EA-WATER RESOURCES BOX 12

1997

ENVIRONMENT AGENCY

REFERENCE COPY ONLY

OTHER

HYDROMETRIC ASSET DATABASE

WELSH REGION WATER RESOURCES
HYDROMETRIC ASSET DATABASE

1. Background

Welsh region have for several years held information relating to Water Resources fixed and mobile assets on a Dataease database. The database is used both by area and regional staff and is used for SLA and gauging stations classification however some drawbacks to the system include being PC based, limited accessibility, maintenance and software support. During 1996 it was decided to migrate the database to a networked, windows platform/database which would allow multi-user and multi-site access. This would increase data accessibility, use of the system, improve asset management particularly with the potential to be linked to a mapping tool.

2. Progress to Date

A contract was let in October 1996 to document the existing system and develop a functional specification for the migration of the database from Dataease to a windows database. The aim was to migrate the system with very little change to the functionality or data storage. Once the database was established on a new system future developments would include changes to functionality etc. Inevitably some database structural changes would be necessary due to the differences between Dataease and another windows database. The draft functional specification is now complete. The next stage was to go on to the actual migration however year 2000 and convergence issues need to be resolved.

3. More on the Database

A myriad of information relating to both fixed (e.g River Flow Gauging stations) or mobile (e.g. loggers) assets is stored within the database. Repair and maintenance information for river flow monitoring stations, utilities (e.g. phone accounts) and reporting facilities are also built into the database.

Fixed assets include - River Flow Monitoring stations (level and flow), Rain Gauge stations, Groundwater stations, Spot Gauging sites, Reservoirs, stores, staff gauges.

Mobile assets include - loggers, sensors, current meters, winches, cableways, dippers, batteries, diptones, vodaphones etc.

As an example some of the information stored for a fixed asset e.g. River flow monitoring stations includes:

- river name, fresh/tidal ratio, catchment area, Hydro reference number, distance from river mouth, measurement structure, centre crest/channel height, crest tappings, zero staff gauge height u/s and d/s, bankfull stage, ordnance datum, NGR of OD, Cartesian reference of OD, local datum, NGR of local datum, description of local datum, channel width, channel length, fixed frequency, no. of rating equations, time series (fresh/tidal), autographic chart, telemetry, alarms, daily mean flows, river temperature, temperature chart, fish counter, fish pass, level class, date entered, date last modified etc.

Jennifer Taylor, 2/9/97.

681.3.06/ENV

Hyrometric Asset Database
Design Specification

DRAFT COPY

NATIONAL GRO[illegible]WATER
& CONTAMI[illegible]
LAND CEN[illegible]

Author: S.B.Clarke

Tested: J Taylor, H Cuddihee

The information contained in this document is subject to change without notice. If you find any problems with the documentation, please report them to the holder of the master document.

Document Number	Version	Date
RSP EA0001	1.0 Pre Release	08/05/97 11:27
RSP EA0001	2.0 Pre Release	11 July, 1997

ENVIRONMENT AGENCY
016484

 © Regent Design 1997

Release History:

Change Details	Version	Date
First Release of draft specification	1.0 Pre Release	08/05/97 11:27
Changes following first read of document	2.0 Pre Release	11 July, 1997

Short Table of Contents

1 INTRODUCTION **8**

1.1 General 8
1.2 Sources of information / Cross references to other documents 8
1.3 Scope and overview of application 9
1.4 Development / Run time environment 12
1.5 Software General Overview 12

2 FUNCTIONAL SPECIFICATION **15**

2.1 Functional Requirements 15
2.2 Overall approach to the Database Software 16
2.3 User Interface 17

3 DATABASE DESIGN **124**

3.1 Overall Structure of the database 124
3.2 Entity relationship diagram 125
3.3 General notes on field checking 127
3.4 Main Analysis of Main Tables 127
3.5 Look up tables 144

4 MIGRATION **154**

4.1 Mapping Old to New Database 154
4.2 Migration Software 155
4.3 Testing the migrated database 155

5 APPENDICES **155**

5.1 Existing Dataease design 155

Contents

1 INTRODUCTION 8

1.1 GENERAL 8
1.1.1 Reason for making the change 8
1.2 SOURCES OF INFORMATION / CROSS REFERENCES TO OTHER DOCUMENTS 8
1.3 SCOPE AND OVERVIEW OF APPLICATION 9
1.3.1 Purpose of the Software 9
1.3.1.1 Scope of the Database 9
1.3.2 Network Topology 11
1.3.2.1 User Access 12
1.4 DEVELOPMENT / RUN TIME ENVIRONMENT 12
1.5 SOFTWARE GENERAL OVERVIEW 12
1.5.1 Software Platform 12
1.5.2 Software background 13

2 FUNCTIONAL SPECIFICATION 15

2.1 FUNCTIONAL REQUIREMENTS 15
2.2 OVERALL APPROACH TO THE DATABASE SOFTWARE 16
2.3 USER INTERFACE 17
2.3.1 Menus 18
2.3.2 Main Menu 18
2.3.2.1 Site Details 18
2.3.2.1.1 Site Address 19
2.3.2.1.2 View History 21
2.3.2.1.3 Fixed Assets 22
2.3.2.1.3.1 Fixed Asset Main Entry 22
2.3.2.1.3.2 Fixed Asset Address Tab 25
2.3.2.1.3.3 Fixed Asset Terrier Details Tab 26
2.3.2.1.3.4 Fixed Asset Capital Details Tab 27
2.3.2.1.3.5 Fixed Asset Links Tab 28
2.3.2.1.3.6 River Flow Monitoring Stations 30
2.3.2.1.3.6.1 Additional Details - RFMS River Details 30
2.3.2.1.3.6.2 Additional Details - RFMS Relative levels 31
2.3.2.1.3.6.3 Additional Details - RFMS Data Availability 33
2.3.2.1.3.6.4 Additional Details - RFMS Intake Details 35
2.3.2.1.3.6.5 Additional Details - RFMS Rating equations 36
2.3.2.1.3.6.6 Additional Details - RFMS IOH Details 38
2.3.2.1.3.6.7 Additional Details - RFMS Rating Station description 40
2.3.2.1.3.7 Rain gauging Stations 41
2.3.2.1.3.7.1 Additional Details - RGAS details 41
2.3.2.1.3.7.2 Additional Details - RGAS observer details 42
2.3.2.1.3.7.3 Additional Details - RGAS station details 43
2.3.2.1.3.7.4 Additional Details - RGAS recording details 44
2.3.2.1.3.8 Bore Holes 45
2.3.2.1.3.8.1 Additional Details - BGS Ref Numbers 46
2.3.2.1.3.8.2 Additional Details - Borehole Aquifer details 46
2.3.2.1.3.8.3 Additional Details - Relative levels 47
2.3.2.1.3.8.4 Additional Details - Borehole / Well details 50
2.3.2.1.3.8.5 Additional Details - Database records 52
2.3.2.1.3.8.6 Additional Details - Data Availability 53
2.3.2.1.3.9 SPOT Gauging sites 54
2.3.2.1.3.9.1 Additional Details - SPOT Gauging sites 54
2.3.2.1.3.10 STORE fixed assets 55
2.3.2.1.3.10.1 Additional Details - SPOT Gauging sites 55
2.3.2.1.3.11 Reservoir fixed assets 57
2.3.2.1.3.11.1 Additional Details - Reservoirs General Information 57
2.3.2.1.3.11.2 Additional Details - Reservoirs Relative Levels 58
2.3.2.1.3.11.3 Additional Details - Reservoirs - Storage details 60
2.3.2.1.3.11.4 Additional Details - Reservoirs - Data availability 61

2.3.2.1.3.12 STAFF fixed assets ... 62
2.3.2.1.3.12.1 Additional Details - STAFF - details ... 62
2.3.2.1.3.12.2 Additional Details - STAFF type and attachment ... 63
2.3.2.1.3.12.3 Additional Details - STAFF relative levels ... 64
2.3.2.1.4 Register Mobile Assets ... 66
2.3.2.1.4.1 Mobile Assets - Cost Details Tab. ... 68
2.3.2.1.4.2 Mobile Assets - Mobile Asset Linkages Tab. ... 69
2.3.2.1.4.3 Mobile Assets additional details - Autographic recorders Installation Details ... 70
2.3.2.1.4.4 Mobile Assets additional details - Autographic recorders Chart Details ... 71
2.3.2.1.4.5 Mobile Assets additional details - Sensor Information ... 72
2.3.2.1.4.6 Mobile Assets additional details - Sensor Installation ... 74
2.3.2.1.4.7 Mobile Assets additional details - Data Logger Information ... 75
2.3.2.1.4.8 Mobile Assets additional details - Linked sensors ... 76
2.3.2.1.4.9 Current Meters additional details - ... 77
2.3.2.1.4.10 Chart additional details ... 78
2.3.2.1.4.11 Rain gauge additional details - ... 78
2.3.2.1.4.12 Gas Sensor additional details ... 79
2.3.2.1.4.13 Winch additional details ... 80
2.3.2.1.4.14 Cableway additional details ... 80
2.3.2.1.4.15 Bomb additional details ... 81
2.3.2.1.4.16 Vodaphone additional details ... 82
2.3.2.1.4.17 Dipper additional details ... 82
2.3.2.1.4.18 Battery and Battery batches additional details ... 83
2.3.2.1.4.19 Diptone additional details ... 84
2.3.2.1.4.20 Counter additional details ... 84
2.3.2.1.5 Repairs and Maintenance ... 86
2.3.2.1.5.1 RFMS Repair and Maintenance - General ... 86
2.3.2.1.5.2 RFMS repair and maintenance - Structure details ... 87
2.3.2.1.5.3 RFMS repair and maintenance - External Roofs / Walls repair ... 88
2.3.2.1.5.4 RFMS repair and maintenance - Floors repair ... 90
2.3.2.1.5.5 RFMS repair and maintenance - Internal Walls / Ceilings repair ... 91
2.3.2.1.5.6 RFMS repair and maintenance - Interior decorations / Miscellaneous repairs ... 92
2.3.2.1.5.7 RFMS repair and maintenance - repair schedule ... 93
2.3.2.1.5.8 RFMS repair and maintenance - Maintenance Schedule ... 94
2.3.2.2 Utilities menu ... 96
2.3.2.2.1 Telephone accounts - Main details ... 96
2.3.2.2.2 Telephone accounts - Additional details ... 98
2.3.2.2.3 Telephone accounts - Bill details ... 99
2.3.2.2.4 Electricity accounts - Main Details ... 100
2.3.2.2.5 Electricity accounts - Bill Details ... 102
2.3.2.2.6 Vodaphone accounts - Main details ... 103
2.3.2.2.7 Vodaphone accounts - Bill details ... 104
2.3.2.2.8 Supporting activities ... 106
2.3.2.2.8.1 Update Lookup Tables ... 106
2.3.2.2.8.2 Backup Data ... 110
2.3.2.2.8.3 Change Database History ... 110
2.3.2.2.8.4 Passwords ... 111
2.3.2.2.9 Reports ... 112
2.3.2.2.9.1 General Reports: ... 113
2.3.2.2.9.1.1 Current Meters / Impellors: ... 113
2.3.2.2.9.1.2 Makers of Mobile Assets ... 113
2.3.2.2.9.1.3 Location of Loggers and sensors ... 114
2.3.2.2.9.1.4 List of Fixed Assets (Registered) ... 114
2.3.2.2.9.1.5 List of Mobile Assets (Registered) ... 115
2.3.2.2.9.1.6 List of RFMS ... 115
2.3.2.2.9.1.7 List of RGAS ... 116
2.3.2.2.9.1.8 List of RFMS in CSV format ... 116
2.3.2.2.9.1.9 Station Audit Report ... 116
2.3.2.2.9.1.10 Ratings Equations ... 117
2.3.2.2.9.1.11 Export SPOT gauging data for MAPINFO ... 117
2.3.2.2.9.1.12 List of RFMS on site ... 117
2.3.2.2.9.1.13 List of RGAS on site ... 118
2.3.2.2.9.1.14 List of RES on site ... 119
2.3.2.2.9.1.15 List of BORE on SITE ... 120

2.3.2.2.9.1.16 River Flow Measurement Stations Service Level agreements 121
2.3.2.2.9.1.17 River Level Measurement Stations Service Level agreements 121
2.3.2.2.9.1.18 Ground Water Measurement Stations Service Level agreements 122
2.3.2.2.9.1.19 Reservoirs Service Level Agreements 122
2.3.2.2.9.1.20 Storage Raingauges Service Level Agreements 123
2.3.2.2.9.1.21 Telemetric/ Logger Raingauges Service Level Agreements 123
2.3.2.2.9.1.22 Temperature Measurement Service Level Agreements 124
2.3.2.2.9.2 Maintenance Reports: 124
2.3.2.2.9.2.1 Schedule 1 (Grass cutting) contracting out reports 124
2.3.2.2.9.2.2 Schedule 2 (Weed Clearance) contracting out reports 124
2.3.2.2.9.2.3 Schedule 3 (Weircrest and gauge board cleaning) contracting out reports 124
2.3.2.2.9.2.4 Schedule 4 (Cableway maintenance) contracting out reports 124
2.3.2.2.9.2.5 Schedule 5 (gravel / silt removal) contracting out reports 124
2.3.2.2.9.2.6 Schedule 6 (Building maintenance) contracting out reports 124

3 DATABASE DESIGN 124

3.1 OVERALL STRUCTURE OF THE DATABASE 124
3.2 ENTITY RELATIONSHIP DIAGRAM 125
3.3 GENERAL NOTES ON FIELD CHECKING 127
3.4 MAIN ANALYSIS OF MAIN TABLES 127
3.4.1 Site Asset Definition 128
3.4.2 Fixed Assets 128
3.4.3 RFMS Additional Information 129
3.4.4 RGAS Additional Information 132
3.4.5 BORE Additional Information 133
3.4.6 STORE Additional Information 134
3.4.7 RES Additional Information 134
3.4.8 Staff Additional Information 135
3.4.9 Mobile Assets 136
3.4.10 CMTS Additional Information table 137
3.4.11 Autographic Additional Information 137
3.4.12 Logger Additional Information 138
3.4.13 Raingauge Additional Information 138
3.4.14 Gas Detector Additional Information 138
3.4.15 Cable Way Additional Information 138
3.4.16 BOMB Additional Information 139
3.4.17 Dipper Additional Information 139
3.4.18 Battery Additional Information 139
3.4.19 Counter Additional Information 139
3.4.20 Ratings 140
3.4.21 Addresses 140
3.4.22 Upgrade Log 140
3.4.23 Impellors 141
3.4.24 Telephone Details 141
3.4.25 Telephone Bills 142
3.4.26 Electricity Details 142
3.4.27 Electricity Bills 142
3.4.28 Vodaphone Details 143
3.4.29 Vodaphone Bills 143
3.5 LOOK UP TABLES 144
3.5.1 Address Types 145
3.5.2 Agency Regions 146
3.5.3 Asset Types 146
3.5.4 Fixed Asset Status Description 146
3.5.5 Mobile Asset Status Description 146
3.5.6 Catchment Area s 147
3.5.7 Asset Ownership 147
3.5.8 Departmental Contribution 147
3.5.9 Measurement Structures 147

3.5.10 RFMS Measurement Authorities *147*
3.5.11 RFMS Station Types *148*
3.5.12 RFMS Runoff Factors *148*
3.5.13 RGAS Purposes *148*
3.5.14 Frequencies/Days *148*
3.5.15 Media Types *149*
3.5.16 Aquifer Details *149*
3.5.17 Logger Event Frequency *149*
3.5.18 Construction Types *149*
3.5.19 Backing Board Types *149*
3.5.20 Model Details *150*
3.5.21 Staff *150*
3.5.22 Reservoir record types *150*
3.5.23 Keys *151*
3.5.24 Visit Reasons *151*
3.5.25 Battery Connector Terminal *151*
3.5.26 Telephone Usage *151*
3.5.27 Logger Types *151*
3.5.28 Dipper Indicator *152*
3.5.29 BOMB Connection Type *152*
3.5.30 Sensor Type *152*
3.5.31 Chart float types *152*
3.5.32 Chart pen types *152*
3.5.33 Chart power types *153*
3.5.34 Chart paper types *153*
3.5.35 Sensor Card types *153*
3.5.36 Logger Usage Types *153*
3.5.37 Cableway power types *153*
3.5.38 Battery types *153*
3.5.39 Telecom companies *154*
3.5.40 Electric companies *154*

4 MIGRATION **154**

4.1 MAPPING OLD TO NEW DATABASE 154
4.2 MIGRATION SOFTWARE 155
4.3 TESTING THE MIGRATED DATABASE 155

5 APPENDICES **155**

5.1 EXISTING DATAEASE DESIGN 155

Hyrometric Asset Database
Design Specification

DRAFT COPY

Author: S.B.Clarke

Tested: J Taylor, H Cuddihee

The information contained in this document is subject to change without notice. If you find any problems with the documentation, please report them to the holder of the master document.

