00	85.00	6.90	39.00
CMLEL1L	27-Jun-87	132.00		10.60	126.00	7.50	
CMLEL1L	29-Sep-87	76.60		5.30	127.00	7.60	
CMLEL1L	29-Oct-87	28.10		40.10		7.60	
CMLEL1L	04-Nov-87	109.00		10.60		7.20	44.00
CMLEL1L	14-Dec-87	146.00		7.00	159.00	7.10	
CMLEL1L	17-Feb-88	25.00		36.00	54.00	7.30	
CMLEL1L	08-Mar-88	63.00		4.00	219.00	7.50	
CMLEL1L	07-Apr-88	119.00		20.00	131.00	7.20	
CMLEL1L	01-Jun-88	66.00		20.00		7.50	36.00
CMLEL1L	04-Aug-88	100.00		8.00	159.00	7.40	
CMLEL1L	11-Oct-88	38.30		100.00	690.00	7.40	
CMLEL1L	01-Dec-88	49.00		23.00	122.00	7.50	
CMLEL1L	13-Nov-89	9.00		86.00	172.00	7.50	
CMLEL1L	20-Mar-90	145.00		247.00	617.00	7.20	
CMLEL1L	22-Mar-90	185.00		133.00	376.00	7.00	
CMLEL1L	24-Apr-90	186.00		41.00	233.00	7.30	
CMLEL1L	25-Jul-90	140.00		24.00	156.00	7.50	
CMLEL1L	27-Sep-90	150.50		63.00	404.00	7.60	
CMLEL1L	24-Oct-90	140.00		150.00	374.00	6.90	
CMLEL1L	23-Jan-91	165.00		48.00	361.00	7.00	
CMLEL1L	27-Feb-91	146.00		73.00	250.00	7.30	
CMLEL1L	10-Apr-91	172.00		18.00	216.00	7.10	62.00
CMLEL1L	16-May-91	196.00		31.00	272.00	7.40	
CMLEL1L	18-Jun-91	185.00		11.00	223.00	7.40	
CMLEL1L	17-Jul-91	185.00		20.00	240.00	7.50	
CMLEL1L	12-Sep-91	487.00	0.70			7.50	
CMLEL1L	13-Nov-91	152.00		17.00	223.00	7.10	
CMLEL1L	03-Dec-91	195.00		41.00	312.00	7.20	116.00
CMLEL1L	09-Jan-92	177.00		22.00	194.00	7.30	
CMLEL1L	11-Feb-92	74.50		20.00	159.00	7.40	57.00
CMLEL1L	24-Mar-92	224.00		14.00	312.00	7.40	84.00
CMLEL1L	14-Apr-92	198.00		17.00	200.00	7.40	88.00
CMLEL1L	12-May-92	190.00		30.00	230.00		
CMLEL1L	14-May-92	191.00		9.00	214.00	7.40	
CMLEL1L	15-Jun-92	402.00		34.00	381.00	7.60	
CMLEL1L	29-Jun-92	208.00	0.82	13.00	62.50	7.80	95.00
CMLEL1L	06-Jul-92	176.00		17.00	225.00	7.30	
CMLEL1L	17-Aug-92	171.00		58.00	300.00	7.40	
CMLEL1L	03-Sep-92	85.80		20.00	140.00	7.70	
CMLEL1L	07-Oct-92	80.10	6.50	87.00	364.00	7.70	114.00
CMLEL1L	15-Oct-92	173.00		62.00	319.00	7.30	
CMLEL1L	21-Oct-92	168.00		38.00	265.00	7.40	
CMLEL1L	29-Oct-92	100.00		187.00	480.00	7.50	
CMLEL1L	04-Nov-92	112.00				7.70	
CMLEL1L	12-Nov-92	99.80		24.00	171.00	7.30	
CMLEL1L	30-Nov-92	44.40			180.00	7.40	
CMLEL1L	16-Dec-92	144.00		50.00	278.00	7.50	
CMLEL1L	05-Jan-93						
CMLEL1L	21-Jan-93	118.00		28.00	140.00	7.20	
CMLEL1L	15-Feb-93	189.00		32.00	221.00	7.30	
CMLEL1L	17-Mar-93	220.00		16.00	216.00	7.40	
CMLEL1L	27-Apr-93	153.00	9.40	14.00	155.00	7.50	53.00

Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	19-May-93	181.00		9.00	155.00	7.50	
CMLEL1L	08-Jun-93	61.90		13.00	156.00	7.80	
CMLEL1L	06-Jul-93	49.60		13.80	181.00	7.80	
CMLEL1L	09-Aug-93	223.00		26.00	288.00	7.50	
CMLEL1L	08-Sep-93	164.00		20.00	272.00	7.70	
CMLEL1L	05-Oct-93	354.00	4.70	17.00	119.00	8.00	54.00
CMLEL1L	01-Nov-93	182.00		136.00	490.00	7.50	
CMLEL1L	08-Dec-93	123.00		103.00	257.00	7.20	
CMLEL1L	10-Jan-94	56.20		91.00	322.00	7.20	
CMLEL1L	01-Feb-94	160.00		98.00	288.00	7.40	
CMLEL1L	21-Mar-94	172.00		55.00	292.00	7.20	
CMLEL1L	10-Apr-94						
CMLEL1L	10-May-94	170.00		12.00	201.00	7.30	
CMLEL1L	01-Jun-94	209.00		14.00	234.00	7.30	
CMLEL1L	11-Jul-94	170.00		20.00	189.00	7.30	
CMLEL1L	08-Aug-94	144.00		12.00	241.00	7.70	
CMLEL1L	08-Sep-94	99.70		10.00	118.00	7.70	
CMLEL1L	13-Oct-94	137.00	9.50	8.00	101.00	7.30	32.00
CMLEL1L	08-Nov-94	103.00		9.00	136.00	7.30	
CMLEL1L	07-Dec-94	75.00		16.00	137.00	7.50	
CMLEL1L	16-Jan-95	187.00		12.00	192.00	7.30	
CMLEL1L	10-Feb-95	90.90		73.00	254.00	7.40	
CMLEL1L	14-Mar-95	153.00		20.00	92.00	7.20	
CMLEL1L	19-Apr-95	202.00		24.00	429.00	7.30	92.00
CMLEL1L	10-May-95						
CMLEL1L	11-May-95	192.00		18.00	248.00	7.20	
CMLEL1L	06-Jun-95	196.00		15.00	273.00	7.30	
CMLEL1L	05-Jul-95	232.00		30.00	310.00	7.70	
CMLEL1L	08-Aug-95	203.00	13.30	52.00	92.00	7.60	
CMLEL1L	06-Sep-95	162.00		14.00	229.00	7.60	
CMLEL1L	27-Sep-95	83.20		15.00	200.00	8.10	
CMLEL1L	10-Nov-95	169.00	13.20	34.00	307.00	7.40	116.00
CMLEL1L	05-Dec-95	128.00		11.00	457.00	7.40	
CMLEL1L	02-Jan-96	165.00		34.00	50.00	7.20	
CMLEL1L	09-Mar-96	72.10	2.00	24.00	108.00	7.30	
CMLEL1L	12-Mar-96	161.00		18.00	288.00	7.80	
CMLEL1L	18-Apr-96	151.00		26.00	357.00	7.80	
CMLEL1L	16-May-96	375.70	13.00	15.00	208.00	8.00	
CMLEL1L	30-May-96	154.20		8.00	108.00	7.80	
CMLEL1L	31-May-96	141.00	2.00	20.00	279.00	8.00	
CMLEL1L	11-Jul-96	144.50		9.00	119.00	7.80	
CMLEL1L	26-Jul-96	103.40		12.00	121.00	7.80	
CMLEL1L	06-Aug-96	192.80	29.40	30.00	238.00	8.00	
CMLEL1L	10-Sep-96	171.00		10.00	165.00	7.90	
CMLEL1L	14-Oct-96	112.20		12.00	244.00	8.00	
CMLEL1L	23-Oct-96	74.60	21.00	10.00	76.00	7.90	26.00
CMLEL1L	05-Nov-96	64.80	0.70	27.00	184.00	7.70	198.00
CMLEL1L	18-Nov-96	64.30	0.63	22.00	163.00	7.70	
CMLEL1L	21-Nov-96	65.90	0.70	28.00	185.00	7.60	104.00
CMLEL1L	22-Nov-96	81.00		33.00	195.00	7.50	
CMLEL1L	28-Nov-96			35.00	297.00	8.10	123.00
CMLEL1L	16-Dec-96	153.60		33.00	248.00	7.40	
CMLEL1L	10-Jan-97	183.90		15.00	225.00	7.40	
CMLEL1L	14-Jan-97	148.20		17.00	228.00	7.30	
CMLEL1L	16-Jan-97	147.00		5.00	193.00	7.30	

Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	17-Jan-97	165.70		30.00	260.00	7.60	42.00
CMLEL1L	20-Jan-97	150.00		20.00	190.00	7.20	
CMLEL1L	23-Jan-97	162.80		13.00	238.00	7.60	34.00
CMLEL1L	28-Jan-97	168.40	15.20	11.00	172.00	7.70	37.00
CMLEL1L	10-Feb-97	89.80			220.00	7.70	
CMLEL1L	25-Feb-97	93.40	0.70	20.00	144.00	7.40	58.00
CMLEL1L	27-Feb-97	104.00	7.60	52.00	147.00	7.60	57.00
CMLEL1L	07-Mar-97	138.00		15.00	150.00	7.30	25.00
CMLEL1L	14-Mar-97	170.00	6.90	20.00	160.00	7.40	109.00
CMLEL1L	07-Apr-97	132.60		9.00	194.00	7.30	
CMLEL1L	09-Apr-97	177.00		8.00	178.00	7.50	25.00
CMLEL1L	18-Apr-97	160.00		7.00	153.00	7.60	35.00
CMLEL1L	24-Apr-97	154.80		9.00	185.00	7.40	48.00
CMLEL1L	02-May-97	147.30		6.00	165.00	7.50	48.00
CMLEL1L	07-May-97	152.00		11.00	186.00	7.30	26.00
CMLEL1L	15-May-97	163.90		33.00	302.00	7.40	59.00
CMLEL1L	23-May-97	154.00		11.00	266.00	7.30	400.00
CMLEL1L	30-May-97	139.00		7.00	197.00	7.60	205.00
CMLEL1L	06-Jun-97	97.30		7.00	137.00	7.50	80.00
CMLEL1L	13-Jun-97	169.00		13.00	187.00	7.50	47.00
CMLEL1L	27-Jun-97	145.30		10.00	226.00	7.40	281.00
CMLEL1L	25-Jul-97	186.00		13.00	279.00	7.50	
CMLEL1L	01-Aug-97	188.20		33.00	326.00	7.50	44.00
CMLEL1L	14-Aug-97	100.20		19.00	164.00	7.50	27.00
CMLEL1L	23-Aug-97	112.00		41.00	243.00	7.80	70.00
CMLEL1L	29-Aug-97	76.10		16.00	360.00	7.80	84.00
CMLEL1L	05-Sep-97	71.10		13.00	100.00	7.40	22.00
CMLEL1L	11-Sep-97	88.80		12.00	120.00	7.30	27.00
CMLEL1L	18-Sep-97	86.90		6.00	116.00	7.40	20.00
CMLEL1L	03-Oct-97	109.30		10.00	157.00	7.50	37.00
CMLEL1L	09-Oct-97	59.50		13.00	126.00	7.40	67.00
CMLEL1L	07-Nov-97	10.00		8.00	138.00	7.70	44.00
CMLEL1L	08-Dec-97	80.50		12.00	123.00	7.50	
CMLEL1L	07-Jan-98	69.30		41.00	160.00	7.40	
CMLEL1L	28-Jan-98	106.10		28.00	191.00	7.50	137.00
CMLEL1L	04-Feb-98	122.00		36.00	243.00	7.30	28.00
CMLEL1L	05-Feb-98	115.00		64.00	268.00	7.30	134.00
CMLEL1L	11-Feb-98	119.00		31.00	175.00	7.40	60.00
CMLEL1L	26-Feb-98	115.00		9.00	152.00	7.70	31.00
CMLEL1L	12-Mar-98	86.30		10.00	123.00	7.50	43.00
CMLEL1L	13-Mar-98	91.70		10.00	128.00	7.50	39.00
CMLEL1L	17-Mar-98	97.90		10.00	126.00	7.60	45.00
CMLEL1L	18-Mar-98	97.40		12.00	127.00	7.50	31.00
CMLEL1L	24-Mar-98	92.80		10.00	128.00	7.50	27.00
CMLEL1L	24-Mar-98	92.80		10.00	128.00	7.50	27.00
CMLEL1L	27-Mar-98	83.20		10.00	146.00	7.60	45.00
CMLEL1L	27-Mar-98	83.20		10.00	146.00	7.60	45.00
CMLEL1L	03-Apr-98	102.50		38.00	179.00	7.60	50.00
CMLEL1L	03-Apr-98	102.50		38.00	179.00	7.60	50.00
CMLEL1L	09-Apr-98	68.90		9.00	106.00	7.70	66.00
CMLEL1L	09-Apr-98	68.90		9.00	106.00	7.70	66.00
CMLEL1L	15-Apr-98	85.60		10.00	105.00	7.50	32.00
CMLEL1L	21-Apr-98	73.30		9.00	90.00	7.70	20.00
CMLEL1L	21-Apr-98	73.30		9.00	90.00	7.70	20.00
CMLEL1L	25-Apr-98	56.90		28.00	139.00	7.50	112.00

Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	27-Apr-98	24.50		5.00	39.00	7.50	32.00
CMLEL1L	28-Apr-98	50.30		6.00	72.00	7.60	22.00
CMLEL1L	06-May-98	91.90		20.00	155.00	7.40	32.00
CMLEL1L	09-May-98	93.40		14.00	135.00	7.20	29.00
CMLEL1L	11-May-98	115.00		20.00	139.00	7.40	33.00
CMLEL1L	12-May-98	102.00		20.00	117.00	7.50	24.00
CMLEL1L	19-May-98	113.00		20.00	123.00	7.30	29.00
CMLEL1L	26-May-98	131.00		8.00	154.00	7.50	27.00
CMLEL1L	27-May-98	124.00		8.00	146.00	7.50	18.00
CMLEL1L	02-Jun-98	99.60		9.00	119.00	7.50	43.00
CMLEL1L	04-Jun-98	118.00		8.00	127.00	7.60	24.00
CMLEL1L	08-Jun-98	134.00		8.00	159.00	7.50	28.00
CMLEL1L	11-Jun-98	83.70		10.00	111.00	7.60	46.00
CMLEL1L	15-Jun-98	116.00		7.00	120.00	7.40	44.00
CMLEL1L	17-Jun-98	117.00		18.00	126.00	7.40	49.00
CMLEL1L	23-Jun-98	114.00		10.00	120.00	7.40	57.00
CMLEL1L	25-Jun-98	117.00		15.00	129.00	7.40	28.00
CMLEL1L	01-Jul-98	85.30		10.00	106.00	7.60	29.00
CMLEL1L	02-Jul-98	82.30		10.00	101.00	7.60	24.00
CMLEL1L	08-Jul-98	124.00		9.00	138.00	7.60	76.00
CMLEL1L	15-Jul-98	92.00		8.00	113.00	7.70	32.00
CMLEL1L	16-Jul-98	70.40		10.00	108.00	7.70	33.00
CMLEL1L	22-Jul-98	54.90		9.00	108.00	7.40	39.00
CMLEL1L	23-Jul-98	52.40		9.00	105.00	7.40	52.00
CMLEL1L	27-Jul-98	56.00		8.00	125.00	7.60	31.00
CMLEL1L	28-Jul-98	87.00		4.00	101.00	7.40	38.00
CMLEL1L	03-Aug-98	94.60		10.00	134.00	7.50	172.00
CMLEL1L	06-Aug-98	101.00		6.00	118.00	7.50	54.00
CMLEL1L	10-Aug-98	113.00		6.00	129.00	7.60	24.00
CMLEL1L	11-Aug-98	121.00		12.00	154.00	7.50	52.00
CMLEL1L	17-Aug-98	132.00		8.00	147.00	7.60	47.00
CMLEL1L	18-Aug-98	96.00		19.00	156.00	7.90	112.00
CMLEL1L	24-Aug-98	11.70		5.00	146.00	7.70	78.00
CMLEL1L	25-Aug-98	109.00		6.00	156.00	7.70	86.00
CMLEL1L	01-Sep-98	148.00		7.00	144.00	7.40	34.00
CMLEL1L	02-Sep-98	127.00		8.00	156.00	7.70	18.00
CMLEL1L	07-Sep-98	104.00		8.00	143.00	7.70	61.00
CMLEL1L	09-Sep-98	99.00		7.00	178.00	7.60	83.00
CMLEL1L	14-Sep-98	99.00		6.00	132.00	7.60	41.00
CMLEL1L	15-Sep-98	100.00		6.00	134.00	7.60	40.00
CMLEL1L	21-Sep-98	110.00		6.00	152.00	7.60	34.00
CMLEL1L	25-Sep-98	126.00		11.00	165.00	7.70	45.00
CMLEL1L	29-Sep-98	58.60		6.00	141.00	7.60	252.00
CMLEL1L	30-Sep-98	107.00		6.80	141.00	7.60	61.00
CMLEL1L	06-Oct-98	68.00		7.60	84.00	7.90	22.00
CMLEL1L	07-Oct-98	66.90		6.00	91.00	7.80	31.00
CMLEL1L	12-Oct-98	92.00		7.50	104.00	7.70	22.00
CMLEL1L	14-Oct-98	93.00		8.70	132.00	7.80	70.00
CMLEL1L	19-Oct-98	73.00		7.00	106.00	7.50	47.00
CMLEL1L	20-Oct-98	72.00		6.00	100.00	7.50	71.00
CMLEL1L	09-Nov-98	37.10		5.00	59.00	7.60	88.00
CMLEL1L	13-Nov-98	81.00		32.00	151.00	7.40	65.00
CMLEL1L	19-Nov-98	80.30		23.00	130.00	7.30	43.00
CMLEL1L	20-Nov-98	82.40		22.00	152.00	7.30	56.00
CMLEL1L	23-Nov-98	79.60		12.00	105.00	7.30	48.00

Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	25-Nov-98	51.70		41.00	156.00	7.40	49.00
CMLEL1L	04-Dec-98	97.80		8.00	109.00	7.50	38.00
CMLEL1L	07-Dec-98	102.00		7.00	106.00	7.40	26.00
CMLEL1L	02-Feb-00	43.00		20.00	105.00	7.50	93.00
CMLEL1L	08-Feb-00	42.40		20.00	112.00	7.40	109.00
CMLEL1L	19-Feb-00	85.00		6.00	95.00	7.50	39.00
CMLEL1L	25-Feb-00	47.90		8.00	123.00	7.30	55.00
CMLEL1L	18-Jul-00	120.00		11.00	155.00	7.30	126.00
CMLEL1L	31-Jul-00	110.00	< 0.50	5.00	138.00	7.50	47.00
CMLEL1L	29-Sep-00	31.80	1.50	9.00	112.00	7.40	108.00
CMLEL1L	02-Oct-00	48.30	2.28	5.00	84.00	7.50	56.00
CMLEL1L	23-Jul-01	93.70	2.22	6.00	154.00	7.40	395.00
CMLEL1L	20-Aug-01	125.00	0.76	7.00	146.00	7.50	43.00
CMLEL1L	26-Mar-02	126.00	1.08	22.00	180.00	7.60	40.00
CMLEL1L	24-Apr-02	136.00	1.29	11.00	180.00	7.50	64.00
CMLEL1L	27-May-02	115.00	0.97	10.00	155.00	7.80	36.00
CMLEL1L	24-Jun-02	137.00	1.30	9.00	196.00	7.90	87.00
CMLEL1L	22-Jul-02	110.00	1.64	7.00	145.00	7.80	21.00
CMLEL1L	27-Aug-02	138.00	1.27	9.00	190.00	7.80	14.00
CMLEL1L	23-Sep-02	160.00	2.21	29.00	203.00	8.00	19.00
CMLEL1L	28-Oct-02	109.00	2.43	7.00	152.00	7.70	23.00
CMLEL1L	26-Nov-02	76.00	2.92	6.00	98.00	7.80	22.00
CMLEL1L	16-Dec-02	89.00	2.86	5.00	138.00	7.50	109.00
CMLEL1L	27-Jan-03	82.00	1.18	6.00	108.00	7.50	22.00
CMLEL1L	25-Feb-03	114.00	2.01	7.00	143.00	7.60	19.00
CMLEL1L	25-Mar-03	129.00	1.93	10.00	162.00	7.90	16.00
CMLEL1L	28-Apr-03	117.00	3.21	14.00	181.00	7.80	105.00
CMLEL1L	28-May-03	118.00	1.79	10.00	155.00	7.90	20.00
CMLEL1L	24-Jun-03	122.00	2.51	9.00	159.00	7.80	60.00
CMLEL1L	30-Jul-03	96.00	1.21	10.00	149.00	7.60	45.00
CMLEL1L	11-Aug-03	119.00	1.20	21.00	187.00	7.80	55.00
CMLEL1L	14-Aug-03	119.00	1.34	6.00	164.00	8.00	26.00
CMLEL1L	27-Aug-03	162.00	1.22	12.00	206.00	8.00	30.00
CMLEL1L	25-Sep-03	193.00	1.92	11.00	234.00	7.90	24.00
CMLEL1L	28-Oct-03	176.00	5.88	14.00	226.00	7.60	58.00
CMLEL1L	28-Nov-03	72.00	2.18	< 6.00	98.00	7.90	76.00
CMLEL1L	12-Dec-03	54.00	4.56	4.00	81.00	7.60	26.00
CMLEL1L	22-Jan-04	88.00	1.34	20.00	182.00	7.50	272.00
CMLEL1L	26-Jan-04	79.00					
CMLEL1L	24-Feb-04	131.00	2.48	9.00	164.00	7.60	29.00
CMLEL1L	23-Mar-04	97.00	0.78	8.00	135.00	7.90	35.00
CMLEL1L	28-Apr-04	109.00	1.16	10.00	28.00	8.00	31.00
CMLEL1L	19-May-04	120.00	2.15	7.00	150.00	7.90	17.00
CMLEL1L	25-Jun-04	51.00	5.59	4.00	68.00	8.00	98.00
CMLEL1L	27-Jul-04	167.00	1.91	8.00	190.00	8.00	18.00
CMLEL1L	24-Sep-04	116.00	2.68	10.00	138.00	7.90	16.00
CMLEL1L	29-Oct-04	61.00	3.66	5.00	77.00	7.90	17.00
CMLEL1L	30-Nov-04	97.00	2.34	< 4.00	107.00	7.80	20.00
CMLEL1L	30-Dec-04	67.00	2.62	7.00	80.00	7.80	21.00
CMLEL1L	25-Jan-05	80.00	2.74	4.00	92.00	8.10	16.00
CMLEL1L	08-Apr-05	132.00	2.64	12.00	159.00	7.70	44.00
CMLEL1L	25-Apr-05	70.00	1.19	5.00	105.00	7.50	52.00
CMLEL1L	26-May-05	103.00	3.00	8.00	140.00	8.00	36.00
CMLEL1L	01-Jul-05	92.00	6.76	8.00	143.00	7.90	49.00
CMLEL1L	05-Aug-05	93.00	1.72	< 4.00	112.00	7.90	18.00

Chelson Meadow - Leachate Lagoon

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMLEL1L	01-Sep-05	187.00	< 1.00	9.00	202.00	8.00	26.00
CMLEL1L	25-Oct-05	40.00	3.24	7.00	129.00	8.20	157.00
CMLEL1L	30-Nov-05	99.00	2.58	5.00	121.00	8.00	52.00
CMLEL1L	30-Dec-05	102.00	2.08	7.00	127.00	7.50	59.00
CMLEL1L	31-Jan-06	107.00	1.74	< 5.00	116.00	8.10	11.00
CMLEL1L	15-Feb-06	92.00	2.74	7.00	127.00	8.00	54.00
CMLEL1L	28-Feb-06	95.00	2.83	5.00	118.00		24.00
CMLEL1L	18-Mar-06	96.00	1.78	8.00	113.00		42.00
CMLEL1L	05-Apr-06	73.00	1.66	5.00	80.00		14.00
Average:		119.30	3.73	20.53	176.32	7.55	58.62
Maximum:		487.00	29.40	247.00	690.00	8.20	400.00
Minimum:		9.00	0.50	4.00	28.00	6.90	11.00
Std Deviation:		57.19	4.83	27.25	87.72	0.24	56.15
No. Records:		279	75	275	274	275	186

All Data Point Statistics

Average:	119.30	3.73	20.53	176.32	7.55	58.62
Maximum:	487.00	29.40	247.00	690.00	8.20	400.00
Minimum:	9.00	0.50	4.00	28.00	6.90	11.00
Std Deviation:	57.19	4.83	27.25	87.72	0.24	56.15
No. Records:	279	75	275	274	275	186

Chelson Meadow - Leachate Outfall - River Plym

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMOUT38L	Outfall to River Plym						
CMOUT38L	16-May-96	197.60	522.00	12.00	196.00	8.00	
CMOUT38L	21-May-96	1.70		8.00	83.00	7.60	45.00
CMOUT38L	30-May-96	35.20	481.00	5.00	112.00	8.20	45.00
CMOUT38L	03-Jun-96	27.90	503.00	18.00	116.00	8.00	66.00
CMOUT38L	04-Jun-96	25.30	494.00	17.00	68.00	8.00	130.00
CMOUT38L	07-Jun-96	48.80	352.00	24.00	111.00	8.10	34.00
CMOUT38L	08-Jun-96	31.60	480.00	26.00	74.00	7.90	59.00
CMOUT38L	10-Jun-96	16.70	623.00	18.00	99.00	7.80	95.00
CMOUT38L	11-Jun-96	17.60	499.00	12.00	108.00	8.00	37.00
CMOUT38L	12-Jun-96	0.50	739.00	10.00	118.00	7.90	47.00
CMOUT38L	13-Jun-96	0.50	753.00	20.00	96.00	8.00	53.00
CMOUT38L	14-Jun-96	0.50	720.00	18.00	115.00	8.20	55.00
CMOUT38L	17-Jun-96	0.50	800.00	18.00	113.00	8.20	45.00
CMOUT38L	18-Jun-96	0.50	700.00	18.00	108.00	8.10	53.00
CMOUT38L	29-Jun-96	0.50	836.00	3.00	123.00	7.90	62.00
CMOUT38L	30-Jun-96	0.50	707.00	3.00	117.00	7.90	65.00
CMOUT38L	02-Jul-96	0.50	90.30	4.00	111.00	7.70	82.00
CMOUT38L	03-Jul-96	0.50	580.00	3.00	55.00	7.80	96.00
CMOUT38L	16-Jul-96	0.50	740.00	3.00	107.00	7.80	56.00
CMOUT38L	20-Jul-96	73.00	170.00	3.00	241.00	7.90	105.00
CMOUT38L	22-Jul-96	0.50	694.00	1.00	121.00	7.90	49.00
CMOUT38L	23-Jul-96	0.50	742.00	4.00	118.00	8.10	24.00
CMOUT38L	24-Jul-96	0.50	790.00	5.00	108.00	8.00	54.00
CMOUT38L	05-Aug-96	0.95		2.00	420.00	7.20	30.00
CMOUT38L	06-Aug-96	0.10		2.00	412.00	7.40	30.00
CMOUT38L	07-Aug-96	1.30		1.00	492.00	7.20	30.00
CMOUT38L	27-Aug-96	0.04		6.00	128.00	7.80	12.00
CMOUT38L	28-Aug-96	0.04		5.00	136.00	7.90	10.00
CMOUT38L	29-Aug-96	0.04		5.00	122.00	7.80	5.00
CMOUT38L	02-Sep-96	0.50	539.00	8.00	223.00	7.80	30.00
CMOUT38L	03-Sep-96	0.50	579.00	12.00	192.00	7.70	37.00
CMOUT38L	04-Sep-96	0.05			197.00	8.00	24.00
CMOUT38L	05-Sep-96	1.50			173.00	8.00	27.00
CMOUT38L	06-Sep-96	5.70			202.00	8.20	24.00
CMOUT38L	07-Sep-96	1.60			149.00	8.00	20.00
CMOUT38L	08-Sep-96	0.41			145.00	8.10	18.00
CMOUT38L	09-Sep-96	0.04			147.00	8.10	18.00
CMOUT38L	10-Sep-96	0.95			148.00	8.10	16.00
CMOUT38L	30-Sep-96	0.50	485.00	5.00	231.00	7.70	31.00
CMOUT38L	01-Oct-96	0.50	547.00	5.00	182.00	7.80	28.00
CMOUT38L	02-Oct-96	0.50	583.00	5.00	171.00	7.80	36.00
CMOUT38L	07-Oct-96	0.50		20.00	130.00	7.70	
CMOUT38L	08-Oct-96	0.50		20.00	136.00	7.70	
CMOUT38L	09-Oct-96	0.50		20.00	129.00	7.80	
CMOUT38L	15-Oct-96	1.20		15.00	126.00	7.60	23.00
CMOUT38L	16-Oct-96	1.40		15.00	128.00	7.60	37.00
CMOUT38L	17-Oct-96	0.95		15.00	133.00	7.80	40.00
CMOUT38L	06-Nov-96	0.50	290.00	4.00	105.00	7.50	57.00
CMOUT38L	07-Nov-96	0.50	288.00	4.00	109.00	7.40	74.00
CMOUT38L	14-Nov-96	0.24		15.00	140.00	7.60	56.00
CMOUT38L	15-Nov-96	0.50			247.00	7.50	49.00
CMOUT38L	18-Nov-96	0.50	589.00	14.00	145.00	7.40	106.00
CMOUT38L	19-Nov-96	0.50	698.00	10.00	145.00	7.40	126.00
CMOUT38L	20-Nov-96	0.50	519.00	11.00	135.00	7.30	60.00

Chelson Meadow - Leachate Outfall - River Plym

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMOUT38L	26-Nov-96	0.17		6.00	144.00	8.50	47.00
CMOUT38L	27-Nov-96	0.12		8.00	139.00	8.40	59.00
CMOUT38L	28-Nov-96	0.08		7.00	132.00	7.50	59.00
CMOUT38L	02-Dec-96	0.50	399.00	4.00	129.00	7.90	36.00
CMOUT38L	04-Dec-96	0.50	298.00	5.00	113.00	7.90	37.00
CMOUT38L	19-Dec-96	0.50	558.00		120.00	7.40	53.00
CMOUT38L	03-Jan-97	0.50	848.00	9.00	146.00	7.20	63.00
CMOUT38L	06-Jan-97	0.50	832.00	9.00	140.00	7.20	54.00
CMOUT38L	07-Jan-97	0.50		9.00	146.00	7.00	114.00
CMOUT38L	10-Jan-97	1.60		2.00	138.00	7.00	74.00
CMOUT38L	11-Jan-97	0.04		34.00	150.00	7.00	64.00
CMOUT38L	13-Jan-97	0.02		4.00	156.00	7.20	30.00
CMOUT38L	14-Jan-97	0.09		6.00	142.00	7.30	51.00
CMOUT38L	15-Jan-97	0.19		4.00	154.00	7.10	39.00
CMOUT38L	23-Jan-97	0.26		40.00	203.00	7.30	182.00
CMOUT38L	25-Jan-97	0.50	637.00	4.00	141.00	7.30	112.00
CMOUT38L	27-Jan-97	0.50	691.00	5.00	133.00	7.30	39.00
CMOUT38L	28-Jan-97	0.50	766.00	15.00	131.00	7.30	36.00
CMOUT38L	29-Jan-97	0.50	709.00	5.00	129.00	7.20	52.00
CMOUT38L	21-Feb-97	0.76		4.00	102.00	7.40	59.00
CMOUT38L	25-Feb-97	0.50	452.00	20.00	94.00	7.40	94.00
CMOUT38L	26-Feb-97	0.50	379.00	6.00	94.00	7.40	76.00
CMOUT38L	27-Feb-97	0.50	429.00	4.00	101.00	7.40	64.00
CMOUT38L	03-Mar-97	0.02		12.00	110.00	7.20	59.00
CMOUT38L	04-Mar-97	0.02		12.00	98.00	7.20	53.00
CMOUT38L	05-Mar-97	0.02		12.00	100.00	7.20	63.00
CMOUT38L	10-Mar-97	0.04	534.00	12.00	100.00	7.40	63.00
CMOUT38L	11-Mar-97	0.61	593.00	15.00	110.00	7.30	131.00
CMOUT38L	13-Mar-97	0.04	660.00	12.00	110.00	7.30	53.00
CMOUT38L	14-Mar-97	0.01		15.00	120.00	7.50	54.00
CMOUT38L	07-Apr-97	0.03		4.00	120.00	7.10	39.00
CMOUT38L	08-Apr-97	0.04		6.00	125.00	7.20	36.00
CMOUT38L	08-Apr-97	1.00		3.00	128.00	6.90	
CMOUT38L	09-Apr-97	0.03		20.00	123.00	7.20	45.00
CMOUT38L	14-Apr-97	0.04		2.00	124.00	7.10	40.00
CMOUT38L	15-Apr-97	0.05		4.00	116.00	7.20	39.00
CMOUT38L	16-Apr-97	0.03		2.00	120.00	7.20	33.00
CMOUT38L	21-Apr-97	0.04		6.00	127.00	7.10	34.00
CMOUT38L	22-Apr-97	0.03		6.00	123.00	7.20	40.00
CMOUT38L	23-Apr-97	0.79		6.00	116.00	7.10	41.00
CMOUT38L	28-Apr-97	0.03		3.00	104.00	7.00	33.00
CMOUT38L	29-Apr-97	0.05		3.00	108.00	7.10	27.00
CMOUT38L	30-Apr-97	0.06		4.00	116.00	7.00	33.00
CMOUT38L	06-May-97	0.04		5.00	118.00	7.00	38.00
CMOUT38L	07-May-97	0.04		3.00	120.00	6.90	31.00
CMOUT38L	12-May-97	0.01		4.00	126.00	6.80	50.00
CMOUT38L	13-May-97	0.02		3.00	119.00	6.90	49.00
CMOUT38L	14-May-97	0.01		4.00	135.00	6.90	70.00
CMOUT38L	21-May-97	0.01		4.00	101.00	7.00	33.00
CMOUT38L	23-May-97	0.17		3.00	128.00	6.90	35.00
CMOUT38L	27-May-97	0.03		3.00	116.00	7.20	37.00
CMOUT38L	29-May-97	0.01		3.00	111.00	7.20	61.00
CMOUT38L	05-Jun-97	0.05		4.00	110.00	6.90	69.00
CMOUT38L	06-Jun-97	0.04		4.00	102.00	7.00	68.00
CMOUT38L	09-Jun-97	0.01		7.00	116.00	7.20	57.00