Document Number	Version	Date
RSP EA0001	1.0 Pre Release	08/05/97 11:27
RSP EA0001	2.0 Pre Release	11 July, 1997

 © Regent Design 1997

Release History:

Change Details	Version	Date
First Release of draft specification	1.0 Pre Release	08/05/97 11:27
Changes following first read of document	2.0 Pre Release	11 July, 1997

Short Table of Contents

1 INTRODUCTION 8

1.1 General 8
1.2 Sources of information / Cross references to other documents 8
1.3 Scope and overview of application 9
1.4 Development / Run time environment 12
1.5 Software General Overview 12

2 FUNCTIONAL SPECIFICATION 15

2.1 Functional Requirements 15
2.2 Overall approach to the Database Software 16
2.3 User Interface 17

3 DATABASE DESIGN 124

3.1 Overall Structure of the database 124
3.2 Entity relationship diagram 125
3.3 General notes on field checking 127
3.4 Main Analysis of Main Tables 127
3.5 Look up tables 144

4 MIGRATION 154

4.1 Mapping Old to New Database 154
4.2 Migration Software 155
4.3 Testing the migrated database 155

5 APPENDICES 155

5.1 Existing Dataease design 155

Contents

1 INTRODUCTION **8**

1.1 GENERAL 8
1.1.1 Reason for making the change *8*
1.2 SOURCES OF INFORMATION / CROSS REFERENCES TO OTHER DOCUMENTS 8
1.3 SCOPE AND OVERVIEW OF APPLICATION 9
1.3.1 Purpose of the Software *9*
1.3.1.1 Scope of the Database 9
1.3.2 Network Topology *11*
1.3.2.1 User Access 12
1.4 DEVELOPMENT / RUN TIME ENVIRONMENT 12
1.5 SOFTWARE GENERAL OVERVIEW 12
1.5.1 Software Platform *12*
1.5.2 Software background *13*

2 FUNCTIONAL SPECIFICATION **15**

2.1 FUNCTIONAL REQUIREMENTS 15
2.2 OVERALL APPROACH TO THE DATABASE SOFTWARE 16
2.3 USER INTERFACE 17
2.3.1 Menus *18*
2.3.2 Main Menu *18*
2.3.2.1 Site Details 18
2.3.2.1.1 Site Address 19
2.3.2.1.2 View History 21
2.3.2.1.3 Fixed Assets 22
2.3.2.1.3.1 Fixed Asset Main Entry 22
2.3.2.1.3.2 Fixed Asset Address Tab 25
2.3.2.1.3.3 Fixed Asset Terrier Details Tab 26
2.3.2.1.3.4 Fixed Asset Capital Details Tab 27
2.3.2.1.3.5 Fixed Asset Links Tab 28
2.3.2.1.3.6 River Flow Monitoring Stations 30
2.3.2.1.3.6.1 Additional Details - RFMS River Details 30
2.3.2.1.3.6.2 Additional Details - RFMS Relative levels 31
2.3.2.1.3.6.3 Additional Details - RFMS Data Availability 33
2.3.2.1.3.6.4 Additional Details - RFMS Intake Details 35
2.3.2.1.3.6.5 Additional Details - RFMS Rating equations 36
2.3.2.1.3.6.6 Additional Details - RFMS IOH Details 38
2.3.2.1.3.6.7 Additional Details - RFMS Rating Station description 40
2.3.2.1.3.7 Rain gauging Stations 41
2.3.2.1.3.7.1 Additional Details - RGAS details 41
2.3.2.1.3.7.2 Additional Details - RGAS observer details 42
2.3.2.1.3.7.3 Additional Details - RGAS station details 43
2.3.2.1.3.7.4 Additional Details - RGAS recording details 44
2.3.2.1.3.8 Bore Holes 45
2.3.2.1.3.8.1 Additional Details - BGS Ref Numbers 46
2.3.2.1.3.8.2 Additional Details - Borehole Aquifer details 46
2.3.2.1.3.8.3 Additional Details - Relative levels 47
2.3.2.1.3.8.4 Additional Details - Borehole / Well details 50
2.3.2.1.3.8.5 Additional Details - Database records 52
2.3.2.1.3.8.6 Additional Details - Data Availability 53
2.3.2.1.3.9 SPOT Gauging sites 54
2.3.2.1.3.9.1 Additional Details - SPOT Gauging sites 54
2.3.2.1.3.10 STORE fixed assets 55
2.3.2.1.3.10.1 Additional Details - SPOT Gauging sites 55
2.3.2.1.3.11 Reservoir fixed assets 57
2.3.2.1.3.11.1 Additional Details - Reservoirs General Information 57
2.3.2.1.3.11.2 Additional Details - Reservoirs Relative Levels 58
2.3.2.1.3.11.3 Additional Details - Reservoirs - Storage details 60
2.3.2.1.3.11.4 Additional Details - Reservoirs - Data availability 61

2.3.2.1.3.12 STAFF fixed assets 62
2.3.2.1.3.12.1 Additional Details - STAFF - details 62
2.3.2.1.3.12.2 Additional Details - STAFF type and attachment 63
2.3.2.1.3.12.3 Additional Details - STAFF relative levels 64
2.3.2.1.4 Register Mobile Assets 66
2.3.2.1.4.1 Mobile Assets - Cost Details Tab. 68
2.3.2.1.4.2 Mobile Assets - Mobile Asset Linkages Tab. 69
2.3.2.1.4.3 Mobile Assets additional details - Autographic recorders Installation Details 70
2.3.2.1.4.4 Mobile Assets additional details - Autographic recorders Chart Details 71
2.3.2.1.4.5 Mobile Assets additional details - Sensor Information 72
2.3.2.1.4.6 Mobile Assets additional details - Sensor Installation 74
2.3.2.1.4.7 Mobile Assets additional details - Data Logger Information 75
2.3.2.1.4.8 Mobile Assets additional details - Linked sensors 76
2.3.2.1.4.9 Current Meters additional details - 77
2.3.2.1.4.10 Chart additional details 78
2.3.2.1.4.11 Rain gauge additional details - 78
2.3.2.1.4.12 Gas Sensor additional details 79
2.3.2.1.4.13 Winch additional details 80
2.3.2.1.4.14 Cableway additional details 80
2.3.2.1.4.15 Bomb additional details 81
2.3.2.1.4.16 Vodaphone additional details 82
2.3.2.1.4.17 Dipper additional details 82
2.3.2.1.4.18 Battery and Battery batches additional details 83
2.3.2.1.4.19 Diptone additional details 84
2.3.2.1.4.20 Counter additional details 84
2.3.2.1.5 Repairs and Maintenance 86
2.3.2.1.5.1 RFMS Repair and Maintenance - General 86
2.3.2.1.5.2 RFMS repair and maintenance - Structure details 87
2.3.2.1.5.3 RFMS repair and maintenance - External Roofs / Walls repair 88
2.3.2.1.5.4 RFMS repair and maintenance - Floors repair 90
2.3.2.1.5.5 RFMS repair and maintenance - Internal Walls / Ceilings repair 91
2.3.2.1.5.6 RFMS repair and maintenance - Interior decorations / Miscellaneous repairs 92
2.3.2.1.5.7 RFMS repair and maintenance - repair schedule 93
2.3.2.1.5.8 RFMS repair and maintenance - Maintenance Schedule 94
2.3.2.2 Utilities menu 96
2.3.2.2.1 Telephone accounts - Main details 96
2.3.2.2.2 Telephone accounts - Additional details 98
2.3.2.2.3 Telephone accounts - Bill details 99
2.3.2.2.4 Electricity accounts - Main Details 100
2.3.2.2.5 Electricity accounts - Bill Details 102
2.3.2.2.6 Vodaphone accounts - Main details 103
2.3.2.2.7 Vodaphone accounts - Bill details 104
2.3.2.2.8 Supporting activities 106
2.3.2.2.8.1 Update Lookup Tables 106
2.3.2.2.8.2 Backup Data 110
2.3.2.2.8.3 Change Database History 110
2.3.2.2.8.4 Passwords 111
2.3.2.2.9 Reports 112
2.3.2.2.9.1 General Reports: 113
2.3.2.2.9.1.1 Current Meters / Impellors: 113
2.3.2.2.9.1.2 Makers of Mobile Assets 113
2.3.2.2.9.1.3 Location of Loggers and sensors 114
2.3.2.2.9.1.4 List of Fixed Assets (Registered) 114
2.3.2.2.9.1.5 List of Mobile Assets (Registered) 115
2.3.2.2.9.1.6 List of RFMS 115
2.3.2.2.9.1.7 List of RGAS 116
2.3.2.2.9.1.8 List of RFMS in CSV format 116
2.3.2.2.9.1.9 Station Audit Report 116
2.3.2.2.9.1.10 Ratings Equations 117
2.3.2.2.9.1.11 Export SPOT gauging data for MAPINFO 117
2.3.2.2.9.1.12 List of RFMS on site 117
2.3.2.2.9.1.13 List of RGAS on site 118
2.3.2.2.9.1.14 List of RES on site 119
2.3.2.2.9.1.15 List of BORE on SITE 120

2.3.2.2.9.1.16 River Flow Measurement Stations Service Level agreements 121
2.3.2.2.9.1.17 River Level Measurement Stations Service Level agreements 121
2.3.2.2.9.1.18 Ground Water Measurement Stations Service Level agreements 122
2.3.2.2.9.1.19 Reservoirs Service Level Agreements 122
2.3.2.2.9.1.20 Storage Raingauges Service Level Agreements 123
2.3.2.2.9.1.21 Telemetric/ Logger Raingauges Service Level Agreements 123
2.3.2.2.9.1.22 Temperature Measurement Service Level Agreements 124
2.3.2.2.9.2 Maintenance Reports: 124
2.3.2.2.9.2.1 Schedule 1 (Grass cutting) contracting out reports 124
2.3.2.2.9.2.2 Schedule 2 (Weed Clearance) contracting out reports 124
2.3.2.2.9.2.3 Schedule 3 (Weircrest and gauge board cleaning) contracting out reports 124
2.3.2.2.9.2.4 Schedule 4 (Cableway maintenance) contracting out reports 124
2.3.2.2.9.2.5 Schedule 5 (gravel / silt removal) contracting out reports 124
2.3.2.2.9.2.6 Schedule 6 (Building maintenance) contracting out reports 124

3 DATABASE DESIGN 124

3.1 OVERALL STRUCTURE OF THE DATABASE 124
3.2 ENTITY RELATIONSHIP DIAGRAM 125
3.3 GENERAL NOTES ON FIELD CHECKING 127
3.4 MAIN ANALYSIS OF MAIN TABLES 127
3.4.1 Site Asset Definition 128
3.4.2 Fixed Assets 128
3.4.3 RFMS Additional Information 129
3.4.4 RGAS Additional Information 132
3.4.5 BORE Additional Information 133
3.4.6 STORE Additional Information 134
3.4.7 RES Additional Information 134
3.4.8 Staff Additional Information 135
3.4.9 Mobile Assets 136
3.4.10 CMTS Additional Information table 137
3.4.11 Autographic Additional Information 137
3.4.12 Logger Additional Information 138
3.4.13 Raingauge Additional Information 138
3.4.14 Gas Detector Additional Information 138
3.4.15 Cable Way Additional Information 138
3.4.16 BOMB Additional Information 139
3.4.17 Dipper Additional Information 139
3.4.18 Battery Additional Information 139
3.4.19 Counter Additional Information 139
3.4.20 Ratings 140
3.4.21 Addresses 140
3.4.22 Upgrade Log 140
3.4.23 Impellors 141
3.4.24 Telephone Details 141
3.4.25 Telephone Bills 142
3.4.26 Electricity Details 142
3.4.27 Electricity Bills 142
3.4.28 Vodaphone Details 143
3.4.29 Vodaphone Bills 143
3.5 LOOK UP TABLES 144
3.5.1 Address Types 145
3.5.2 Agency Regions 146
3.5.3 Asset Types 146
3.5.4 Fixed Asset Status Description 146
3.5.5 Mobile Asset Status Description 146
3.5.6 Catchment Area s 147
3.5.7 Asset Ownership 147
3.5.8 Departmental Contribution 147
3.5.9 Measurement Structures 147

3.5.10 RFMS Measurement Authorities *147*
3.5.11 RFMS Station Types *148*
3.5.12 RFMS Runoff Factors *148*
3.5.13 RGAS Purposes *148*
3.5.14 Frequencies/Days *148*
3.5.15 Media Types *149*
3.5.16 Aquifer Details *149*
3.5.17 Logger Event Frequency *149*
3.5.18 Construction Types *149*
3.5.19 Backing Board Types *149*
3.5.20 Model Details *150*
3.5.21 Staff *150*
3.5.22 Reservoir record types *150*
3.5.23 Keys *151*
3.5.24 Visit Reasons *151*
3.5.25 Battery Connector Terminal *151*
3.5.26 Telephone Usage *151*
3.5.27 Logger Types *151*
3.5.28 Dipper Indicator *152*
3.5.29 BOMB Connection Type *152*
3.5.30 Sensor Type *152*
3.5.31 Chart float types *152*
3.5.32 Chart pen types *152*
3.5.33 Chart power types *153*
3.5.34 Chart paper types *153*
3.5.35 Sensor Card types *153*
3.5.36 Logger Usage Types *153*
3.5.37 Cableway power types *153*
3.5.38 Battery types *153*
3.5.39 Telecom companies *154*
3.5.40 Electric companies *154*

4 MIGRATION **154**

4.1 MAPPING OLD TO NEW DATABASE 154
4.2 MIGRATION SOFTWARE 155
4.3 TESTING THE MIGRATED DATABASE 155

5 APPENDICES **155**

5.1 EXISTING DATAEASE DESIGN 155

1 Introduction

1.1 General

The purpose of this specification is to detail the requirement for a Microsoft Windows based database application for the Welsh region of the Environment Agency to replace the existing database currently running under DOS and Dataease.

1.1.1 Reason for making the change

This specification is intended to detail the migration of a DOS based database to a windows based one. It is not therefore intended to be a "re-design" or "new development". However, certain changes will be introduced where areas have not been implemented previously due to the cumbersome nature of that area. The windows version of the database should be more maintainable and very much more user friendly, making the product available to more people.

1.2 Sources of information / Cross references to other documents

When reading this document please refer to the following sources:

Source	Title	Version
Document	Hydrometric Assets Database Users Guide	1.0 Rev 1.00
Database	Water Resources Hydrometric Assets Database	2.00
Underlying Database	Database and Engine	Ver 4.53

The discussions which form the basis of this specification took place with the Water Resources department of the South East area in St Mellons, Cardiff.