Chelson Meadow - Leachate Outfall - River Plym

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMOUT38L	10-Jun-97	0.03		4.00	119.00	7.30	51.00
CMOUT38L	11-Jun-97	0.02		4.00	113.00	7.10	60.00
CMOUT38L	23-Jun-97	0.01		5.00	108.00	7.10	49.00
CMOUT38L	24-Jun-97	0.02		5.00	114.00	6.90	35.00
CMOUT38L	26-Jun-97	0.07		6.00	110.00	7.10	39.00
CMOUT38L	22-Jul-97	0.03		5.00	126.00	6.80	44.00
CMOUT38L	23-Jul-97	0.02		5.00	134.00	6.90	42.00
CMOUT38L	24-Jul-97	0.04		5.00	128.00	7.10	42.00
CMOUT38L	28-Jul-97	0.50		5.00	142.00	6.90	46.00
CMOUT38L	29-Jul-97	0.11		7.00	149.00	6.90	72.00
CMOUT38L	30-Jul-97	0.50		5.00	138.00	7.10	44.00
CMOUT38L	12-Aug-97	0.03		3.00	100.00	7.10	21.00
CMOUT38L	13-Aug-97	0.04		2.00	100.00	7.30	22.00
CMOUT38L	14-Aug-97	0.02		2.00	98.00	7.50	27.00
CMOUT38L	18-Aug-97	0.05		5.00	91.00	7.10	21.00
CMOUT38L	19-Aug-97	0.11		4.00	94.00	7.20	28.00
CMOUT38L	20-Aug-97	0.04		6.00	101.00	7.30	25.00
CMOUT38L	21-Aug-97	0.05		5.00	97.00	7.40	25.00
CMOUT38L	26-Aug-97	0.03		2.00	97.00	7.40	28.00
CMOUT38L	27-Aug-97	0.03		4.00	99.00	7.40	29.00
CMOUT38L	28-Aug-97	0.03		2.00	95.00	7.40	26.00
CMOUT38L	01-Sep-97	0.03		3.00	78.00	7.30	32.00
CMOUT38L	03-Sep-97	0.03		3.00	76.00	7.20	23.00
CMOUT38L	04-Sep-97	0.02		3.00	69.00	7.30	23.00
CMOUT38L	08-Sep-97	0.02		4.00	68.00	7.20	29.00
CMOUT38L	09-Sep-97	0.03		3.00	69.00	7.40	32.00
CMOUT38L	10-Sep-97	0.02		5.00	83.00	7.20	45.00
CMOUT38L	15-Sep-97	0.06		4.00	76.00	7.30	44.00
CMOUT38L	17-Sep-97	0.03		4.00	80.00	7.20	37.00
CMOUT38L	18-Sep-97	0.03		4.00	83.00	7.20	32.00
CMOUT38L	30-Sep-97	0.02		2.00	95.00	7.20	29.00
CMOUT38L	01-Oct-97	0.01		2.00	113.00	7.20	38.00
CMOUT38L	02-Oct-97	0.01		4.00	90.00	7.20	28.00
CMOUT38L	06-Oct-97	0.01		3.00	100.00	7.30	37.00
CMOUT38L	07-Oct-97	0.02		2.00	92.00	7.30	14.00
CMOUT38L	09-Oct-97	0.01		4.00	79.00	7.30	23.00
CMOUT38L	03-Nov-97	0.01		4.00	88.00	7.30	35.00
CMOUT38L	07-Nov-97	0.01		4.00	85.00	7.40	32.00
CMOUT38L	04-Feb-98	0.01		5.00	101.00	7.20	36.00
CMOUT38L	05-Feb-98	0.01		5.00	88.00	7.50	60.00
CMOUT38L	16-Mar-98	0.03		5.00	84.00	7.20	51.00
CMOUT38L	18-Mar-98	0.02		5.00	77.00	7.50	35.00
CMOUT38L	25-Mar-98	0.03		5.00	86.00	7.20	47.00
CMOUT38L	25-Mar-98	0.03		5.00	86.00	7.20	47.00
CMOUT38L	27-Mar-98	0.01		5.00	84.00	7.10	31.00
CMOUT38L	27-Mar-98	0.01		5.00	84.00	7.10	31.00
CMOUT38L	30-Mar-98	0.02		5.00	89.00	7.40	42.00
CMOUT38L	02-Apr-98	0.06		5.00	80.00	7.10	21.00
CMOUT38L	02-Apr-98	0.06		5.00	80.00	7.10	21.00
CMOUT38L	06-Apr-98	0.01		4.00	90.00	7.70	60.00
CMOUT38L	06-Apr-98	0.01		4.00	90.00	7.70	60.00
CMOUT38L	15-Apr-98	0.03		3.00	80.00	7.30	33.00
CMOUT38L	16-Apr-98	0.03		4.00	79.00	7.20	34.00
CMOUT38L	21-Apr-98	0.02		4.00	74.00	7.40	28.00
CMOUT38L	21-Apr-98	0.02		4.00	74.00	7.40	28.00

Chelson Meadow - Leachate Outfall - River Plym

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMOUT38L	25-Apr-98	0.01		3.00	63.00	7.30	38.00
CMOUT38L	27-Apr-98	0.03		3.00	58.00	7.30	37.00
CMOUT38L	28-Apr-98	0.04		3.00	56.00	7.30	36.00
CMOUT38L	06-May-98	0.01		3.00	60.00	7.00	24.00
CMOUT38L	09-May-98	0.02		3.00	65.00	7.30	15.00
CMOUT38L	12-May-98	0.01		5.00	77.00	7.20	22.00
CMOUT38L	12-May-98	0.07		5.00	76.00	7.30	20.00
CMOUT38L	12-May-98	0.01		5.00	77.00	7.20	22.00
CMOUT38L	12-May-98	0.07		5.00	76.00	7.30	20.00
CMOUT38L	19-May-98	0.02		5.00	82.00	7.20	22.00
CMOUT38L	19-May-98	0.02		5.00	82.00	7.20	22.00
CMOUT38L	26-May-98	0.01		2.00	77.00	7.40	34.00
CMOUT38L	27-May-98	0.01		2.00	80.00	7.30	33.00
CMOUT38L	02-Jun-98	0.01		3.00	75.00	7.30	30.00
CMOUT38L	02-Jun-98	0.01		3.00	75.00	7.30	30.00
CMOUT38L	04-Jun-98	0.01		5.00	84.00	7.20	72.00
CMOUT38L	08-Jun-98	0.02		4.00	89.00	7.40	23.00
CMOUT38L	11-Jun-98	0.02		6.00	80.00	7.30	29.00
CMOUT38L	15-Jun-98	0.50		5.00	81.00	7.20	36.00
CMOUT38L	17-Jun-98	0.50		5.00	76.00	7.20	25.00
CMOUT38L	23-Jun-98	0.03		6.00	76.00	7.20	33.00
CMOUT38L	25-Jun-98	0.01		7.00	79.00	7.20	17.00
CMOUT38L	01-Jul-98	3.40		4.00	74.00	7.30	32.00
CMOUT38L	02-Jul-98	0.01		4.00	77.00	7.20	49.00
CMOUT38L	08-Jul-98	0.02		5.00	80.00	7.20	106.00
CMOUT38L	15-Jul-98	0.02		4.00	76.00	7.50	46.00
CMOUT38L	16-Jul-98	0.04		4.00	73.00	7.60	26.00
CMOUT38L	22-Jul-98	0.02		5.00	57.00	7.40	27.00
CMOUT38L	23-Jul-98	0.03		5.00	61.00	7.30	19.00
CMOUT38L	27-Jul-98	0.02		3.00	65.00	7.50	27.00
CMOUT38L	28-Jul-98	0.03		3.00	62.00	7.40	21.00
CMOUT38L	03-Aug-98	0.11		3.00	74.00	7.30	34.00
CMOUT38L	06-Aug-98	0.07		3.00	74.00	7.30	25.00
CMOUT38L	10-Aug-98	0.09		3.00	74.00	7.30	45.00
CMOUT38L	11-Aug-98	0.05		3.00	77.00	7.30	37.00
CMOUT38L	17-Aug-98	0.05		5.00	99.00	7.20	49.00
CMOUT38L	18-Aug-98	0.26		4.00	85.00	7.30	26.00
CMOUT38L	24-Aug-98	0.32		4.00	90.00	7.30	48.00
CMOUT38L	25-Aug-98	27.30		4.00	131.00	7.60	90.00
CMOUT38L	01-Sep-98	0.05		3.00	92.00	7.20	60.00
CMOUT38L	02-Sep-98	0.05		3.00	111.00	7.20	36.00
CMOUT38L	07-Sep-98	0.05		4.00	84.00	7.10	35.00
CMOUT38L	09-Sep-98	0.05		4.00	86.00	7.00	55.00
CMOUT38L	14-Sep-98	0.25		2.00	77.00	7.20	26.00
CMOUT38L	15-Sep-98	0.05		1.00	76.00	7.20	21.00
CMOUT38L	21-Sep-98	0.06		2.00	77.00	7.10	32.00
CMOUT38L	25-Sep-98	0.05		2.00	89.00	7.10	25.00
CMOUT38L	29-Sep-98	0.05		4.10	83.00	7.40	35.00
CMOUT38L	30-Sep-98	0.05		3.80	97.00	7.30	92.00
CMOUT38L	06-Oct-98	0.05		3.00	65.00	7.50	36.00
CMOUT38L	07-Oct-98	0.05		3.60	70.00	7.40	50.00
CMOUT38L	12-Oct-98	0.05		3.00	69.00	7.50	34.00
CMOUT38L	14-Oct-98	0.05		2.90	78.00	7.30	40.00
CMOUT38L	19-Oct-98	0.05		4.00	81.00	7.10	59.00
CMOUT38L	20-Oct-98	0.05		5.00	83.00	7.10	61.00

Chelson Meadow - Leachate Outfall - River Plym

Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)
CMOUT38L	09-Nov-98	0.05		4.00	58.00	7.40	44.00
CMOUT38L	13-Nov-98	0.05		3.00	58.00	7.30	46.00
CMOUT38L	19-Nov-98	0.05		3.00	68.00	7.20	39.00
CMOUT38L	20-Nov-98	0.05		5.00	80.00	7.20	35.00
CMOUT38L	23-Nov-98	0.09		4.00	77.00	7.20	104.00
CMOUT38L	25-Nov-98	0.05		4.00	81.00	7.30	77.00
CMOUT38L	04-Dec-98	0.05		4.00	76.00	7.30	54.00
CMOUT38L	07-Dec-98	0.05		3.00	68.00	7.20	43.00
CMOUT38L	02-Feb-00	0.05		3.00	94.00	7.40	78.00
CMOUT38L	08-Feb-00	0.05		4.00	89.00	7.30	116.00
CMOUT38L	19-Feb-00	0.08		2.00	69.00	7.20	70.00
CMOUT38L	18-Jul-00	0.12		< 5.00	92.00	7.30	56.00
CMOUT38L	31-Jul-00	0.05	133.00	< 5.00	78.00	7.40	55.00
CMOUT38L	29-Sep-00	< 0.05	45.34	< 3.00	72.00	7.30	85.00
CMOUT38L	02-Oct-00	< 0.05	54.21	< 4.00	56.00	7.30	69.00
CMOUT38L	23-Jul-01	< 0.02	109.00	2.00	82.00	7.50	47.00
CMOUT38L	20-Aug-01	0.12	130.00	< 6.00	102.00	7.30	102.00
CMOUT38L	27-May-02	< 0.02	113.25	< 4.00	105.00	7.60	86.00
CMOUT38L	23-Jul-02	< 0.02	130.72	< 4.00	110.00	8.00	83.00
CMOUT38L	27-Aug-02	< 0.02	145.82	< 4.00	124.00	8.00	66.00
CMOUT38L	23-Sep-02	0.04	179.46	17.00	142.00	8.10	38.00
CMOUT38L	28-Oct-02	< 0.02	102.54	< 15.00	123.00	8.00	88.00
CMOUT38L	26-Nov-02	< 0.02	77.51	< 5.00	109.00	8.20	216.00
CMOUT38L	27-Jan-03	29.00	56.29	5.00	140.00	7.90	220.00
CMOUT38L	25-Mar-03	4.50	111.46	10.00	763.00	7.60	
CMOUT38L	07-May-03	0.02	148.72	< 4.00	147.00	8.10	360.00
CMOUT38L	29-May-03	0.03	151.10	< 3.00	169.00	8.00	465.00
CMOUT38L	01-Jul-03	0.63	< 0.20	< 3.00	154.00	8.20	303.00
CMOUT38L	30-Jul-03	3.60	148.58	< 4.00	182.00	8.10	421.00
CMOUT38L	27-Aug-03	0.02	149.48	< 5.00	127.00	8.10	63.00
CMOUT38L	25-Sep-03	95.00	95.42	5.00	183.00	7.80	33.00
CMOUT38L	28-Nov-03	< 0.02	119.41	1.00	192.00	8.20	537.00
CMOUT38L	26-Feb-04	0.40	93.33	< 3.00	68.00	8.20	69.00
CMOUT38L	19-May-04	< 0.02	92.58	< 4.00	87.00	8.20	147.00
CMOUT38L	25-Jun-04	0.09	93.02	< 3.00	49.00	8.20	21.00
CMOUT38L	24-Sep-04	0.03	118.51	6.00	121.00	8.10	121.00
CMOUT38L	29-Oct-04	< 0.02	84.87	< 3.00	88.00	8.20	128.00
CMOUT38L	30-Nov-04	< 0.02	99.71	< 3.00	75.00	8.10	44.00
CMOUT38L	30-Dec-04	68.00	2.39	6.00	85.00	8.00	19.00
CMOUT38L	26-Jan-05	< 0.02	123.04	< 4.00	55.00	8.10	42.00
CMOUT38L	08-Apr-05	75.00	60.95	15.00	185.00	8.10	180.00
CMOUT38L	27-Apr-05	< 0.02	98.13	< 4.00	109.00	8.10	120.00
CMOUT38L	14-Sep-05	72.00	72.85	6.00	121.00	8.20	52.00
CMOUT38L	25-Oct-05	42.00	3.23	11.00	183.00	7.90	337.00
CMOUT38L	09-Dec-05	0.19	113.76	< 5.00	95.00	8.20	105.00
CMOUT38L	18-Mar-06						
CMOUT38L	18-Mar-06		98.35				
CMOUT38L	18-Mar-06		99.18	7.00	143.00		213.00
CMOUT38L	05-Apr-06		97.18	< 4.00	101.00		117.00
Average:		3.59	367.11	6.08	113.54	7.45	58.66
Maximum:		197.60	848.00	40.00	763.00	8.50	537.00
Minimum:		0.01	0.20	1.00	49.00	6.80	5.00
Std Deviation:		16.95	272.19	5.30	63.93	0.38	63.82
No. Records:		264	83	257	266	264	260

Chelson Meadow - Leachate Outfall - River Plym

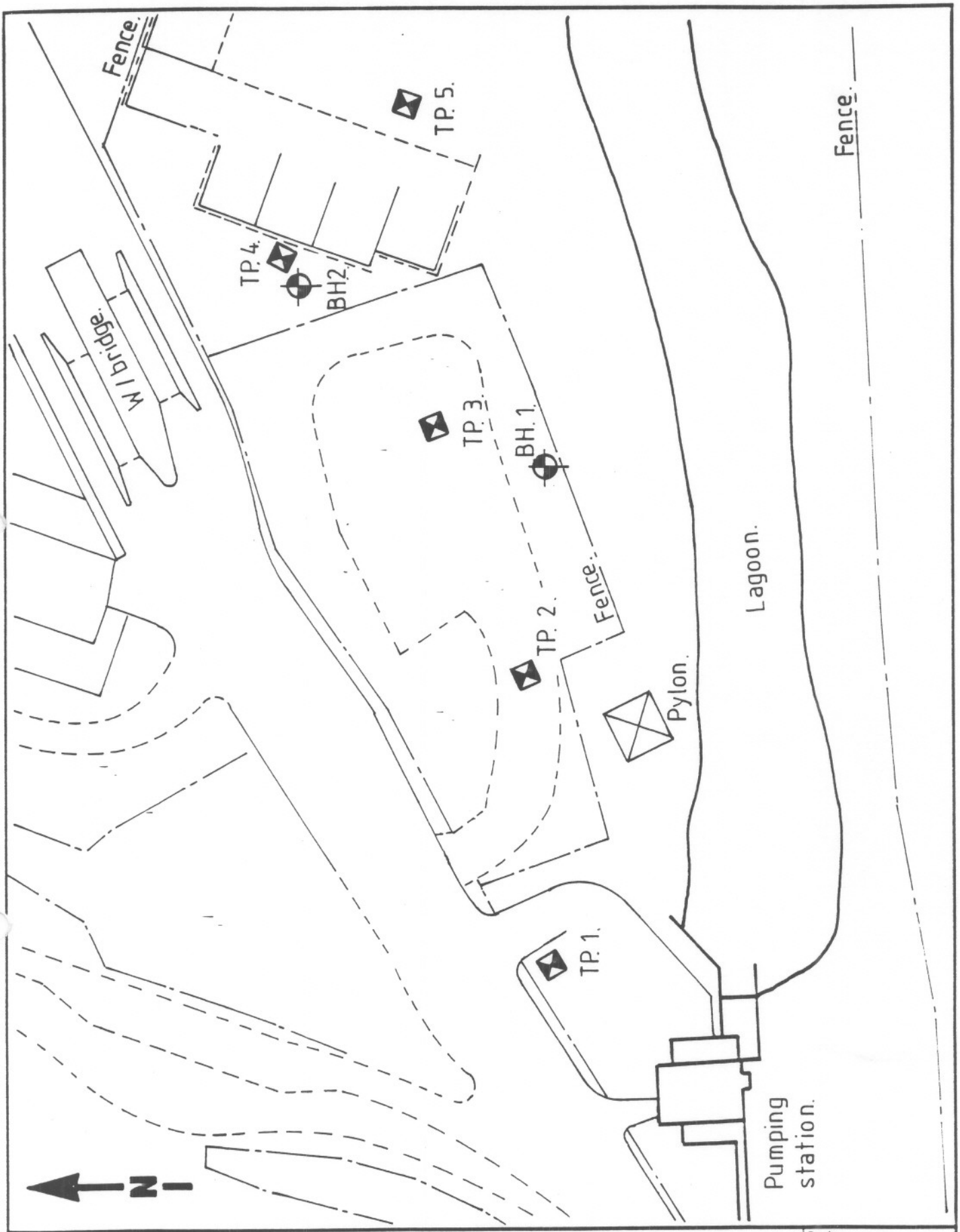
Selected date period is between 01/01/1985 and 15/06/2006

Sample Point ID	Date	NH3-N(mg/l)	NO3(mg/l)	BOD(mg/l)	COD(mg/l)	pH	SS(mg/l)

All Data Point Statistics

Average:	3.59	367.11	6.08	113.54	7.45	58.66
Maximum:	197.60	848.00	40.00	763.00	8.50	537.00
Minimum:	0.01	0.20	1.00	49.00	6.80	5.00
Std Deviation:	16.95	272.19	5.30	63.93	0.38	63.82
No. Records:	264	83	257	266	264	260

C5



Title

EXPLORATORY HOLE LOCATION PLAN

Scale: N.T.S.

STRUCTURAL SOILS

Key to Symbols

- Borehole
- Trial Pit

Drawn By	Date	Checked By	Date
D. M.M.	9:11:94		

Contract

Job No

KEY TO BOREHOLE AND TRIAL PIT LOGS

SAMPLING

U	Undisturbed driven tube sample - 102mm diameter, 450 mm long
P	Undisturbed pushed piston sample - 102mm diameter, 1000mm long
U+, P+	No recovery in undisturbed sample
D	Small disturbed sample
B	Bulk disturbed sample
W	Water Sample
CS	Core sample taken from rotary core for laboratory testing

IN-SITU TESTING

SPT	Standard Penetration Test using split spoon sampler.
CPT	Standard Penetration Test using a solid 60 degree cone.
S+, C+	Seating blows only

Where a single value is quoted this is the N value for 300mm penetration following a seating drive of 150mm. Where this full 300mm penetration is not achieved the number of blows (not an N value) is quoted with the penetration below the seating drive eg. 85/115mm.
Where total penetration is less than the seating drive the number of blows for the total penetration is quoted eg 50/60mm.

V	Field Vane Test. Vane shear strength, c, is quoted in kPa. N=Natural; R=Remoulded
k	Permeability Test. Permeability is quoted exponentially eg. 1.2E-07 m/s.
G	Gas Test

DRILLING RECORDS

W	Water flush returns estimated percentage
TCR	Total Core Recovery, %
SCR	Solid Core Recovery, %
RQD	Rock Quality Designation, %
If	Fracture spacing, mm.

NI (non-intact) used for fragmented core. Minimum, average and maximum spacing may be quoted.

WATER COLUMN SYMBOLS

	First water strike, second water strike etc.
	Standing water level following first strike, standing water level following second strike etc.
	Seepage

INSTRUMENTATION SYMBOLS


Arisings


Bentonite pellets


Solid pipe


Specified material


Bentonite/cement balls


Sand/gravel filter


Slotted pipe


Specified material


Bentonite cement grout


Concrete


Piezometer tip


Stopcock cover

NOTES:
1. All soil and rock descriptions in accordance with British Standards BS 5930:1981, "Code of Practice for Site Investigations".
2. All lengths used to determine rock core mechanical properties taken along the centre line of the core.