1.3 Scope and overview of application

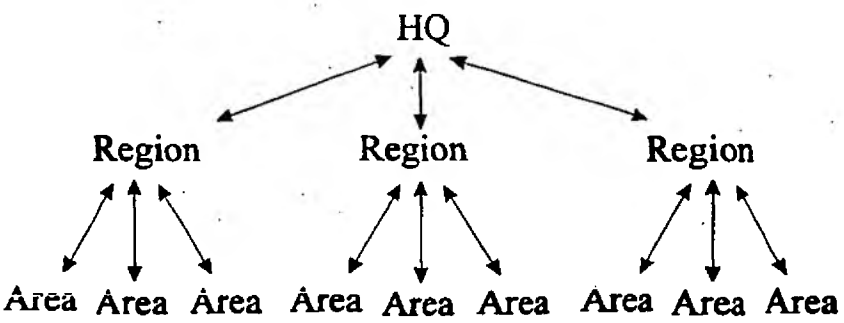
1.3.1 Purpose of the Software

The software is generally intended to create and maintain a database of all aspects of Water Resources which have had money invested in them, among these are:

- Buildings in the field & structures (not necessarily owned)
- Monitoring Systems
- Building Maintenance (Weirs, Monitoring Systems, equipment etc)
- Staff (People taking readings etc)
- Utilities (Electricity and Phones for Telemetry System etc)

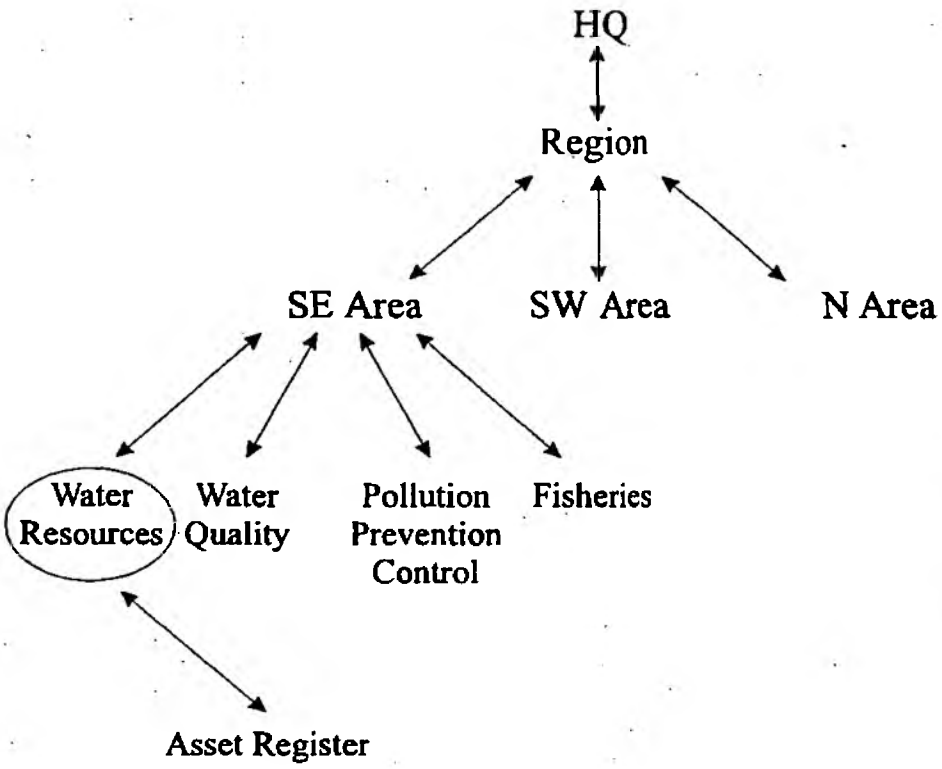
1.3.1.1 Scope of the Database

The Environment Agency is a National Agency, with the basic structure as follows:

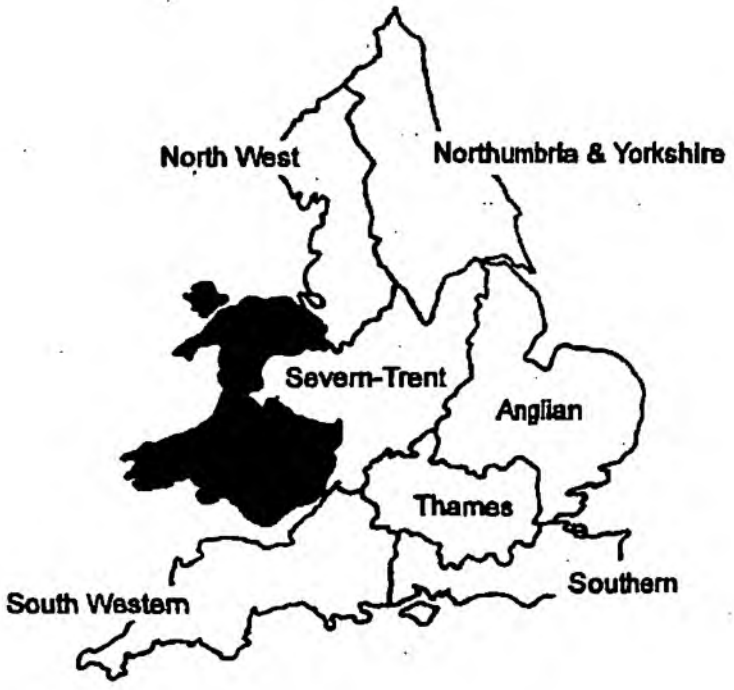


The existing Database design covers the Welsh Region Water Resources department of the Environment Agency.

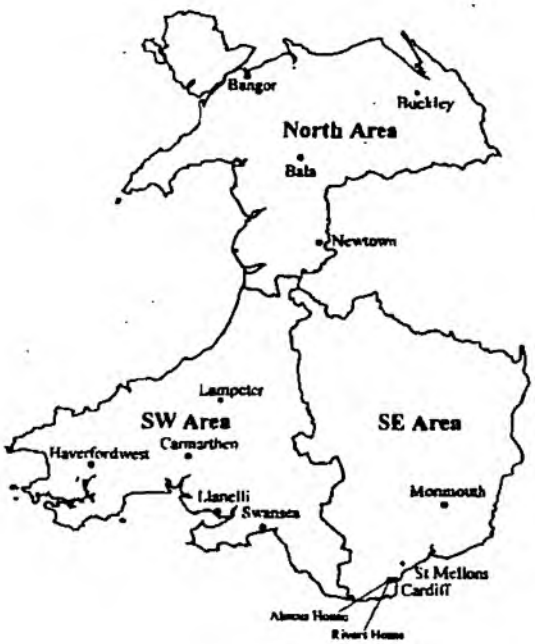
The Welsh Water Resources departments and how the asset register relates to their activities is shown more clearly as follows:



The following map shows the area covered by the Welsh region.

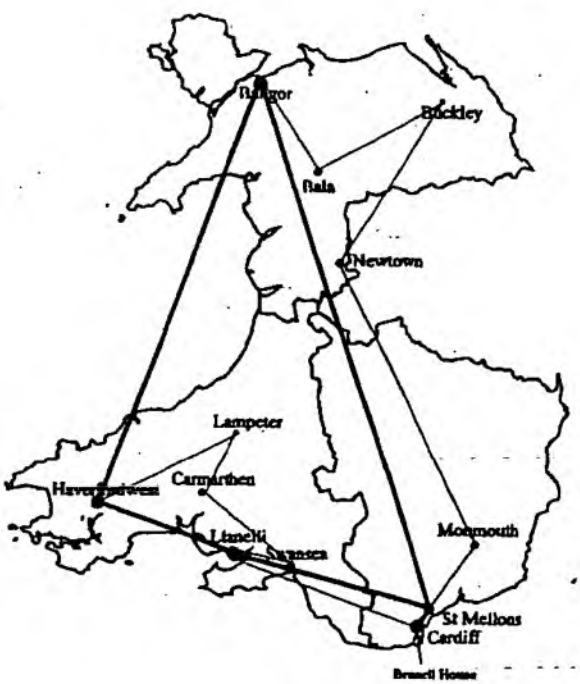


The Welsh region is split up into three areas, the North, South West and South East areas. These are shown in the following map:



1.3.2 Network Topology

As the areas within Wales are connected by a Wide Area Network, then the Database will be operating on this WAN. The following map shows the connection of the 3 areas within the Welsh region:



1.3.2.1 User Access

The software is intended to be used within each area of the Welsh Region Water Resources with access to change the database as follows:

- One Database per Area
- Regional access of all 3 databases over the WAN (Via a copy)
- One user per area with create / write access
- Each area has LAN access for read / reports

Thus a Database client server configuration is not required, as only one person in each area will need write access to the database. In operation the database will not need need multi-user access, as only one person will have access to the database for write at any one time on any site.

Read access for other users in the region may be achieved by using a daily (or less often if preferred) copy to each site which could be performed overnight to prevent disruption.

1.4 Development / Run time environment

This Specification is not intended to define either the Run time or Development Environments for the database, but to define the front-end (Windows, forms and menus) and the underlying database structure. Many of today's solutions will be capable of operating within these constraints and it is simply down to the Environment agency to choose the tools which fit within the criteria set by the IS department and potential managers and users of the software.

The forms that follow have been developed in the screens which follow have been created in a Delphi Prototype, with no underlying database structure. Some of the forms may need further refinement to make use simpler or more obvious but this would be a natural progression once the database design was underway.

1.5 Software General Overview

1.5.1 Software Platform

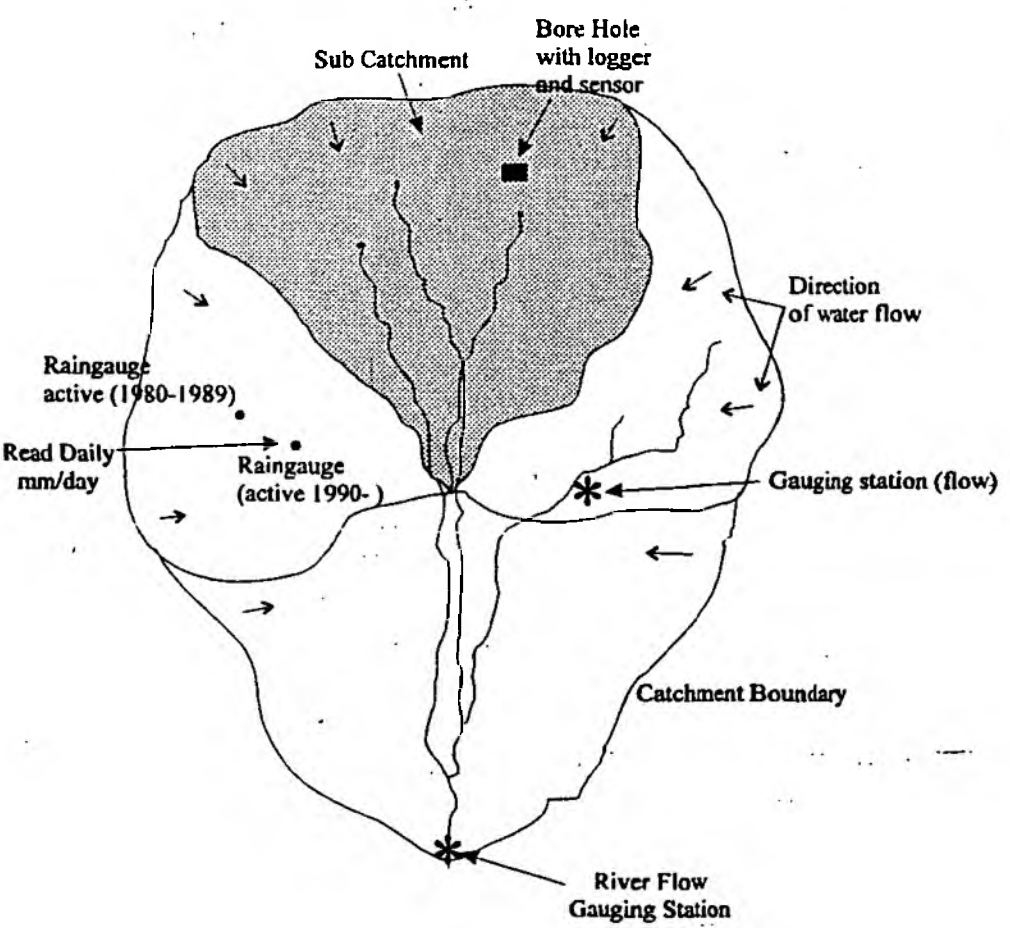
The Software is intended to be Microsoft Windows (Version 3.1 or Workgroups 3.11) hosted, each copy running on a P.C. with a good level of performance, and Network access as described above.

1.5.2 Software background

The business of the water resources department is, amongst other things, to measure levels and flows of rivers and water storage's to ensure that supply and the environment are not adversely affected by over use or floods etc.

To this end, equipment is installed within the catchment area of a river to monitor rainfall (using raingauges) and riverflow (using river flow monitoring stations) and levels (using boreholes). Other measurements may also be made and are dealt with in a similar manner to those just mentioned.

To assist in understanding the use of assets within the catchment area of a river the following picture shows possible examples of installed equipment:



The water resources department requires the software to easily allow entry of two main kinds of assets, these are:

- FIXED ASSETS
- MOBILE ASSETS

A fixed asset is one where land or construction is involved (Such as a weir) and a mobile asset is where something can be installed (Such as a datalogger). As the above illustration shows, there will always be some land or building works associated with each piece of measurement equipment, and in some cases there will be several pieces of equipment at the same site.

The database is intended to contain all the relevant information about the fixed and mobile assets as well as associating certain assets with others.

For example a datalogger can have one sensor actively connected at any one time but may have another sensor associated with it but inactive. The database should allow the inactive sensor to be made active and visa versa whilst keeping the association.

Fixed assets are maintained within the database and again can be in use or not (rain gauge sites for example may not be in use but can be brought into use as required).

Mobile assets (such as rain gauges) are associated with the fixed assets so that it is known which measurement equipment is where.

The existing database uses a fairly large menu structure to enter individual assets (fixed and mobile) and then links are made from one to the other to indicate the associations.

2 Functional Specification

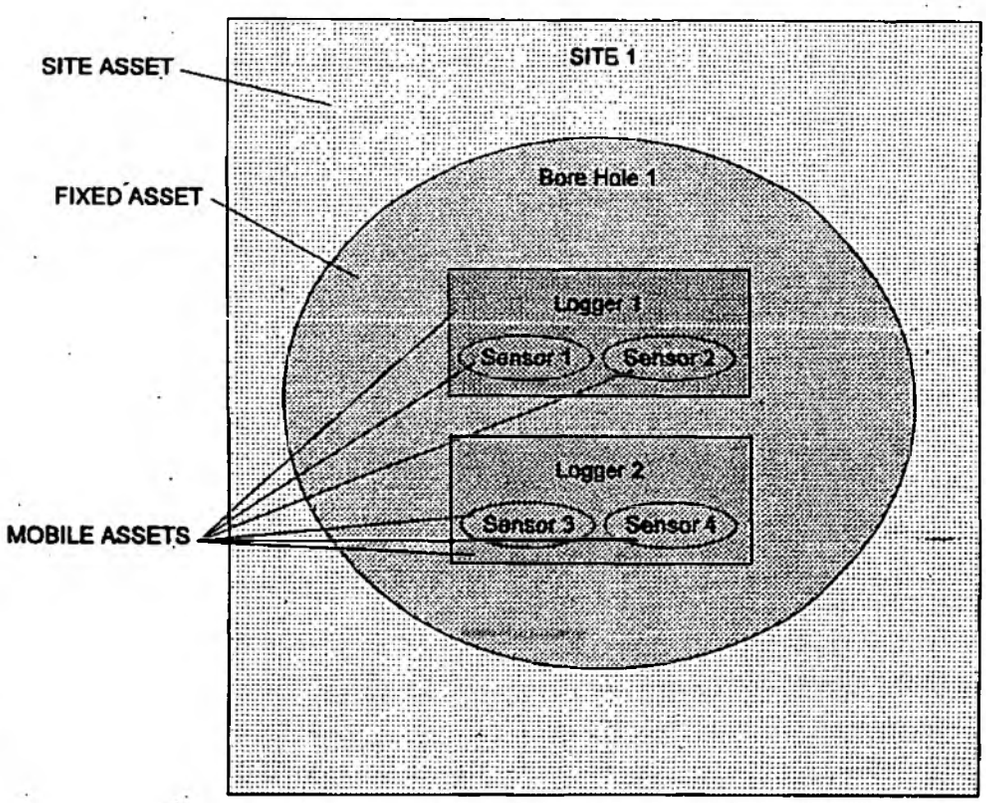
2.1 Functional Requirements

The functional requirements of the windows based software is to make the entry of the asset database information as simple and "obvious" as is possible with such a complex data structure.

To this end, an additional kind of asset has been introduced to simplify the user's access to the links and associations of asset types. This asset is called a SITE ASSET.

The basic principle is that a site asset contains data about a physical site within that geographical area which contains one or more (usually one) fixed asset. Each fixed asset itself can then contain mobile assets. In certain cases, these mobile assets can contain other mobile assets (such as a logger, which has sensors attached).

To illustrate this the following picture shows an example site:



To help to simplify this concept and to provide a more familiar feel to the windows user, the user is encouraged to consider a "tree structure" for a site asset, with sub-entries as the assets that are contained within each asset.

Thus the following tree would be equivalent to the above illustration:

As can seen this allows for simple and obvious links from one kind of asset to another and also does not digress far from the requirements of the underlying existing database.

In addition to this, the grouped asset which was not previously implemented will also be available by using this approach.

2.2 Overall approach to the Database Software

The intention of this specification is to lay down fairly detailed guidelines for the implementation of the software (although not down to the actual language to be used) as some lengthy discussions have been had covering the possible approach to the user screens and the underlying database requirements.

At the time of actual design, further improvements in structure and clarity may be made, although it is not expected that any major changes would be required.

The approach used for the software is one where the menus of the existing DOS software are replaced by a GUI (Graphical user interface) front end, using point and click operation to access the forms to enter or modify the database.

In addition to this, each copy of the software will be configurable (by use of an INI file or similar) to allow default fields for items such as area, region and access level (ie: items which rarely change when using the database on any one PC).

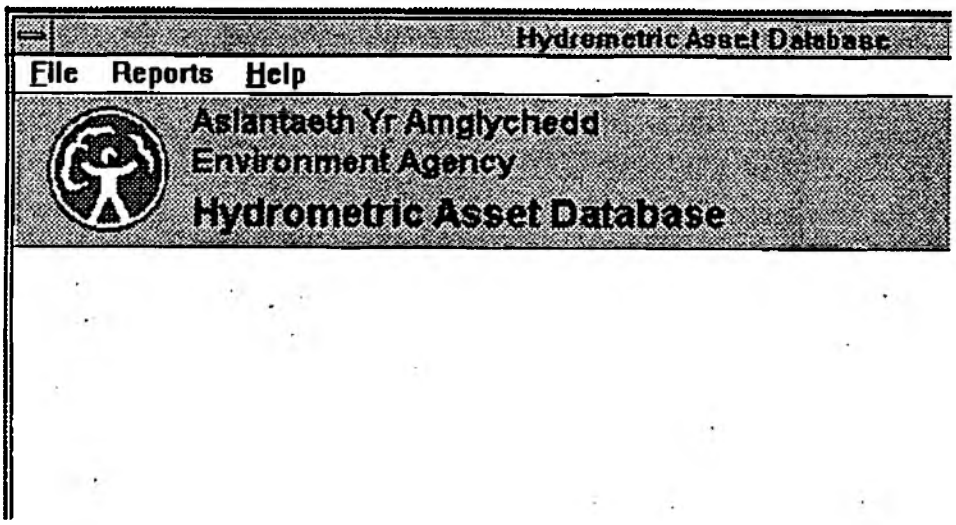
Where simple look ups are used within forms these are stored in look up tables to allow for easy addition of items within these lists. The software is intended to have forms dedicated to maintaining these look up tables.

Note that within this documentation "lut" prefixing a name is used to denote a look up table.

2.3 User Interface

The user interface would be an MDI parent window with some menu facilities such as loading other areas databases etc, with the majority of user interaction via windowed menus and forms within.

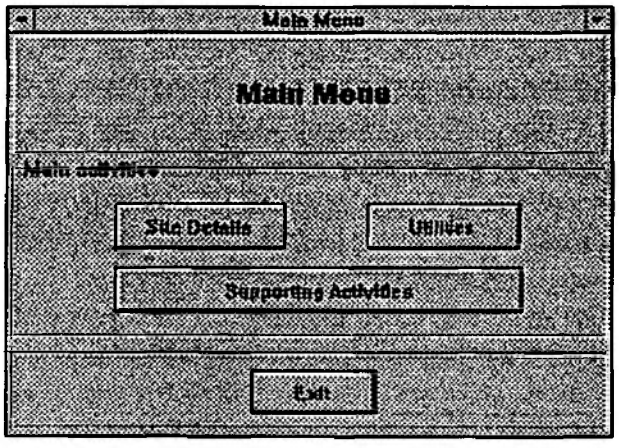
The following screen grab shows the main MDI parent with Windows Menus added:



2.3.1 Menus

2.3.2 Main Menu

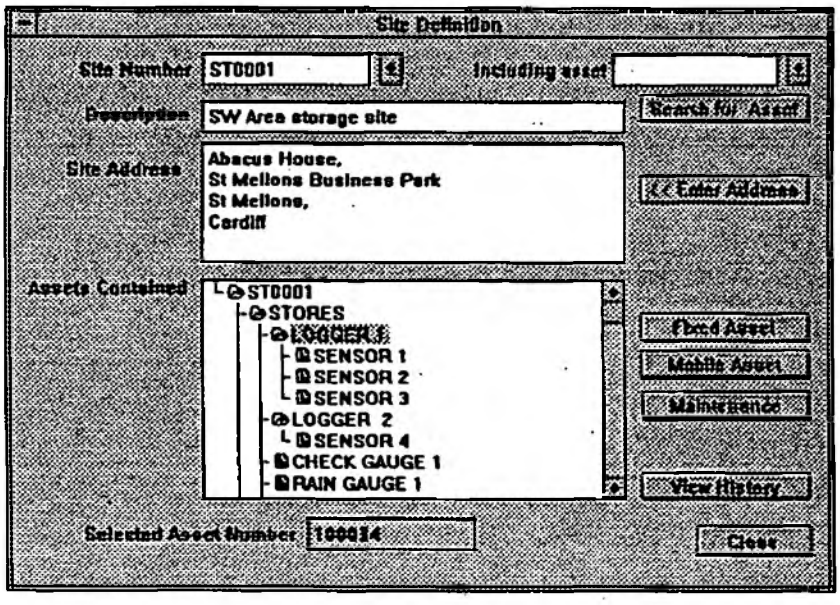
The Main Menu screen (Centred within the MDI Parent area) would be presented to the user on running the application and would take the following format:



To navigate menus and forms the user would simply click with the mouse on each menu button. This will give access to the majority of the Asset database.

2.3.2.1 Site Details

To add a new site or modify an existing site the following form is presented following clicking on site details:



To use the Site definition, the user can select either Site, Fixed or Mobile asset and the buttons on the right hand side will be enabled / disabled / changed accordingly to allow the addition of the relevant type of asset.

For example, if a new site was to be added (the default operation mode) then a new site number would be created automatically (in sequence) and the site number would appear in the tree view window. By selecting this "top of tree" item, the "New fixed asset" or "Add fixed asset" buttons would be the only options available on the right hand side (All Sites contain fixed assets only). Pressing this button would cause the fixed asset form to be loaded with a unique asset number automatically created. When the fixed asset is fully created, the user can then close the fixed asset definition and will return to the site definition form, where the fixed asset will appear on the tree-view. Clicking on this fixed asset will allow mobile assets to be added (enabling the New Mobile Asset / Add mobile asset buttons on the right). Once the mobile asset has been created / associated with this fixed asset, the user can then associate further mobile assets to this mobile asset if required allowing for the "Log-Link-Sensor" relationships required. Certain laws govern the relationships of items such as sensors to loggers which may need further message boxes or forms to allow only one active logger / sensor per fixed asset. This level of detail is intended to be done at design level due to inherent complexity of the relationships.

The site itself carries additional details such as description, address, occupier etc.

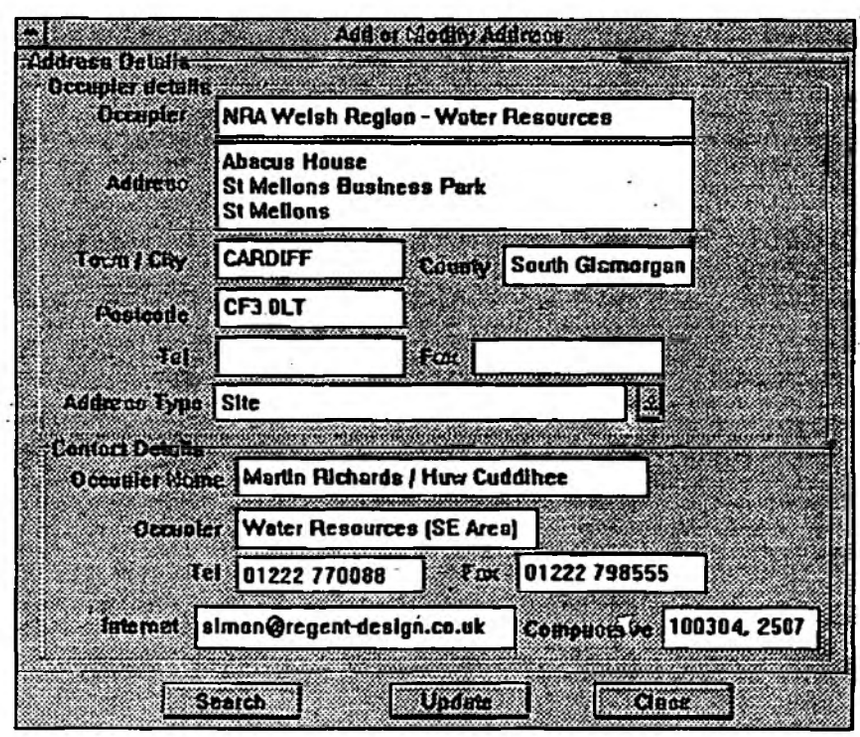
The database program would create a new site number sequentially following the last number to be used, or the user could select another site by using the dropdown combo-box or the up/down keys to navigate previous entries.

The Site description is a text field which allows the user to describe the site.

2.3.2.1.1 Site Address

The site address is entered / loaded by pressing the address button.

The add / change address form will appear as follows:



The following describes the usage of fields on the address form:

Occupier

Unrestricted text field of up to 50 characters. The name relating to the address, such as a company name.

Address

Unrestricted text of 3 lines by 50 characters for the postal address

Town / City

Unrestricted text of 30 characters for the town or city name.

County

Unrestricted text of 30 characters for the county name

Postcode

Unrestricted text of 30 characters for the postcode

Tel

Unrestricted text of 30 characters for the phone number of the address.

Fax

Unrestricted text of 30 characters for the fax number of the address.

Address Type

A list box of a database lookup table of address types (Manufacturer, supplier etc) (See lutAddressTypes)

Occupier name

Unrestricted text of 50 characters giving the contact name for the above address

Occupier

Unrestricted text of 40 characters giving a description of the occupier such as owner.

Tel

Unrestricted text of 30 characters for the phone number of the contact.

Fax

Unrestricted text of 30 characters for the fax number of the contact.

Internet

This a unrestricted text field of 45 characters for the Internal email address.

Compuserve

This is a unrestricted text field of the compuserve address number. (Where applicable)

Once the address has been updated, the Update and Close buttons should be pressed.

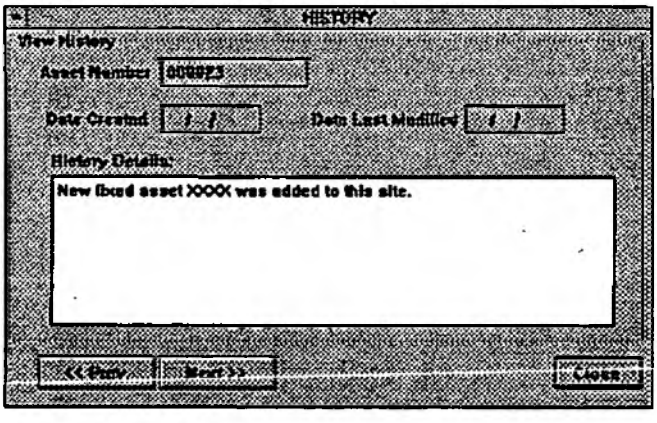
The user should then select which fixed assets (from the left hand list box) are installed within this site.

2.3.2.1.2 View History

The database stores the history of changes to its tables, generated by asking the user for summary details of each change.

This is viewed by selecting the asset in the site definition form with the mouse, and then pressing the history button (Site, Fixed or Mobile assets carry their own history).

By selecting each member asset (Site, Fixed or Mobile) in the tree view shown, it is possible to view the history. By pressing the View History button, the following form will appear:

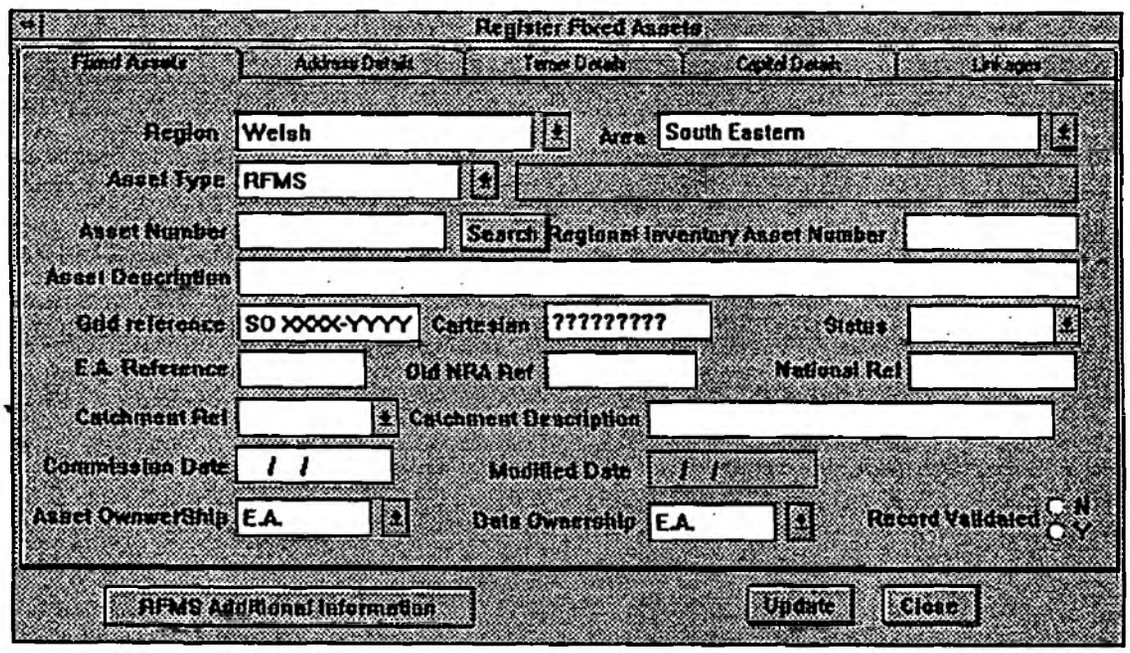


Pressing the next and previous buttons will show chronologically ordered history entries for that Asset.

2.3.2.1.3 Fixed Assets

As described above the user must add a fixed asset to the site before mobile assets can be added or associated with it.

2.3.2.1.3.1 Fixed Asset Main Entry



Region

This is a drop-down list box with a database lookup (lutAgencyRegions).

Area

This is a drop down list box with a database lookup (lutAgencyAreas).

Asset type

This is a drop down list box with a database lookup (lutAssetTypes).

Asset type Description

Next to fixed asset types are the fixed asset type descriptions also a database lookup (lutAssetTypes). (The description is looked up from the "lutAssetTypes" lookup table whenever an asset type is selected and automatically displayed.)

Asset Number

The asset number is calculated from a unique number (the next fixed asset record number) according to the following rules:

The asset seed is obtained from the areas look up tables (lutAgencyAreas)

Regional Inventory asset number

This number is a unrestricted text field and may be entered in addition to the uniquely generated asset number.

Asset Description

This unrestricted text field allows the user to describe the asset in detail. 120 Characters.

Grid Reference

This is the OS Grid reference for the fixed asset. The Cartesian grid reference should be updated from this entry according to a predefined formula.

The Environment Agency will provide this information

Cartesian Grid Reference

This is the Cartesian Grid reference for the fixed asset. The grid reference should be updated from this entry according to a predefined formula.

The Environment Agency will provide this information

Status

This is the status of the fixed asset (Such as active, open, closed etc) This is a database look up table (lutStatus).

EA Reference

This is the unique reference calculated from the asset number the region and area according to the following rules:

Old NRA Reference

This unrestricted text field is the number previously used by the National rivers authority, prior to the formation of the Environment agency.

National Reference

This unrestricted text field is national reference number for the fixed asset (if required).

Catchment Reference

The catchment reference is obtained from a drop-down list box from a database lookup table. (lutCatchmentAreas).

Catchment Description

The catchment reference is obtained from the catchment reference from a database lookup table. (lutCatchmentAreas).

Commission Date

This unrestricted date entry is obtained from the commissioning date for the asset.

Modified Date.

This is the date that the record was last changed. It is not an editable field.