STRUCTURAL SOILS

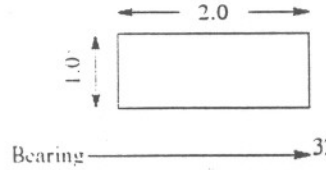
TRIAL PIT LOG

Contract	Client	Trial Pit
Chelson Meadow, Plymouth	Devon Waste Management	No TP1

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	02.11.94	3.95		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Result				
					MADE GROUND: Grass and weeds over firm brown gravelly silty clayey topsoil	(0.30) 0.30	
					MADE GROUND: Firm brown gravelly clayey silt	(0.50) 0.80	
					MADE GROUND: Large concrete boulders with occasional pieces of asphalt, wood and loose grey brown silty sandy gravelly matrix	(1.40) 2.20	
					Trial pit terminated at 2.2m depth due to obstruction in the ground and lack of working space to move machine		

Plan (Not to Scale)



General Remarks

Trial pit dry. Buried cables adjacent to trial pit apparently the supply to treatment plant pump.

All dimensions in metres	Method	Logged	Checked

STRUCTURAL SOILS

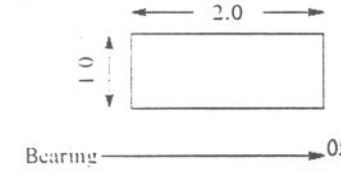
TRIAL PIT LOG

Contract	Client	Trial Pit
Chelson Meadow, Plymouth	Devon Waste Management	No TP2

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	02.11.94	4.19		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
					MADE GROUND: Dense grey sandy gravel surfacing over 50mm asphalt over 100mm dense grey brown gravel sub-base	(0.25) 0.25	
					MADE GROUND: Dense grey silty sandy gravel with concrete cobbles	(0.75) 1.00	
1.00	1	D			MADE GROUND: Medium dense grey brown silty sandy gravel with occasional cobbles and some refuse including polythene sheeting, pieces of wood and a pressed steel sink unit	(0.60) 1.60	
1.60	2	D		▽1	MADE GROUND: Loose grey silty sandy gravel with occasional cobbles and pieces of brick	(1.90) 3.50	
					Trial pit terminated at 3.5m depth due to standing water at 3.0m depth		

Plan (Not to Scale)



General Remarks

Trial pit just stable to 3.0m depth with some local spalling below 1.6m depth. unstable below standing water at 3.0m depth.

All dimensions in metres	Method	Logged	Checked

STRUCTURAL SOILS

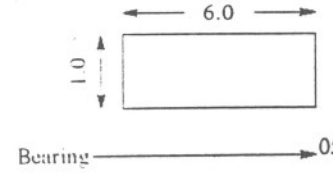
TRIAL PIT LOG

Contract	Client	Trial Pit
Chelson Meadow, Plymouth	Devon Waste Management	No TP3

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	02.11.94	4.39		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
					MADE GROUND: Slate gravel surface over dense grey brown silty sandy gravel with much broken brick, pieces of masonry, occasional steel bars and pieces of wood	(0.40) 0.40	
					MADE GROUND: Loose to medium dense greyish brown silty sandy gravel with concrete cobbles, pieces of wood, polythene sheeting and other waste materials	(1.00) 1.40	
				▽1	MADE GROUND: Large reinforced concrete boulders in a matrix of loose greyish brown silty sandy gravel with cobbles and boulders. Difficult digging due to size and shape of concrete boulders including length of heavily reinforced concrete column	(2.45) 3.85	
					Trial pit terminated at 3.8m depth due to standing water at 3.3m depth		

Plan (Not to Scale)



General Remarks

Trial pit extended to 6.0m length due to concrete boulder obstruction at 1.4m depth. Trial pit stable to 1.4m depth, locally unstable to standing water at 3.3m depth, unstable below water.

All dimensions in metres	Method	Logged	Checked

STRUCTURAL SOILS

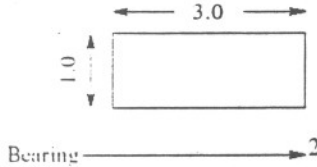
TRIAL PIT LOG

Contract	Client	Trial Pit
Chelson Meadow, Plymouth	Devon Waste Management	No TP4

Job No	Date	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	02.11.94	4.50		1 of 1

Samples and In-situ Tests				Water	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Result				
					MADE GROUND: Rough grass and weeds over loose greyish brown silty sandy gravel with occasional cobbles, much wood and some plastic sheeting, rubber strip, cloth, and a piece of linoleum. Pungent odour eminating from pit at depth	(2.60)	
				∿	Trial pit terminated at 2.6m depth on flat concrete slab which extended beyond plan area of pit	2.60	

Plan (Not to Scale)



General Remarks

Trial pit unstable, water seepage above concrete slab.

All dimensions in metres	Method	Logged	Checked

STRUCTURAL SOILS

BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	1

Job No	Start	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	24/10/94	4.06		1 of 5
	End 26/10/94			

Samples and In-situ Tests				Water	Instrumentation	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Blows					
						MADE GROUND: Scalpings	(0.30) 0.30	
0.30-1.00	1	B				MADE GROUND: Soft grey brown sandy silty very gravelly clay with limestone, slate, polythene and ash fragments and an ammonia odour	(0.70) 1.00	
1.00	2	S+	30/ 0mm			MADE GROUND: Boulders (not recovered)	(0.80) 1.80	
2.00	3	D				MADE GROUND: Firm varying to very soft grey brown sandy silty very gravelly clay with limestone, slate, ash, brick, plastic, polythene, paper, wood and metal fragments and an ammonia odour above 2.10m depth		
2.10-3.00	4	B						
3.00	5	SPT	14					
3.01-4.00	6	B					(4.10)	
4.50	7	SPT	1					
4.51-5.50	8	B						
5.90	9	D					5.90	
6.00	10	U	9			Soft grey speckled black slightly sandy very silty CLAY with some becoming occasional black peaty wood remains (Alluvium)		
6.50	11	D					(1.10)	
7.00	12	D					7.00	
7.50	13	U	40			Soft grey slightly sandy clayey SILT with occasional trace of shells (Alluvium)	(1.00)	
8.00	14	D					8.00	
8.01-8.80	15	B				Very stiff brown slightly sandy clayey SILT with many angular to subrounded slate fragments with occasional limestone and calcite fragments and occasional light grey and black clay (Alluvium)	(0.90)	
8.90	16	D					8.90	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Casing Diameter	Water Depth
24.10.94		3.50	3.00	150	2.0
26.10.94		9.00	8.00	150	8.20

Chiselling

From	To	Hours
1.00	1.70	1.5 hrs
9.50	9.60	1 hr

General Remarks

Some water added below 5.9m depth to assist drilling.

STRUCTURAL SOILS

BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	1

Job No	Start	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	24/10/94	4.06		2 of 5
	End 26/10/94			

Samples and In-situ Tests				Water	Instrumentation	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Blows					
9.00	17	W	61			Green grey and purple very thinly cleaved highly weathered SLATE, very weak, cleavage inclined at 50 deg, smooth with some clay infilling varying to tight with some brown staining	(0.60)	
9.01	18	SPT				(Lower Devonian Slate - Highly Weathered)	9.50	
9.50	19	D	40/ 0mm			Green grey and purple very thinly cleaved slightly weathered SLATE, weak to moderately weak with some staining along discontinuities	9.60	
9.60	20	CPT				(Lower Devonian Slate)		
						Borehole continued by rotary coring at 9.6m depth		

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Casing Diameter	Water Depth
24.10.94		3.50	3.00	150	2.0
26.10.94		9.00	8.00	150	8.20

Chiselling

From	To	Hours
1.00	1.70	1.5 hrs
9.50	9.60	1 hr

General Remarks

Some water added below 5.9m depth to assist drilling.

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	1.

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	Start 26/10/94 End 31/10/94	4.06		3 of 5

Drilling Records			Mechanical Log				Instru-mentation	Description of Strata	Depth (Thick-ness)	Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)				
									(9.60)	
9.60-10.60			0	0	0			Hole continued from Cable Percussion drilling at 9.60m depth Grey fissile thinly cleaved SLATE, very weak to moderately weak with some grey brown silty clay	9.60	

General Remarks

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	1.

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	Start 26/10/94 End 31/10/94	4.06		4 of 5

Drilling Records			Mechanical Log				Instru-mentation	Description of Strata	Depth (Thick-ness) Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)			
								Grey fissile thinly cleaved SLATE, very weak to moderately weak with some grey brown silty clay (Highly weathered Lower Devonian Slate) (not recovered)	(1.30) 10.90
10.60-11.10	S+ 30/ 0mm		40	0	0	1 10 35		Purple and green grey banded very fissile very thinly cleaved very closely to closely jointed highly weathered SLATE weak with occasional thin quartz veins. Cleavage inclined at 50 deg, generally stepped and irregular, generally tight but with a little clay infilling and some brown staining and planar joints inclined at 65 deg	(0.30)
11.10-11.60			100	50	0	5 15 40			
11.60-12.00			100	60	0	8 20 40		Purple and green grey banded very fissile thinly cleaved closely jointed slightly weathered SLATE, weak to moderately strong with occasional thin quartz veins. Cleavage inclined at 50 deg, generally smooth, occasionally stepped, tight with occasional clay smear on discontinuities and occasional brown staining, planar joints inclined at 65 deg (Lower Devonian Slate)	(2.00) 13.20
12.00-12.40			100	50	0	8 20 70			
12.40-12.70	S+ 25/ 0mm		100	50	0	10 20 50			
12.70-13.00			100	40	0	2 15 40			
13.00-13.80			62	30	0	1 10 40		Green grey and purple banded very fissile very thinly cleaved very closely to closely jointed slightly weathered SLATE weak to moderately strong with occasional thin quartz veins, recovered non intact. Cleavage inclined at 50 deg generally smooth, occasionally stepped, tight with brown staining and planar joints inclined at 65 deg (Lower Devonian Slate, Highly Fractured)	(0.40) 13.60
13.80-14.50			100	40	0	5 15 40		Green grey and purple banded SLATE as from 11.20 to 13.20m depth (Lower Devonian Slate)	(1.35) 14.95
14.50-15.10			100	40	0	5 10 50			
15.10-15.85	C+ 25/ 0mm		100	50	0	2 10 50		Zone of highly fractured SLATE as from 13.2-13.6m depth Green grey and purple banded SLATE as from 11.20 to 13.20m depth (Lower Devonian Slate)	(0.65) 15.60
15.85-16.50			85	50	0	2 15 63		Green grey and purple banded SLATE as from 13.2 to 13.6m depth (Lower Devonian Slate)	(0.50) 16.10
16.50-18.00			40	20	0	2 15 90		Green grey and purple banded SLATE as from 11.20 to 13.20m depth but with no clay smear on discontinuities (Lower Devonian Slate)	(1.00) 17.10
								Green grey and purple banded SLATE as from 13.2 to 13.6m depth with no staining on discontinuities (Lower Devonian Slate, Highly Fractured)	(2.00) 19.10
18.00-18.70	C+ 25/ 0mm		50	0	0	1 2 10			
18.70-19.40			50	0	0	1 7 85			
19.40-20.30			100	90	11	3 20 100		Green grey and purple banded SLATE as from 11.2 to 13.2m depth but with no clay smear or brown staining on discontinuities (Lower Devonian Slate)	(1.20)

General Remarks

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	1.