Asset Ownership

Database lookup table - EA or Other currently. (See lutAssetOwnership)

Data Ownership

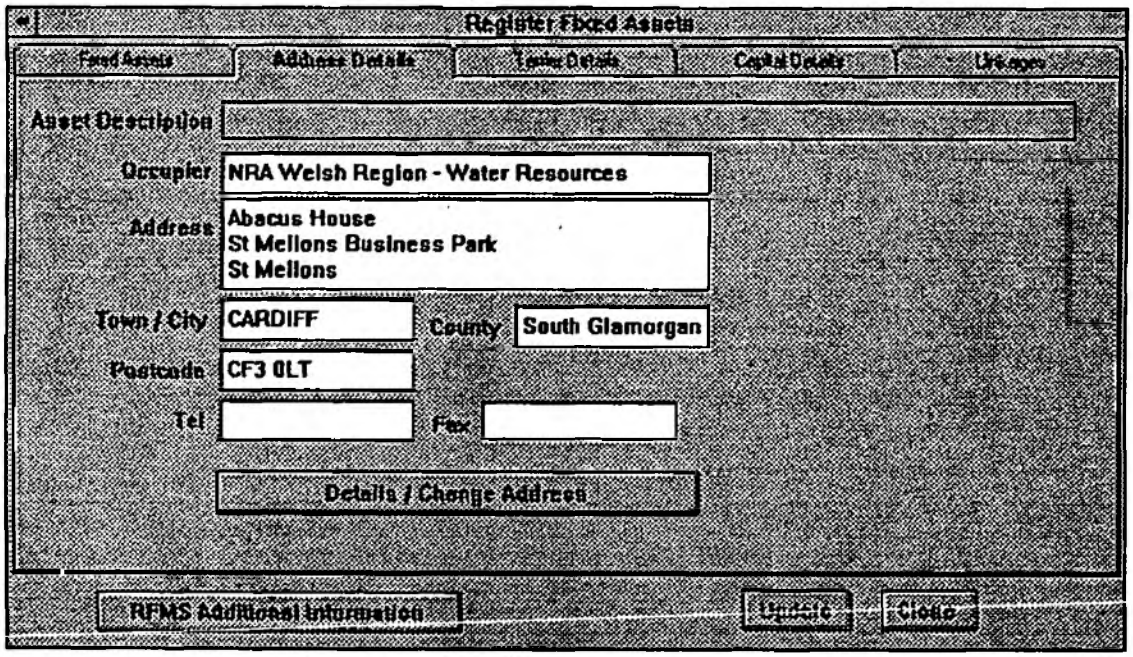
Database lookup table - EA or Other currently. (See lutAssetOwnership)

Record Validated

Simply a boolean (Yes/No) to indicate that the record has been checked by someone.

2.3.2.1.3.2 Fixed Asset Address Tab

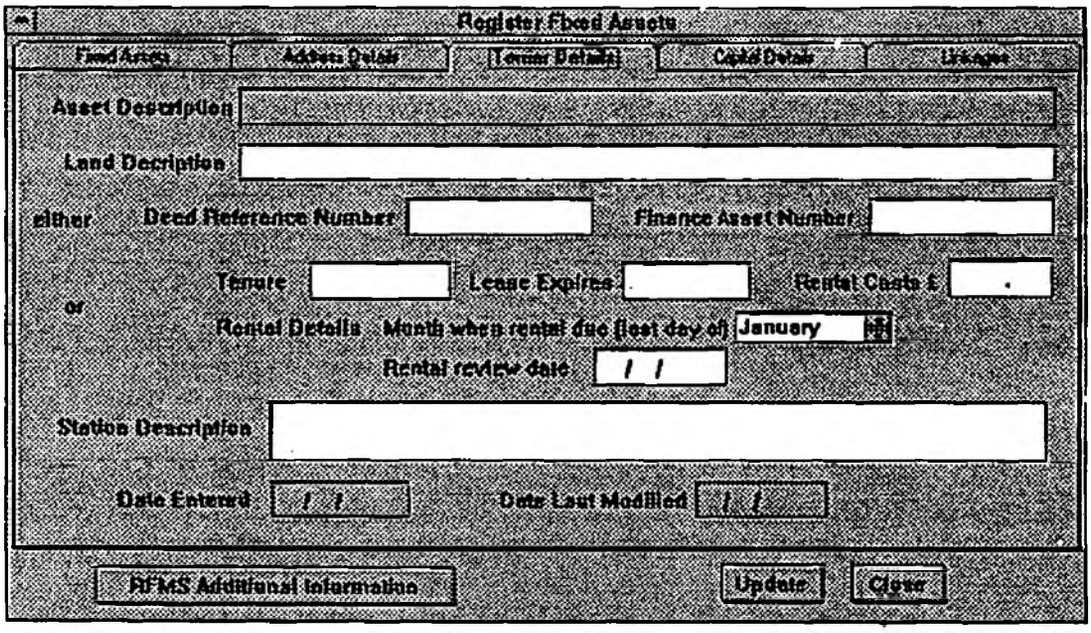
By clicking on the Address details Tab on the Fixed asset entry form, the user can enter or view the address which has been allocated for this asset. Note more information is available in the address than shown on the address Tab such as contact name and Email addresses.



Clicking on the Details / Change of Address button the user can enter or define a new address to use. (See Site Address form described above for the address entry form). (See tableAddresses.)

2.3.2.1.3.3 Fixed Asset Terrier Details Tab

By Clicking on the fixed asset terrier details TAB the following form will appear:



"Terrier Details" means the details relating to the land for the fixed asset, such as rent, deeds etc.

The fields on the form Tab are as follows:

Asset Description

A text field which serves to remind the user of the asset being edited - Non editable field.

Land Description

A text field which allows the user to enter the description of use of the land.

Deed Reference number

Unrestricted text - 20 characters - The reference number for any deeds to the land - Once this field is filled in, the rental fields should all be greyed out.

Finance Asset Number

Any finance related to this asset will have a finance asset number - these are entered here. Once this field is filled in, the rental fields should all be greyed out.

Tenure

Unrestricted text field - 20 characters. Any details about rental should be entered here. Once this field is filled in, the ownership fields should all be greyed out.

Lease expires

A unrestricted Date field - The date the lease will expire.

Rental costs

The cost of the land rental is entered here. The amount paid in annual rental.

Month rent is due

This is a form look up value and is selected from a list box of months (January to December).

Rental review date

A unrestricted Date field - The date the rental is due for a review

Station description

A unrestricted multi-line text edit field (Memo field) Up to 500 characters can be entered here.

Date entered

An un-editable field for when the terrier details were first entered.

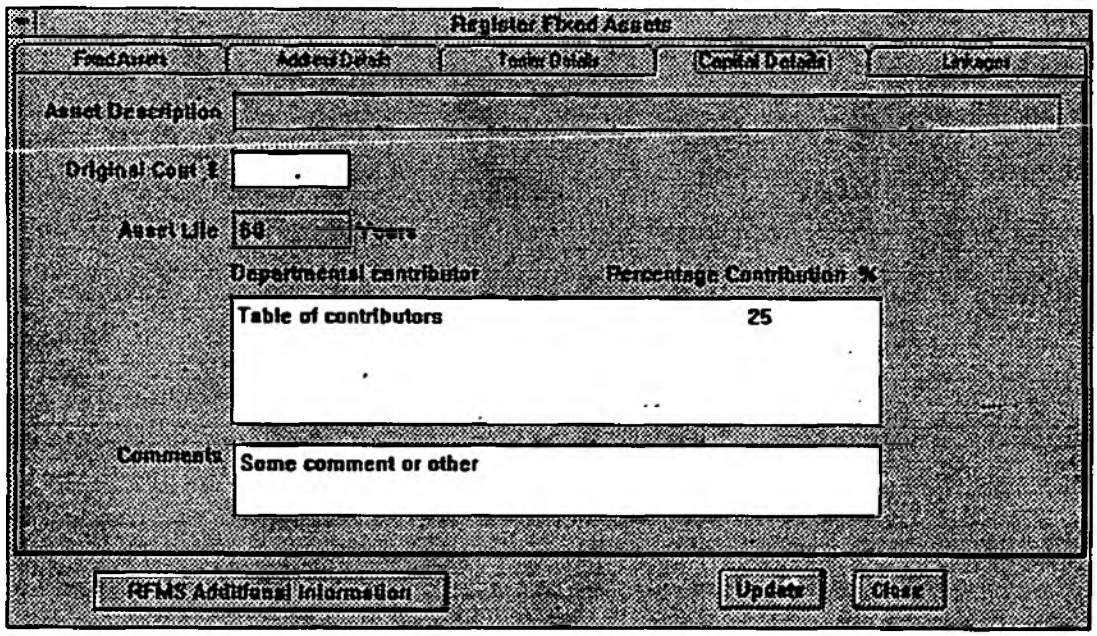
Date last modified

An un-editable field for when the terrier details were last modified

2.3.2.1.3.4 Fixed Asset Capital Details Tab

The next Tab on the fixed asset registration form is the capital details tab. These details allow the user to enter details relating to the cost / value of the fixed asset.

When the user clicks on the Capital Details tab the following form will be produced:



Asset Description

This is an un-editable field which reminds the user of the asset being edited.

Original Cost

This is an unrestricted entry cost field (in pounds).

Asset Life

This is an un-editable field showing the asset life. The life of the asset is obtained from the asset type lookup table (lutAssetTypes)

Departmental contribution table.

The following entry is a table of Departmental contributors versus percentage contribution. Departmental contributors is a database lookup table of those departments which may contribute to the costs of fixed assets. Percentage contribution is an unrestricted percentage field (to the nearest percent). (See lutDepartmentalContributors)

Checking will be applied to the total percentage in the table to ensure 100% is covered.

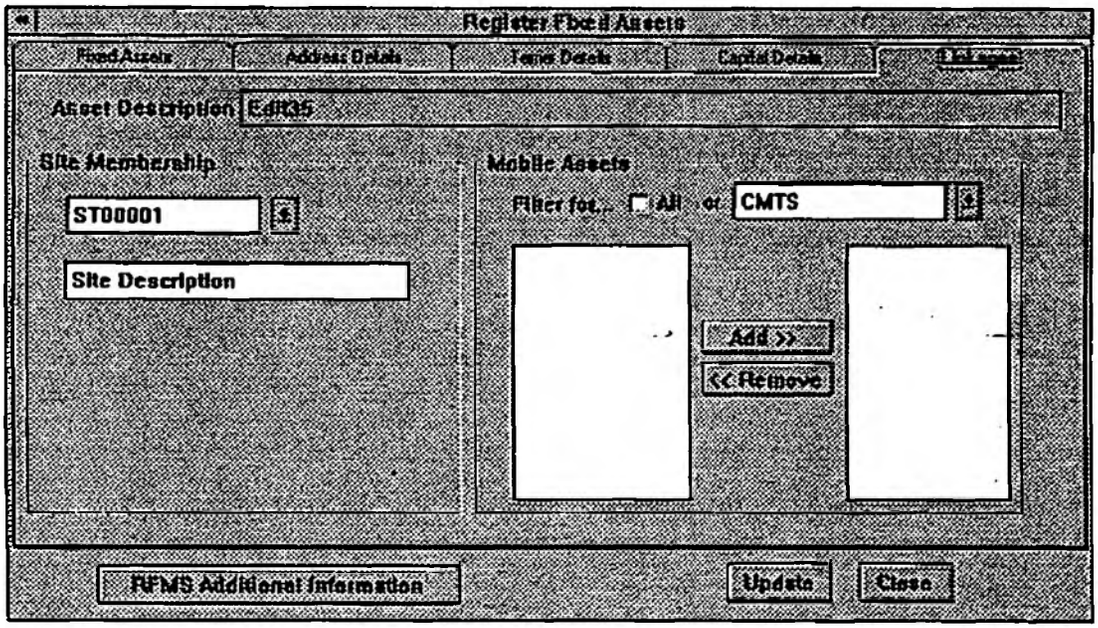
Comments

This is a 120 character memo / text field which allows any further comment on the capital aspects of the fixed asset to be made.

2.3.2.1.3.5 Fixed Asset Links Tab

The next Tab on the fixed asset registration form is the link details tab. These details allow the user to enter details relating to any associated mobile assets, such as River Flow Gauges, loggers etc.

When the user clicks on the Link Details tab the following form will be produced:



The fields have the following use:

[Site membership]

(Site number)

The number of the site which contains this fixed asset (if any)

(Site description)

The name of the site which contains this fixed asset (if any)

[Mobile assets]

Filter for [x] or

This check box and list box allows the user to use select the type of filter used to display the mobile assets in the list box below (Left hand side).

(Mobile assets available list box)

This list box shows which mobile assets are available to be included into this fixed asset if required.

Some considerable intelligence should be built into this facility based around the following ground rules:

- Fixed assets can have any associated mobile assets
- Only mobile assets which are not associated with other fixed / mobile assets are considered available (The exception is that they should be in the "stores" fixed asset)
- Only mobile assets which are not damaged or out of service in some way are considered available (The exception is when the mobile asset is being calibrated)

(Mobile assets associated list box)

These assets are added to this list by pressing the Add button having selected one or many (Standard windows Shift / control / mouse actions) assets first.

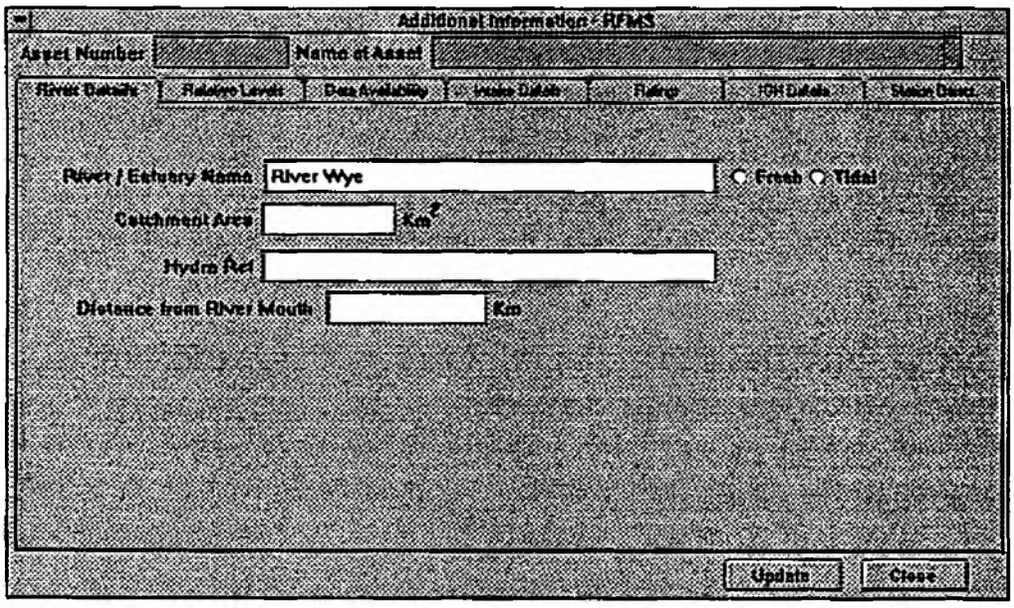
2.3.2.1.3.6 River Flow Monitoring Stations

When the main fixed asset registration form is used to enter RFMS (River Flow Monitoring Stations) *asset types*, then the additional details button can be used to enter specific details relating to that kind of fixed asset RFMS station. (See tableRFMSAdditionalInformation)

The following screens show the additional RFMS screens:

2.3.2.1.3.6.1 Additional Details - RFMS River Details

This screen allows the user to enter facts about the river which is being monitored:



River / Estuary Name

This unrestricted text field of 50 characters is the name of river.

Fresh / Tidal Radio Buttons

This indicates whether the river is fresh or tidal.

Catchment Area

This unrestricted long integer field allows the area in square Km to be entered. This figure changes as you move down stream (The catchment increases) and thus can't be calculated within the software.

Hydro Reference number

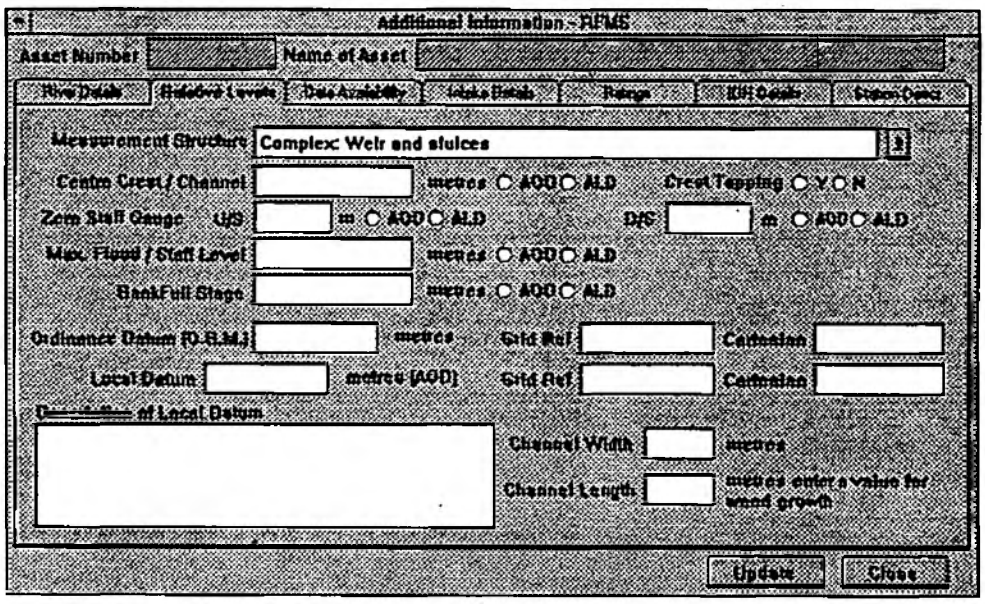
This hydro reference number is entered as text and is calculated by the user according to which tributary is being measured

Distance from River Mouth

This unrestricted integer field allows the distance from the river mouth to be entered.

2.3.2.1.3.6.2 Additional Details - RFMS Relative levels

This screen allows the user to enter facts about the rivers relative levels to be entered:



Measurement structure

This is a database lookup of measurement structures available for fixed assets and is a drop down list box. (See lutMeasurementStructures)

Centre Crest / Channel height in meters AOB / ALD

These fields allow the fixed point value of the height of the centre of the channel to be entered, and also whether the point is Above the **Ordnance Datum** (AOD - National Standard Datum) or Above the **Local Datum** (ALD - some nearby measured reference point)

Crest Tapping Y or N

The user must enter here whether there is a crest tapping at this RFMS station.

Zero Staff gauge height Up Stream in meters AOB / ALD

These fields allow the fixed point value of the height of the upstream Staff gauge zero mark to be entered, and also whether the point is Above the **Ordnance Datum** (AOD - National Standard Datum) or Above the **Local Datum** (ALD - some nearby measured reference point)

Zero Staff gauge height Down Stream in meters AOB / ALD

These fields allow the fixed point value of the height of the downstream Staff gauge zero mark to be entered, and also whether the point is Above the **Ordnance Datum** (AOD - National Standard Datum) or Above the **Local Datum** (ALD - some nearby measured reference point)

Max flood / Staff level in meters AOB / ALD

These fields allow the fixed point value of the height of the maximum flood level or max staff gauge level to be entered , and also whether the point is Above the **Ordnance** Datum (AOD - National Standard Datum) or Above the **Local** Datum (ALD - some nearby measured reference point)

Bankfull Stage in meters AOB / ALD

These fields allow the fixed point value of the height of the Bankfull Stage level to be entered, and also whether the point is Above the **Ordnance** Datum (AOD - National Standard Datum) or Above the **Local** Datum (ALD - some nearby measured reference point)

Ordnance Datum in meters

These fields allow the fixed point value of the height of the ordnance datum (Ordnance Benchmark) in metres.

Grid Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide full information)

Once this field has been entered, the national grid reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency. This will allow for plotting from the Mapinfo system with relative ease.

Local Datum in meters

The height of the local datum as a fixed point number in metres is entered by the user into this field.

Grid Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Description of local datum

This is a Memo edit field which is not restricted and has a length of 500 characters maximum. The text may need to scroll the memo field to fit in all text when fully filled in.

Channel width in metres

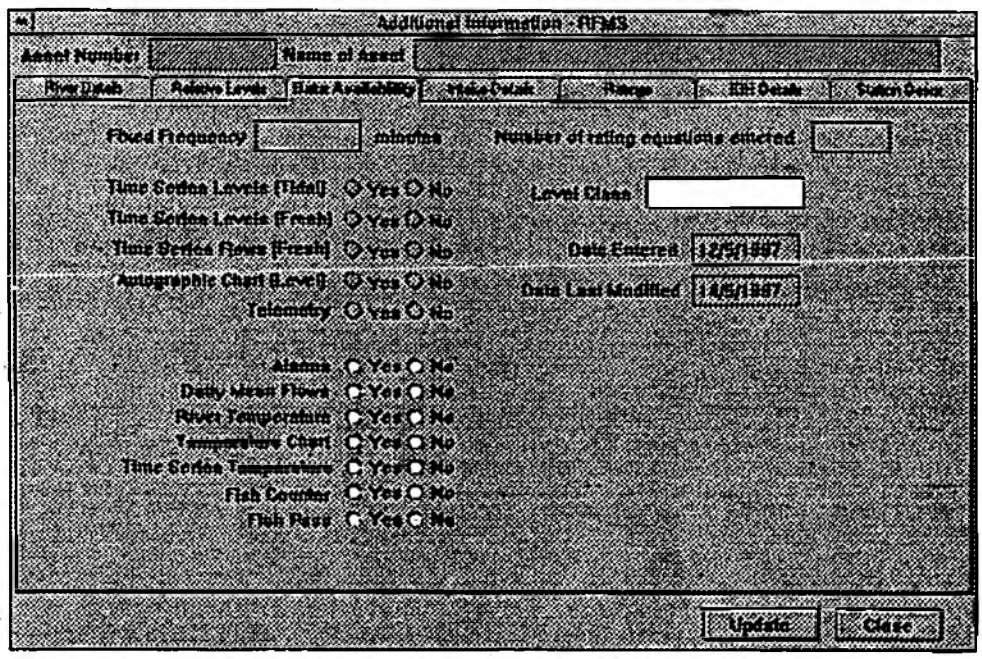
The channel width as a fixed point number in metres is entered by the user into this field.

Channel length in metres

The channel length as a fixed point number in metres is entered by the user into this field.

2.3.2.1.3.6.3 Additional Details - RFMS Data Availability

This screen allows the user to enter facts about availability of data from the river flow monitoring station:



Fixed frequency minutes

This un-editable field of frequency value is looked up by looking at the data from the currently active logger data within this fixed asset (only one can be active at any one time)

Number of ratings equations entered

This un-editable field of the number of ratings equations is displayed from the data from the ratings equations from the RFMS ratings equation Tab (this is the number of entries in the table of ratings for this fixed asset)

Time series levels (Tidal) (Y/N)

If the fixed asset is tidal and there is a logger attached to this asset then this is set to **YES** else it is **NO**.

Time series levels (Fresh) (Y/N)

If the fixed asset is fresh water and there is a logger attached to this asset then this is set to **YES** else it is **NO**.

Time series flows (Fresh) (Y/N)

If the fixed asset is fresh and there is a logger attached to this asset then this is set to **YES** else it is **NO**.

Autographic chart (Level) (Y/N)

If the fixed asset has an autographic chart recorder attached to this asset then this is set to **YES** else it is **NO**.

Telemetry (Y/N)

This is entered by the user and is set to Y if there is telemetry available at the fixed asset.

Alarms (Y/N)

This is entered by the user and is set to Y if there is any alarm available at the fixed asset.

Daily Mean flows (Y/N)

If daily mean flows are available at this fixed asset then the user sets this to "Y"

River Temperature (Y/N)

If the river temperature is monitored then the user sets this to "Y"

Temperature Chart (Y/N)

If there is a chart recorder connected to the temperature sensor for the river then this is set to "Y" by the user.

Time series temperature (Y/N)

If time series temperature measurements are made at this fixed asset then the user sets this to "Y".

Fish counter (Y/N)

If there is a fish counter at this fixed asset then the user sets this to "Y", otherwise "N"

Fish Pass (Y/N)

If there is a fish pass at this fixed asset then the user sets this to "Y", otherwise "N"

Level Class

This is the classification of the station and is manually entered by the user.

Date entered

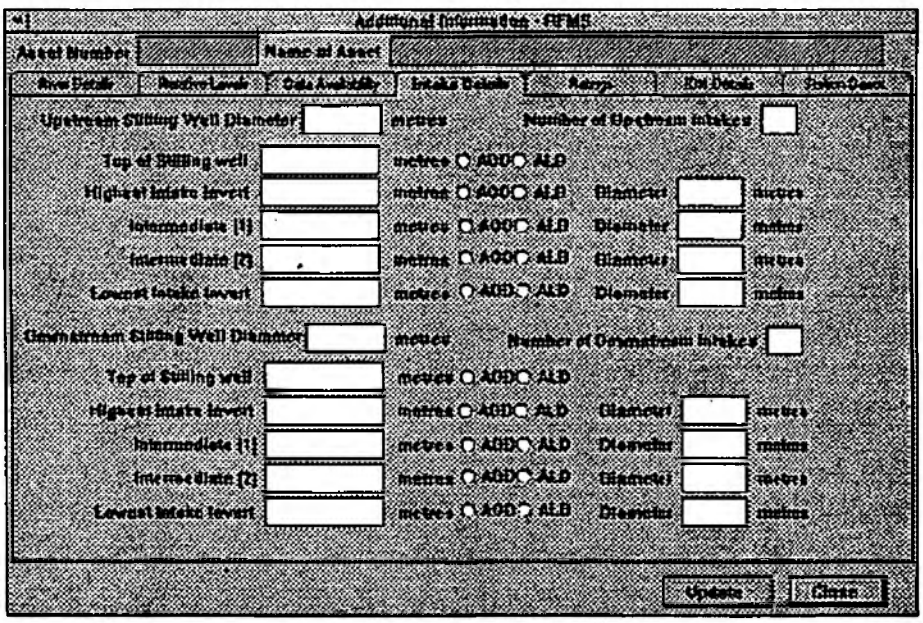
The date the information was first entered into this form is stored here by the computer (Read only field)

Date last modified

The date the information was last entered into this form is stored here by the computer (Read only field).

2.3.2.1.3.6.4 Additional Details - RFMS Intake Details

This screen allows the user to enter facts about the intake details of the river flow monitoring station:



Upstream stilling well diameter

This un-regulated field is the diameter of the upstream intake well and is entered here by the user. The field is a floating point number.

Number of upstream intakes

The number of upstream intakes is entered here by the user. The field is an integer number.

Top of stilling well in metres (AOD/ALD)

The user should indicate the height of the top of the stilling well (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Highest intake invert in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the highest intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Intermediate 1 in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the intermediate 1 intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Intermediate 2 invert in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the intermediate 2 intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Lowest intake invert in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the lowest intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Downstream stilling well diameter

This un-regulated field is the diameter of the downstream stilling well and is entered here by the user. The field is a floating point number.

Number of Downstream intakes

The number of downstream intakes is entered here by the user. The field is an integer number.

Top of stilling well in metres (AOD/ALD)

The user should indicate the height of the top of the stilling well (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Highest intake invert in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the highest intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Intermediate 1 in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the intermediate 1 intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Intermediate 2 invert in metres (AOD/ALD) and diameter

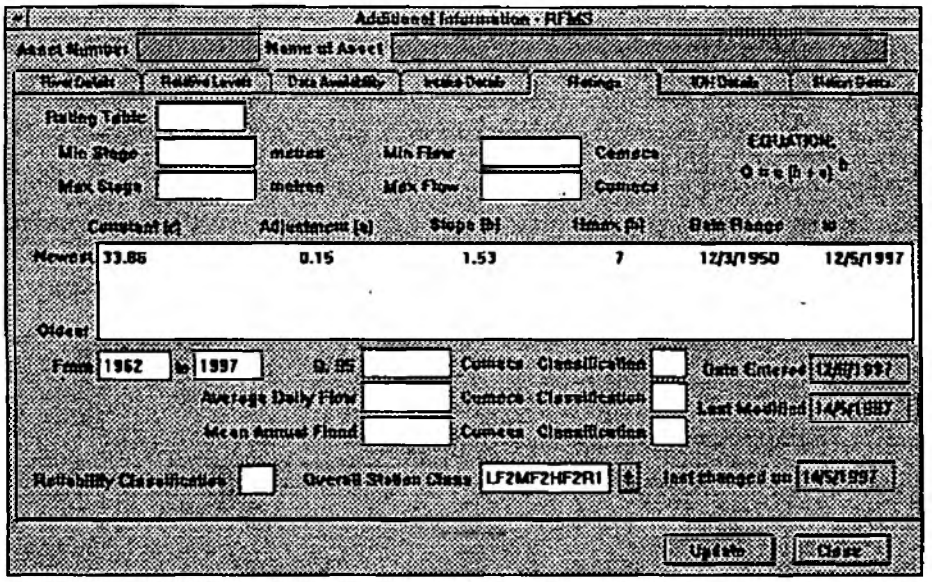
These un-regulated fields are entered by the user to indicate the height of the intermediate 2 intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

Lowest intake invert in metres (AOD/ALD) and diameter

These un-regulated fields are entered by the user to indicate the height of the lowest intake (floating point) whether it is above Local or Ordnance datum and its diameter in metres (also floating point).

2.3.2.1.3.6.5 Additional Details - RFMS Rating equations

This screen allows the user to enter the rating equations for the river flow monitoring station:



Rating Table

This free text field of 5 characters allows the user to type in a rating table type.

Minimum stage in Metres

This floating point number is the depth of the minimum stage in metres.

Maximum stage in Metres

This floating point number is the depth of the maximum stage in metres.

Minimum flow in Cumecs

This floating point number is the depth of the minimum flow in cumecs to 3 decimal places.

Maximum flow in Cumecs

This floating point number is the depth of the maximum flow in cumecs to 3 decimal places.

Ratings tables details:

The table of ratings would be editable within the form:

Constant(c)	Adjustment(a)	Slope(b)	Hmax(h)	Validity start date	Validity end date

This is an actual database table for all ratings, (see tableRatings).

From (year)

The validity (start date as a year) of the current classification figures such as Q95 is entered here.

to (year)

The validity (end date as a year) of the current classification figures such as Q95 is entered here.

Long term Q95

The long term Q95 flow value (fixed point to 3 decimal places) is entered here along with the value in cumecs also to 3 decimal places.

Long term average daily flows (adf)

The long term average daily flow (fixed point to 3 decimal places) is entered here along with the value in cumecs also to 3 decimal places.

Long term mean annual flood (maf)

The long term mean annual; flood value (fixed point to 3 decimal places) is entered here along with the value in cumecs also to 3 decimal places.

Overall station class

The Overall station classification can be entered here into this combo edit list box. Each new classification which is entered is added to a table of classifications to allow previous classifications to be viewed. The latest classification is the displayed class in the edit field.

Last date changed on

The last edit date of the currently shown overall station classification is displayed here. It is read only.

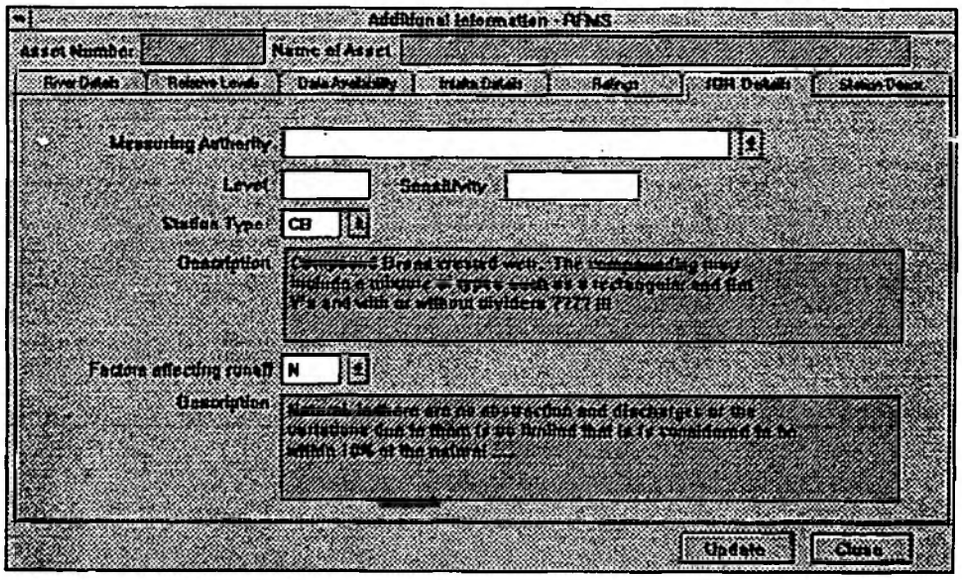
Date entered

This is the date the record was first entered.

Date Last modified

This is the date the record was last updated.

This screen allows the user to enter facts about the IOH (Institute of hydrology) details of the river flow monitoring station:



Measuring Authority

This is a lookup table of Measurement Authorities. (See lutRFMSMeasurementAuthorities)

Level

This is a free text field of 5 characters length.

Sensitivity

This field is a fixed precision value for the sensitivity with 3 decimal places.

Station Type

The station type is the short (initials) description of RFMS asset types. It is a look up from table lutRFMSStationTypes

Description

The description gives the full description as entered in lutRFMSStationTypes.