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	Start 26/10/94 End 31/10/94	4.06		5 of 5

Drilling Records			Mechanical Log				Instru-mentation	Description of Strata	Depth (Thick-ness)	Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)				
								Green grey and purple banded SLATE as from 11.2 to 13.2m depth but with no clay smear or brown staining on discontinuities (Lower Devonian Slate)	20.30	
								Borehole terminated at 20.3m depth		

General Remarks

STRUCTURAL SOILS

BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	2

Job No	Start	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	28/10/94	4.50		1 of 3
	End 28/10/94			

Samples and In-situ Tests				Water	Instru-mentation	Description of Strata	Depth (Thick-ness)	Legend
Depth	No	Type	Blows					
0.00-1.00	1	B				MADE GROUND: Firm grey brown very gravelly sandy silty clay with limestone, slate, polythene and plastic fragments	(1.00) 1.00	
1.00	2	CPT	50/			MADE GROUND: Limestone and concrete boulders, cobbles and gravel with some sandy silty clay		
1.01-2.00	3	B	75mm				(1.00) 2.00	
2.00-2.50	4	B				MADE GROUND: Firm brown slightly sandy silty clay with some angular to subrounded limestone and slate fragments, occasional red and black clay and occasional ash fragments		
2.50-3.00	5	B						
3.00	6	SPT	30				(2.50)	
3.01-4.00	7	B						
							4.50	
4.50	8	SPT	15			Medium dense grey brown slightly silty sandy angular to rounded fine to coarse limestone, slate and occasional flint GRAVEL with an ammonia odour (Alluvium)		
4.51-5.50	9	B					(1.25)	
5.50-6.00	10	B					5.75	
6.00	11	SPT	0			Very soft grey mottled black slightly sandy silty CLAY with some becoming occasional black peaty deposits (Alluvium)		
							(1.25)	
7.00	12	D					7.00	
7.50	13	U	9			Soft becoming firm grey slightly sandy silty, becoming clayey SILT with occasional shells (Alluvium)		
8.00	14	D					(2.00)	
8.50	15	D						
							9.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Casing Diameter	Water Depth

Chiselling		
From	To	Hours
1.00	1.50	1.5 hrs
10.70	10.80	0.5 hr

General Remarks

STRUCTURAL SOILS

BOREHOLE LOG

Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	2

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	Start 28/10/94 End 28/10/94	4.50		2 of 3

Samples and In-situ Tests				Water	Instrumentation	Description of Strata	Depth (Thickness)	Legend
Depth	No	Type	Blows					
9.00	16	U	14			Firm grey slightly sandy clayey SILT with occasional traces of slate gravel (Alluvium)	(0.80)	
9.50	17	D					9.80	
9.80	18	D				Very stiff brown slightly sandy clayey SILT with many angular to subrounded slate fragments (Alluvium)	(0.40)	
10.00	19	SPT	41				10.20	
						Green grey and purple very thinly cleaved highly weathered SLATE, very weak (Lower Devonian Slate - Highly Weathered)	(0.50)	
10.80	20	S+	50/ 75mm			SLATE, weak to moderately weak (not recovered) (Lower Devonian Slate)	10.70	
						Borehole continued by rotary coring at 10.80m depth	10.80	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Casing Diameter	Water Depth

Chiselling		
From	To	Hours
1.00	1.50	1.5 hrs
10.70	10.80	0.5 hr

General Remarks

STRUCTURAL SOILS

ROTARY BOREHOLE LOG

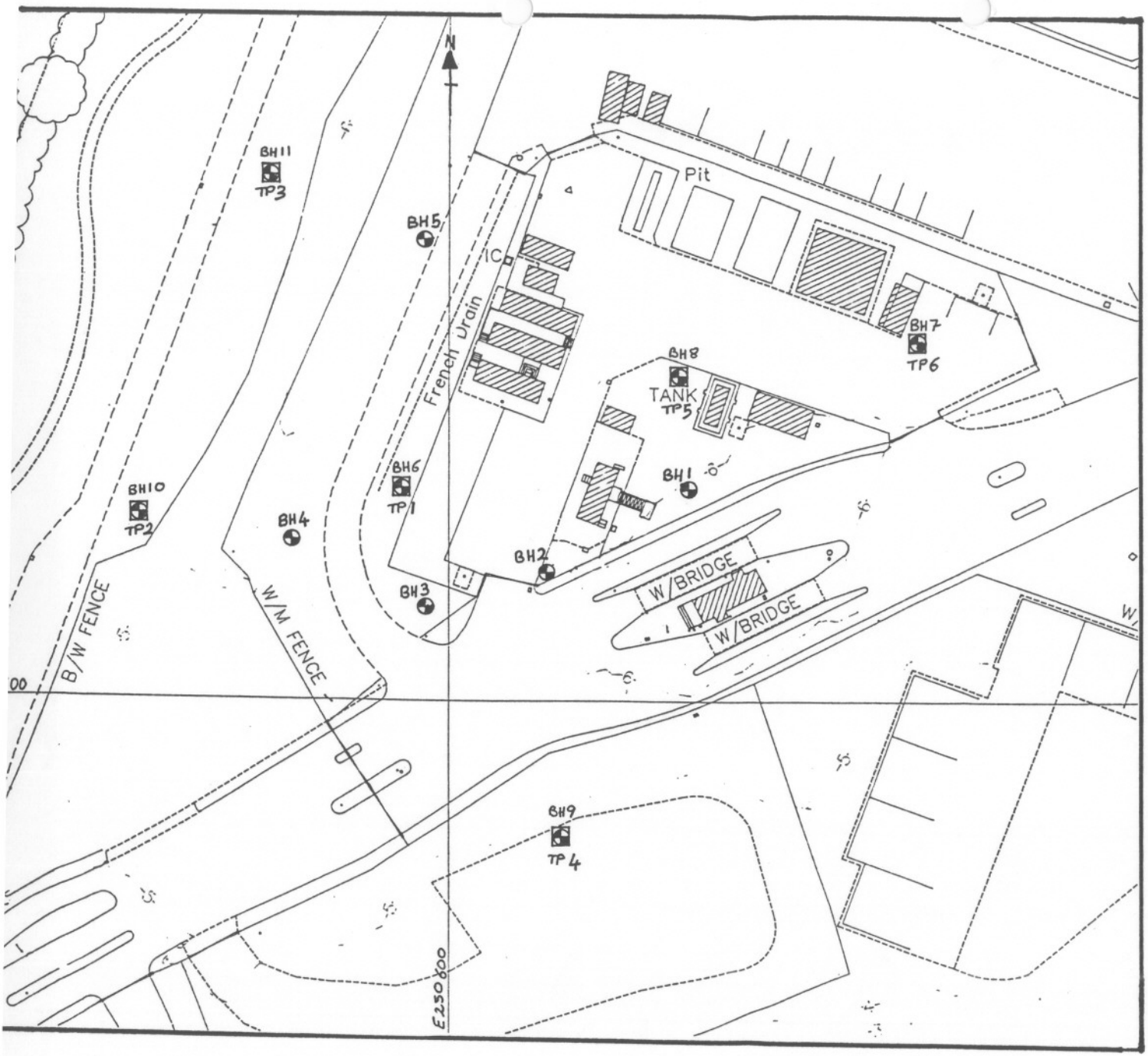
Contract	Client	Borehole No
Chelson Meadow, Plymouth	Devon Waste Management	2.

Job No	Start / End	Ground Level (m AOD)	Co-Ordinates	Sheet
41037	Start 01/11/94 End 01/11/94	4.50		3 of 3

Drilling Records			Mechanical Log				Instru-mentation	Description of Strata	Depth (Thick-ness)	Legend
Depth	Test	W	TCR	SCR	RQD	If (mm)				
								Hole continued from Cable Percussion hole at 10.80m depth	10.80	
10.80-11.00			100	0	0	1		Grey fissile thinly cleaved SLATE, very weak to moderately weak with some grey brown silty clay (Highly Weathered Lower Devonian Slate)	11.00	
11.00-11.50			100	10	0	5 20 1		Purple and green grey banded fissile thinly cleaved closely jointed slightly weatehred SLATE, moderately weak to moderately strong, with occasional thin quartz veins. Cleavage inclined at 45-50 deg, generally smooth occasionally stepped, tight with some brown staining and planar joints inclined at 65 deg (Lower Devonian Slate)	(0.50) 11.50	
11.50-12.00			30	0	0	10 30 1			(0.50) 12.00	
12.00-12.50			100	60	0	6 15 2			(0.40) 12.40	
12.50-13.80	C+ 25/ 0mm		45	25	0	10 50 45 0 25		Green grey and purple banded fissile thinly cleaved very to extremely closely jointed slightly weathered SLATE, weak to moderately strong with occasional thin quartz veins, recovered non intact. Cleavage inclined at 45-50 deg, generally smooth occasionally stepped, tight with some brown staining and planar joints inclined at 65 deg (Lower Devonian Slate, highly fractured)	(0.95) 13.35	
								Green grey and purple banded SLATE as from 11.00 to 11.50m depth (Lower Devonian Slate)	(0.45) 13.80	
13.80-14.30			10	5	0	10 5 0		Green grey and purple banded SLATE as from 11.5 to 12.0m depth (Lower Devonian Slate, Highly Fractured)		
								Green grey and purple banded SLATE as from 11.00 to 11.50m depth (Lower Devonian Slate)		
14.30-15.30			65	60	0	2 20 90		Green grey and purple banded SLATE as from 11.5 to 12.0m depth (Lower Devonian Slate, Highly Fractured)	(0.85) 14.65	
								Green grey and purple banded SLATE as from 11.0 to 11.50m depth (Lower Devonian Slate)		
15.30-16.00			100	90	0	3 20 70			(1.35) 16.00	
								Borehole terminated at 16.00m depth		

General Remarks

Rotary coring from 9.60m to 10.80m to clear infill from hole, no recovery. Bentonite used to assist recovery of slate corestone at 13.80m depth.



● BOREHOLE LOCATIONS

■ TRIAL PIT LOCATIONS WITH BOREHOLES

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JOB: CHELSON MEADOW VISITORS CENTRE

JOB No: 1503

FIGURE No: 2

TITLE: SITE PLAN

SCALE: 1:500 (WHEN A3 SIZE)

DRAWN BY: HP DATE: 10/93

JH ENGINEERING GEOLOGISTS

JOB CHELSON MEADOW VISITORS CENTRE JOB NO: 1503

B H LOG No: 9

SHEET 1 OF 1

TYPE OF BORING: CABLE PERCUSSION CASING DETAILS: 150mm to 3.00m START DATE: 22.9.93.

EQUIPMENT: PILCON WAYFARER BOREHOLE DIAMETER: 150mm to 4.00m GROUND LEVEL 4.83mAOD

Date & Time	Casing Depth (m)	Water Level	SAMPLE Depth (m)	Type	No.	DESCRIPTION OF STRATA	Depth (m) (Thickness)	Level (m.O.D.)	Strata Symbol
22.9.93	-	-				MADE GROUND - Soft to firm brown very clayey sandy silt with some medium angular gravel. (Top soil)	0.80	4.03	
	1.00		1.30 - 1.70	B	1	MADE GROUND - Soft becoming firm to stiff yellow brown mottled black sandy silty clay with some fine to coarse slate gravel, some tarmac, twigs and plastic from 1.30 to 1.70m. Bricks and cement present at 2.00m.	(3.20+)		
	2.00		2.80 - 3.20	B	2		3.00	1.83	
	3.00	3.20	3.20 - 4.00	B	4	Dense dark grey fine to coarse angular slate GRAVEL, some cobble size, with some a brown sandy silty clay.	(1.00+)		
		3.50	3.50	W	3				
22.9.93							4.00	0.83	
						End of Borehole 9 at .400m			

REMARKS:

1. Chiselling through obstruction (bricks) at 2.00m.
2. Groundwater encountered at 3.50m. Boring suspended and water level monitored for 20 minute period: 5min = 3.40m : 10min = 3.30m : 15min = 3.20m : 20min = 3.20m.
3. PVC Gas monitoring standpipe installed within borehole upon completion, with tip at 4.00m. Standpipe perforated from 4.00m to 1.00m, and plain to ground level. Installation completed with screw-on gas valve assembly housed within a lockable steel stop-cock cover.