Factors affecting runoff

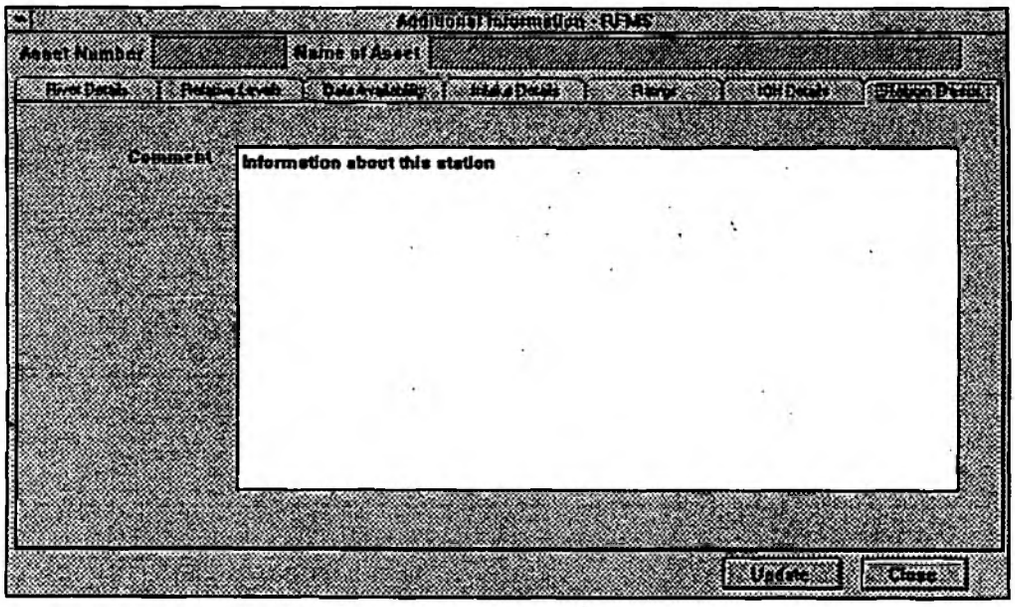
The factors affecting runoff are the short (initials) description of RFMS runoff types. It is a look up from table lutRFMSRunOffFactors.

Description

The description gives the full description as entered in lutRFMSRunOffFactors..

2.3.2.1.3.6.7 Additional Details - RFMS Rating Station description

This screen allows the user to enter a full description detailing the river flow monitoring station (additional comments may be added here also, although the history should store details of changes):



Comments

A large (512 characters) memo entry field to allow free text description, comments etc.

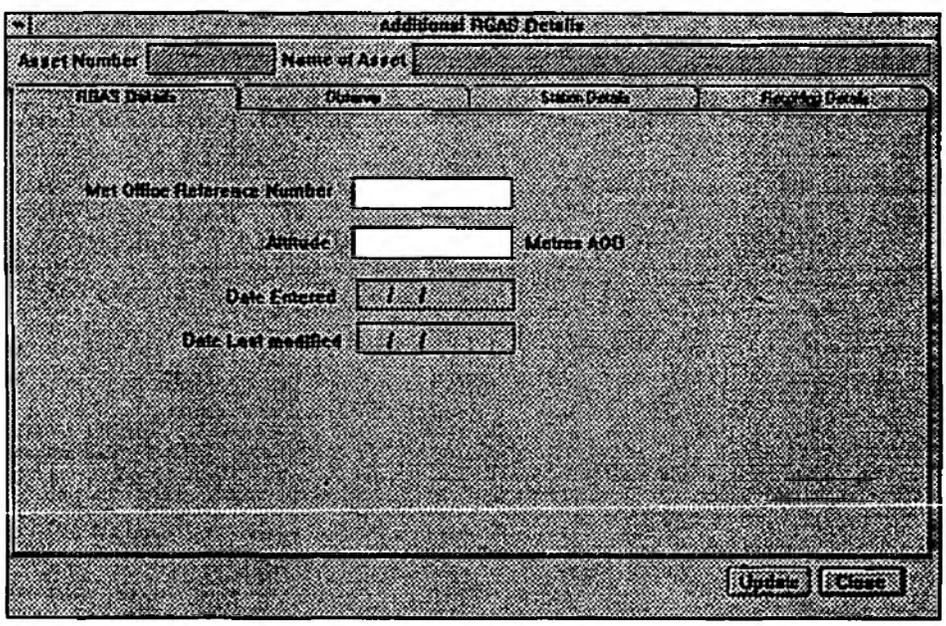
2.3.2.1.3.7 Rain gauging Stations

When the main fixed asset registration form is used to enter RGAS (Rain gauging Stations) *asset types*, then the additional details button can be used to enter specific details relating to that kind of fixed asset RGAS station.

The following screens show the additional RGAS screens:

2.3.2.1.3.7.1 Additional Details - RGAS details

This form covers the general details of the RGAS station:



Met Office reference number

This is an integer field for the MET Office reference number which relates to this RGAS site and is entered here by the user. (Up to 6 characters long)

Altitude (metres AOD)

This is a fixed point (3 decimal places) value and is related to the altitude above the local datum.

Date Entered

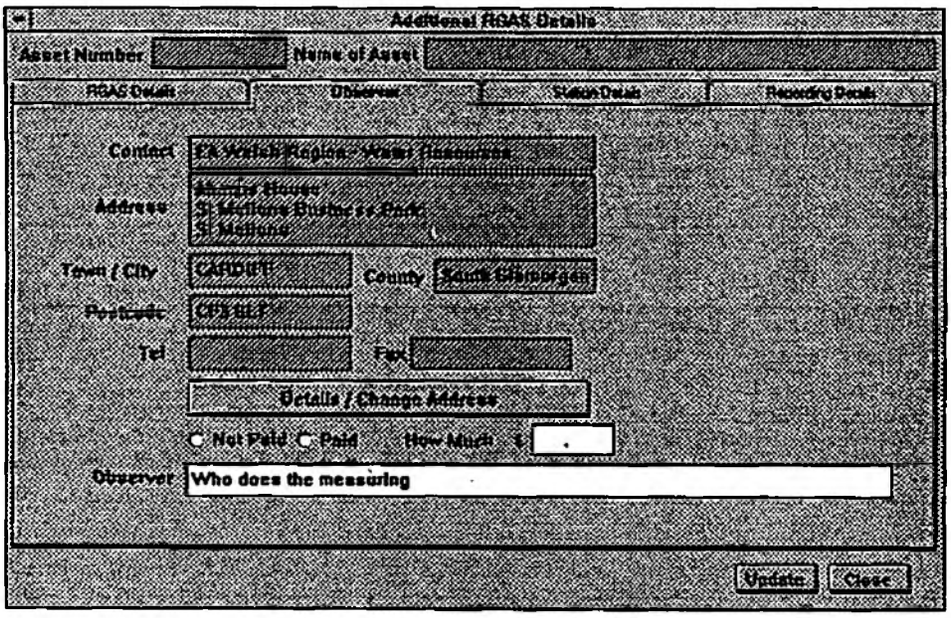
This read only field is the date that the RGAS details were first entered

Date last modified

This read only field is the date that the RGAS details were last changed.

2.3.2.1.3.7.2 Additional Details - RGAS observer details

This form covers the observer details of the RGAS station:



Observer, Address, Town / City, County, Postcode, Tel, Fax

These fields are read only fields from the currently selected address for the observer. The information comes from the main addresses table using "observer" as a filter for the address type.

Details / Change Address

This button allows a new address to be added or changed, and more information is available. (See above for add / modify address form). (Note the history will be maintained within this system as described in the introduction to allow access to the previous names)

Paid / Not paid

This radio button is sued to show whether the observer is paid or not.

How much

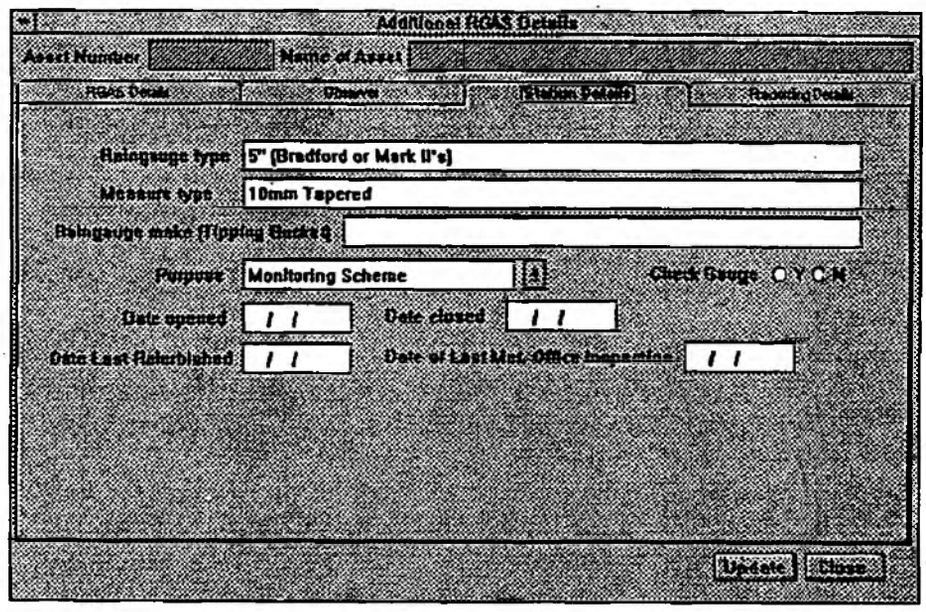
If the radio button above is set to paid then this field is enabled to allow a cost entry field.

Observer

Further details about the observer may be entered here in the free text field (50 characters)

2.3.2.1.3.7.3 Additional Details - RGAS station details

This form covers the station details of the RGAS station:



Raingauge type

This is a free text field and allows for up to 50 characters of text to describe the raingauge site type.

Measure type

This is a free text field and allows for up to 50 characters of text to describe the measure type used at this site.

Raingauge make (Tipping bucket)

This is a free text field and allows for up to 50 characters of text to describe the make of the tipping bucket type of raingauges used on this site.

Purpose

This field is a look up table of monitoring purposes for the rain gauge. (See table lutRGASPurposes).

Check gauge (Y/N)

These radio buttons are to indicate whether the raingauge fitted is being used as a check gauge or not.

Date opened

This free date field is used to indicate when the rain gauge was last started to be used before a series of measurements.

Date closed

This free date field is used to indicate when the last series of measurements ended using this raingauge.

Date last refurbished

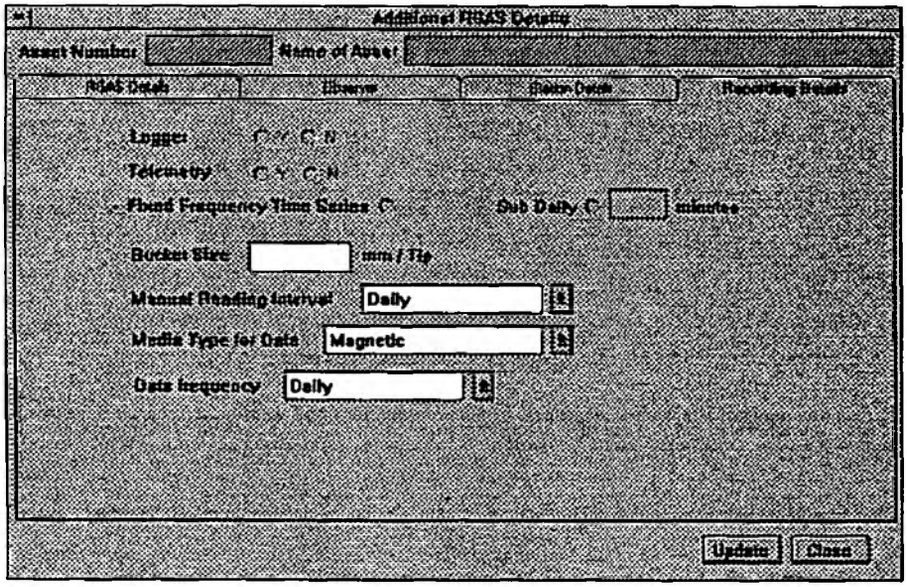
This free date field is used to indicate when this raingauge was last refurbished

Date of last Met office inspection

This free date field is used to indicate when the last MET Office inspection of this raingauge site occurred.

2.3.2.1.3.7.4 Additional Details - RGAS recording details

This form shows any linked information about recording with data loggers:



Logger

If there is a logger linked to this asset (defined within the site definition tree - See above) which is currently active then this radio button will show "Y" else it will show "N".

Telemetry

If there is a logger with telemetry linked to this asset (defined within the site definition tree - See above) which is currently active then this radio button will show "Y" else it will show "N".

Fixed frequency time series (option)

If there is a logger linked to this asset which is currently active using fixed frequency time series measurements , then this radio button will be shown as selected.

Sub Daily (option)

If there is a logger linked to this asset which is currently active using sub daily measurements, then this radio button will be shown as selected.

Sub Daily (option)

If there is a logger linked to this asset which is currently active using sub daily measurements, then this filed will show the interval - This may be a look up table - (See lutSubDailyIntervals)

Bucket size

The bucket size to be used at this site is set here it is an integer value in mm/tip.

Manual reading interval

This is the interval between readings used at this fixed asset. It is obtained from a lookup table. (See lutFrequencies/Days)

Media type for data

This is the type of data media used at this fixed asset. It is obtained from a lookup table. (See lutMediaTypes)

Data frequency

This is the frequency of data stored for this fixed asset. It is obtained from a lookup table. (See lutFrequencies/Days)

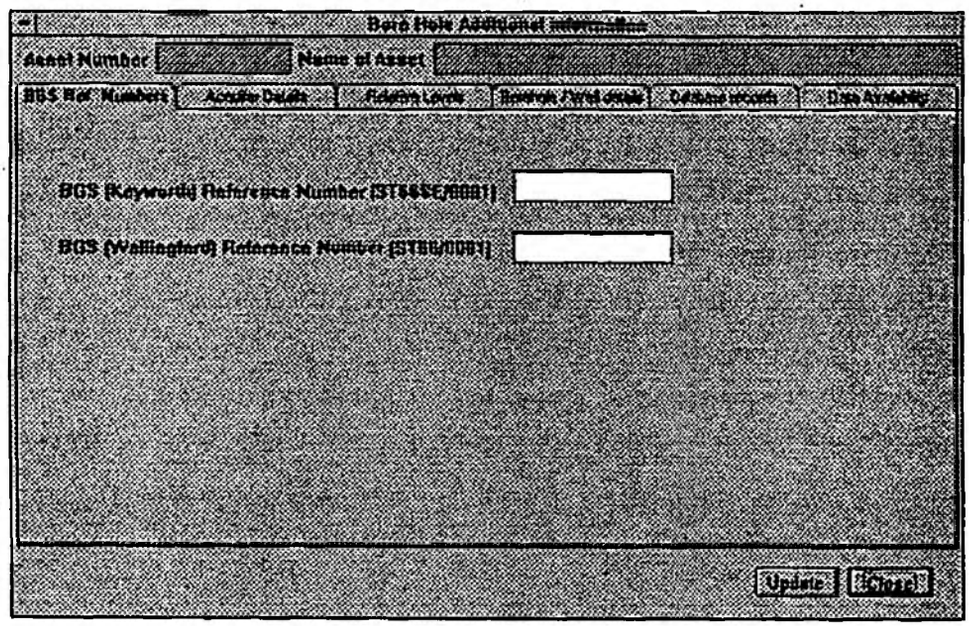
2.3.2.1.3.8 Bore Holes

When the main fixed asset registration form is used to enter Bore Hole *asset types*, then the additional details button can be used to enter specific details relating to that kind of fixed asset bore hole.