4. Backfilled gravel filter from 4.00m to 1.00m, bentonite seal to 0.50m and concrete to ground

JWH ENGINEERING GEOLOGISTS

JOB: CHELSON MEADOW VISITORS CENTRE JOB NO: 1503

TRIAL PIT NO: 4

SHEET 1 OF 1

DATE: 9.9.93.

EXCAVATOR: JCB 3CX WITH 450MM WIDE TOOTHED BUCKET

LOGGED BY: AJW

Depth (m)	SAMPLES/TESTS TYPE	SAMPLES/TESTS DEPTH/RESULTS	GROUND WATER	DESCRIPTION OF STRATA	DEPTH (Thickness) (m)	LEVEL (mOD)	LEGEND
				MADE GROUND - Dense brown sandy gravelly silt with much brick, metal and concrete.	0.40	4.83 4.43	
1	B1	1.20m		MADE GROUND - Dense grey silty sand and gravel with pieces of brick, wood, metal and some cobbles and boulders.	(1.00) 1.40	3.43	
2				MADE GROUND - Very dense highly mixed silty sand and gravel with many pieces of concrete, brick, wood and metal. Some boulder size pieces of concrete.	(0.80) 2.20	2.63	
	B2	2.50m		MADE GROUND - Dense pinkish grey clayey silty sand and gravel with some pieces of wood, brick and concrete.	(0.60+) 2.80	2.03	
3				Trial pit terminated at 2.80m depth			
4							
5							

REMARKS:
1. No groundwater encountered.
2. Some spalling of trial pit sidewalls.
3. Slow to excavate below 1.40m depth.
4. Backfilled with arisings upon completion.

SITE REPORT
Appendix D

Appendix D1 Assessment of the Likelihood of Land Pollution

Table D1A Assessment of the Likelihood of Land Pollution

Site Operation or Site Zone	Substance	Relevant Activity	Potential for Pollution from the relevant activity	1. Records of pollution	2. Existence of pollution prevention measures	Nature of Primary Containment	Testing and Inspection of Primary Containment	Nature of Secondary Containment	Column continue on t table 2B
Name Unit Operation and refer to the relevant section of the Permit Site Report containing its description	**Name substance, provide CAS RN if appropriate as well as manufacturers product name. Volume stored. For mixtures provide breakdown of polluting substances and percentage by volume.**	**Detail the relevant activity for each substance where the location, pollution risk or pollution prevention measures differ**	**Detail the failure mechanism and potential pollution arising from the loss of primary containment**	**Detail any incidents of pollution or spills from the relevant activity. This can be based on visual assessment during site reconnaissance, installation or other records and data sources. Have measures been put in place to ensure no further pollution incidents?**	**Do pollution prevention measure exist for each element of the relevant activity ?**	**Detail the nature of the storage vessel, including volume, location and provide unique reference number and indicate which site plan it is shown on**	**Provide details of a testing and inspection programme or reference to a separate document, e.g. pressure tests, leak tests, material thickness checks etc.**	**Detail the nature of the secondary containment.**	→
Leachate treatment by SBRs 1-4	Landfill leachate	1.Delivery of leachate by underground pipe	Loss from broken/cracked pipes	No evidence/records of spills or leaks	Yes	Rising main, underground, Drawing No. WD/W1/472, Appendix A1	Annual CCTV inspection	None	→
		2.Storage/ treatment within SBR	Spillage from collapse of SBR walls	None	Yes	Reinforced concrete above ground structure, SBR, Drawing No. WD/W1/472, Appendix A1	Monthly visual and annual engineering report	None	
		3.Discharge via under ground pipe	Loss from broken/cracked pipes	No evidence/records of spills or leaks	Yes	Effluent return line, underground, Drawing No. WD/W1/472, Appendix A1	Annual CCTV inspection	None	→
		4.Discharge via channel and outfall pipe	Loss from broken/cracked channel	No evidence/records of spills or leaks	Yes	Discharge channel, sub-surface, Drawing No. WD/W1/472, Appendix A1	Monthly visual inspection	None	→
		5.Reseeding by road tanker	Spillage from road tanker or delivery pipe work to land	No evidence/records of spills or leaks	Yes	Road tanker	Not applicable to LTPI	None	→
		6.Sludge removal	Loss from decant pipe work to land	No evidence/records of spills or leaks	Yes	De-sludge discharge pipe, underground, Drawing No. WD/W1/472, Appendix 1.	Annual CCTV inspection	None	→
		7. Addition of anti-foam	Loss to land during movement of containers	No evidence/records of spills or leaks	Yes	HDPE drums	None	None	→

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Table 1B Assessment of the likelihood of land pollution, continued

Continued from table 1A →	Testing and Inspection of Secondary Containment	Nature of Tertiary Containment	Testing and Inspection of Tertiary Containment	3. Adequacy of pollution prevention measures Yes/No	4. Are the proposed Integrity testing of pollution prevention measures Adequate Yes/No	5. Is there an adequate documented management system to demonstrate operator management and competence with the relevant activity?	The assessment on the likelihood of pollution and hence the need to collect reference samples will be made on the questions set in the GREEN columns on this table and supported by the information provided. To make the case that there is little likelihood of pollution the Applicant will need to provide the following answers: Green Column 1 - No past pollution incidents or spillages Green Column 2 - Yes pollution prevention measures exist for each relevant activity Green Column 3 - Yes pollution prevention measures are adequate Green Column 4 - Yes adequate integrity testing undertaken or proposed Green Column 5 – Yes there is an adequate management system IF THE ABOVE CRITERIA CANNOT BE SATISFIED THEN THERE IS THE REASONABLE POSSIBILITY OF POLLUTION AND THE OPERATOR WILL NEED TO COLLECT REFERENCE DATA IN THE SITE PROTECTION MONITORING PROGRAMME	
	Provide details of a testing and inspection programme or reference to a separate document, e.g. pressure tests, leak tests, material thickness checks etc.	Detail the nature of the tertiary Containment	Provide details of a testing and inspection programme or reference to a separate document, e.g. pressure tests, leak tests, material thickness checks etc.	Do the pollution prevention measures and testing and inspection programme comply with the indicative requirements set out in Box 5 ? If yes then justify how.				
							Little Likelihood of pollution ?	Reasonable P of Pollution ?
→	1.None	None	None	Yes	Yes	Yes	✔	-
→	2.None	None	None	Yes	Yes	Yes	✔	-
→	3.None	None	None	Yes	Yes	Yes	✔	-
→	4.None	None	None	Yes	Yes	Yes	✔	-
→	5.None	None	None	N/A:	N/A	N/A	✔	-
→	6.None	None	None	Yes	Yes	Yes	✔	-
→	7.None	None	None	No. Bunded area to be constructed	N/A	Yes	✔	-

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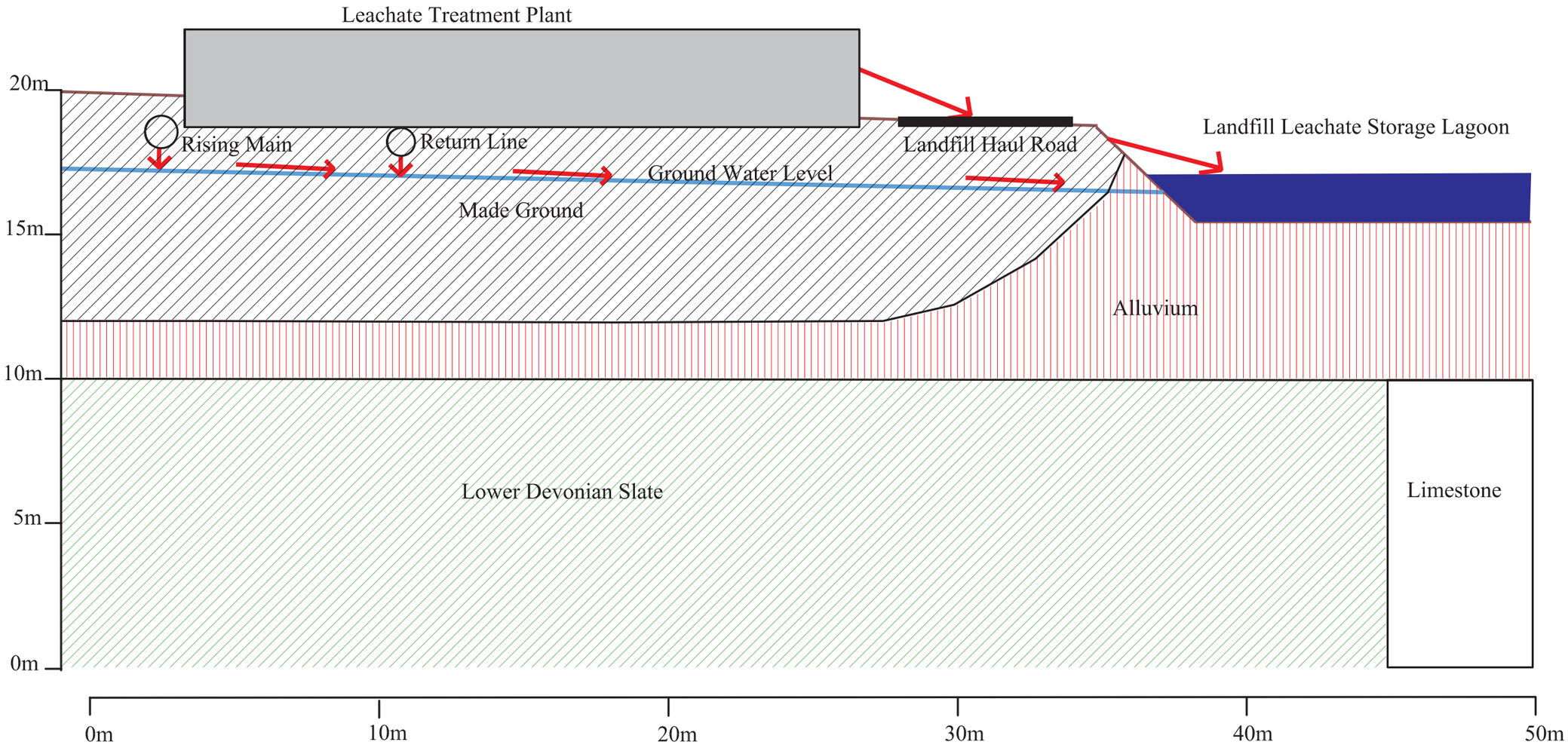
SITE REPORT
Appendix E

Appendix E1: Graphical Conceptual Site Model for Chelson Meadow Leachate Treatment Plant:

Potential Pollution Pathways arising from Storage & Treatment of Leachate



SITE REPORT
Appendix F