The following screens show the additional Bore Hole screens:

2.3.2.1.3.8.1 Additional Details - BGS Ref Numbers

This screen allows the reference numbers for British Geological Society to be entered for the bore hole in question:



BGS (Keyworth) reference number

The reference used by the Keyworth British Geological society for this Borehole is entered here. (Up to 11 digits)

The reference will be in the following format

ST66SE/0000

BGS (Wallingford) reference number

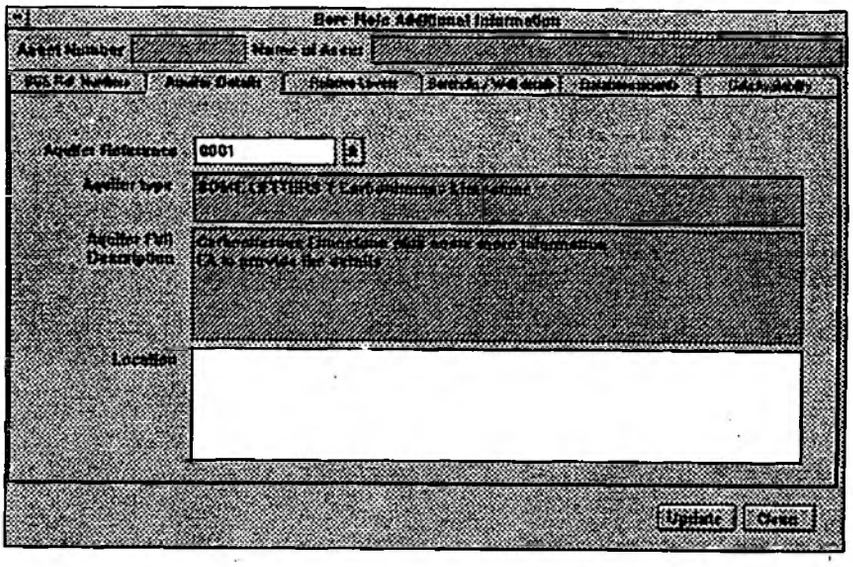
The reference used by the Wallingford British Geological society for this Borehole is entered here. (Up to 9 digits)

The reference will be in the following format

ST66/0000

2.3.2.1.3.8.2 Additional Details - Borehole Aquifer details

This form allows the aquifer details relating to the bore hole, to be entered



Aquifer reference

This is the reference number for the aquifer type and comes from a lookup table. (See lutAquiferDetails.)

Aquifer type

This is the description of the geology for the aquifer - The Environment Agency to provide this information. (The information will come from lutAquiferDetails and is automatically linked to the full description)

Aquifer Full Description

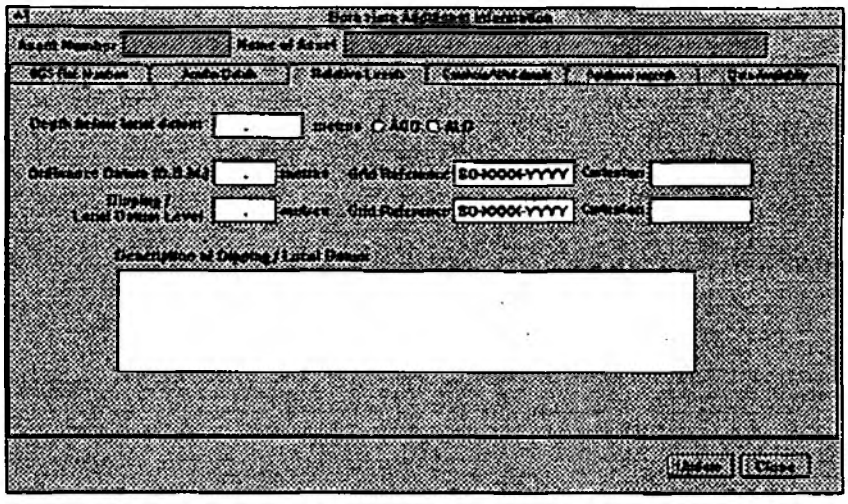
This is the full description of this kind of aquifer - The Environment Agency to provide this information. (The information will come from lutAquiferDetails and is automatically linked to the aquifer type)

Location

This free text field allows for description of the location up to 128 characters in length.

2.3.2.1.3.8.3 Additional Details - Relative levels

The altitude details of the borehole attributes are entered here:



Depth below local datum (AOD / ALD)

The depth below the local datum point in metres is a fixed point value of 3 decimal places resolution. The user must also select whether the datum is the Local datum or the ordnance datum.

Ordnance Datum in meters

These fields allow the fixed point value of the height of the ordnance datum (Ordnance Benchmark) in metres.

Grid Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the ordnance datum will be automatically calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Dipping / Local Datum in meters

The height of the local datum as a fixed point number in metres is entered by the user into this field.

Grid Reference of dipping / local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of dipping / local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

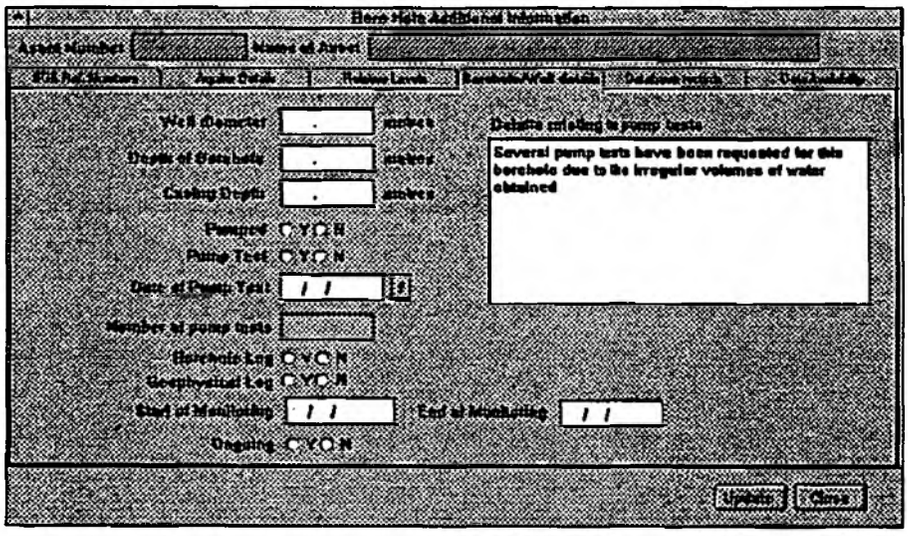
Once this field has been entered, the national grid reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Description of dipping local datum

This is a Memo edit field which is not restricted and has a length of 500 characters maximum. The text may need to scroll the memo field to fit in all text when fully filled in.

2.3.2.1.3.8.4 Additional Details - Borehole / Well details

Further information about the borehole itself is entered on this form:



Well diameter (Metres)

The diameter of the well in metres is entered here by the user as a fixed point value to 3 decimal places.

Depth of borehole

The depth of the borehole is entered here by the user as a fixed point value to 3 decimal places.

Casing Depth

The depth of the man made casing of the borehole is entered here by the user as a fixed point value to 3 decimal places.

Pumped (Y/N)

If the borehole is pumped then this radio button should be set "Y" by the user else it should be set to "N"

Pump test (Y/N)

If the borehole has had a pump test then this radio button should be set "Y" by the user else it should be set to "N"

Date of pump test

Each time a pump test is done on this borehole then the date of that test should be entered here as a date entry. (It is a combo list box allowing previous dates to be seen from the history).

Number of pump tests

This field will be automatically updated from the number of dates entered in the above combo list box.

Borehole log

If there is a borehole log maintained then the usre must enter "Y" here, otherwise enter "N".

Geophysical log

If there is a geophysical log maintained then the user must enter "Y" here, otherwise enter "N".

Start of Monitoring

The date that monitoring was started on this borehole is entered here manually as a date entry.

End of Monitoring

The date that monitoring ended on this borehole is entered here manually as a date entry.

Ongoing (Y/N)

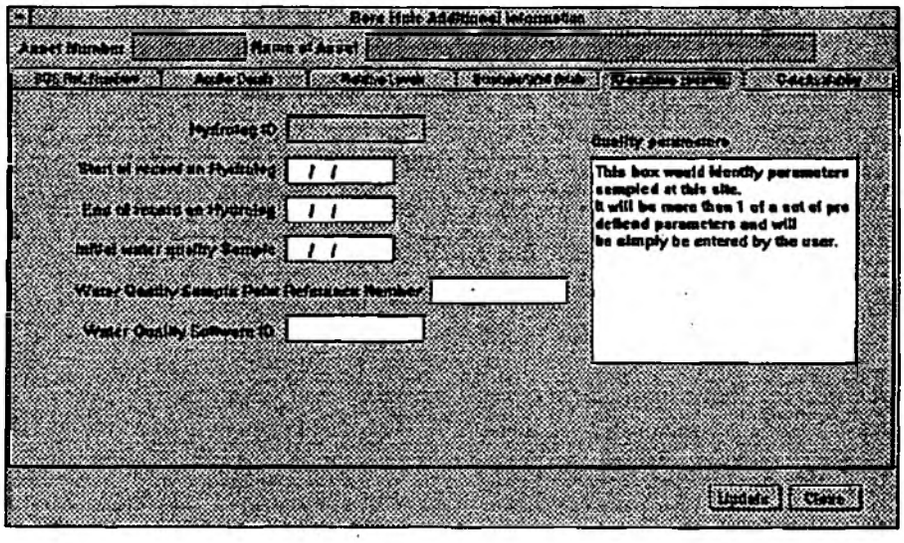
If the monitoring is still ongoing then this radio button is set to "Y" else it is set to "N".

Details relating to pump tests.

The user may enter a multi line (memo) field here to describe why the pump tests are being carried out.

2.3.2.1.3.8.5 Additional Details - Database records

The database record of the hydrolog software is stored in this form:



Hydrolog ID

This ID number is typed in here as a free text entry of 12 characters.

Start of record on Hydrolog

This date field is entered to indicate when the record was started on the hydrolog software.

End of record on Hydrolog

This date field is entered to indicate when the record was ended on the hydrolog software.

Initial water quality sample

This date field is entered to indicate when the initial water quality sample was taken.

Water quality sample point reference number

This reference number is used to indicate the water quality sample and is a free text field of 12 characters in length.

Water quality Software ID

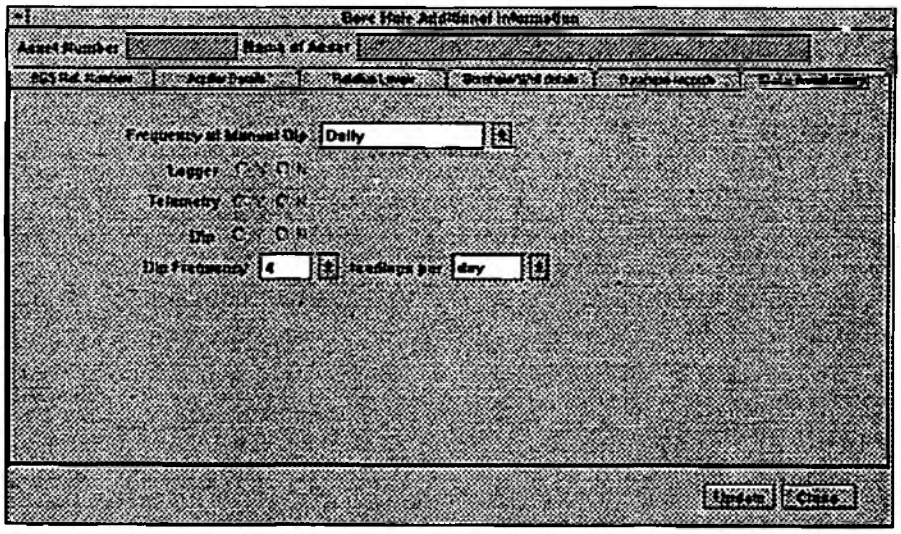
This field is the water quality software ID number and is a free text 10 character field.

Quality parameters

This field allows the user to identify paremeters sampled at this site. It will be more than 1 of a set of pre-defined parmeters, entered as free text - Up to 500 characters are to be used to store this data.

2.3.2.1.3.8.6 Additional Details - Data Availability

The following form links the Borehole with the availability of data from data loggers:



Frequency of Manual dip

This is the interval between readings used at this fixed asset. It is obtained from a lookup table. (See lutFrequencies/Days)

Logger (Y/N)

If there is an active logger attached to this bore hole, then this read only radio button will be set to "Y" otherwise it will be set to "N".

Telemetry (Y/N)

If there is an active logger with telemetry attached to this bore hole, then this read only radio button will be set to "Y" otherwise it will be set to "N".

Autographic (Y/N)

If there is an autographic chart recorder attached to this asset (as defined by the site asset definition tree) then this read only radio button is set to "Y" otherwise it is set to "N".

DIP frequency

The number of readings per day is set in this field for the datalogger attached to this bore hole and is derived from the lookup table lutLoggerEventFrequency.

Dip frequency period reference (list box)

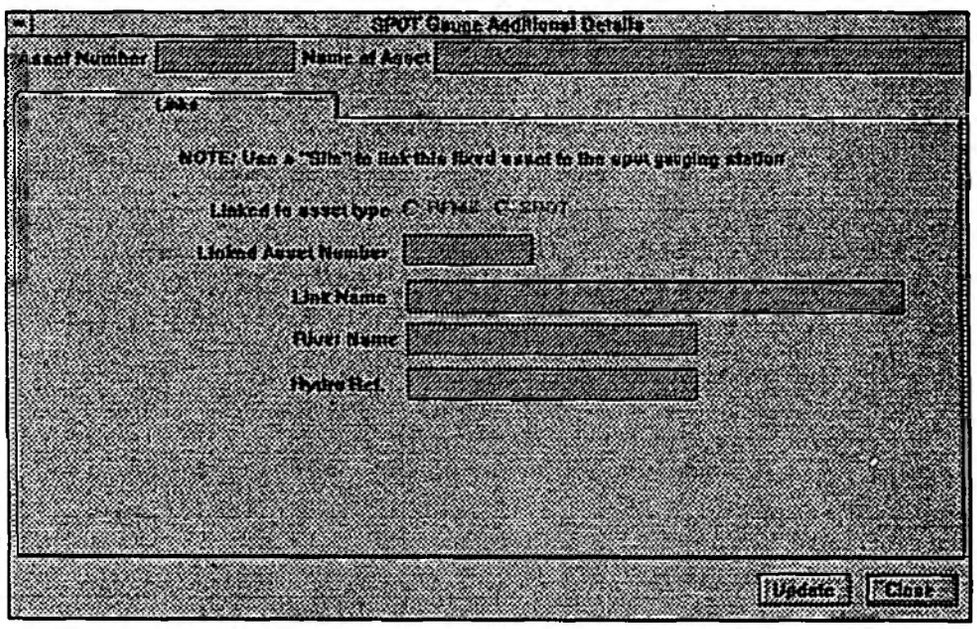
This list box allows the user to select the period to which the DIP frequency is related. For examples 4 readings per *day*, 5 readings per *week*. It is derived from a look up table (see lutDipFrequencyDurations).

2.3.2.1.3.9 SPOT Gauging sites

When the main fixed asset registration form is used to enter SPOT gauging sites *asset types*, then the additional details button can be used to view the linking details to other asset types.

The following screens show the additional SPOT gauge screens:

2.3.2.1.3.9.1 Additional Details - SPOT Gauging sites



Linked to asset type RFMS / SPOT

If the site definition contains an RFMS and SPOT gauge site then the linked to asset type read only radio button is set to "RFMS" otherwise it is set to "SPOT".

Linked asset number

If the site definition contains the RFMS and SPOT sites then the number of the RFMS site associated with this SPOT site is shown here (read only).

Link Name

The name of the linked asset (above) is displayed here. (read only)

River name

The name of the river of the linked asset (above) is displayed here. (read only)

Hydro Reference

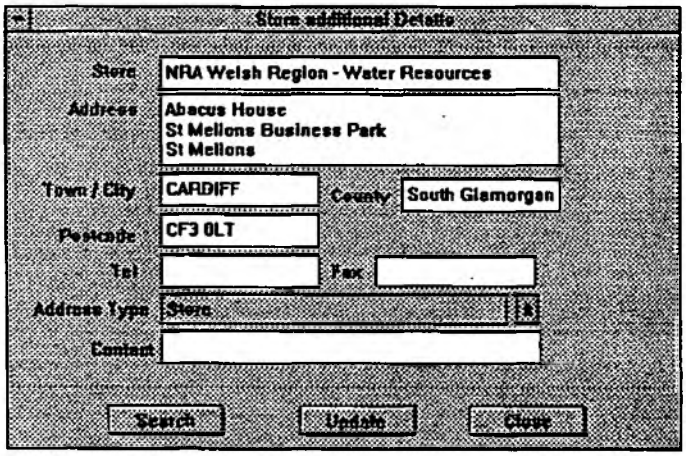
The name of the hydro reference of the linked asset (above) is displayed here.(read only)

2.3.2.1.3.10 STORE fixed assets

When the main fixed asset registration form is used to enter STORE *asset types*, then the additional details button has no information, however, the message could be displayed to indicate some help message.

2.3.2.1.3.10.1 Additional Details - SPOT Gauging sites

The following screens show the additional store message:



Store

This is the name of the store - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Address

This is the address of the store - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Town/City

This is the town or city the store is in - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Postcode

This is the postcode of the store - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Tel

This is the telephone number of the store - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Fax

This is the fax number of the store - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

Address Type

This is the address type of the store - It it can only ever be Store.

Contact

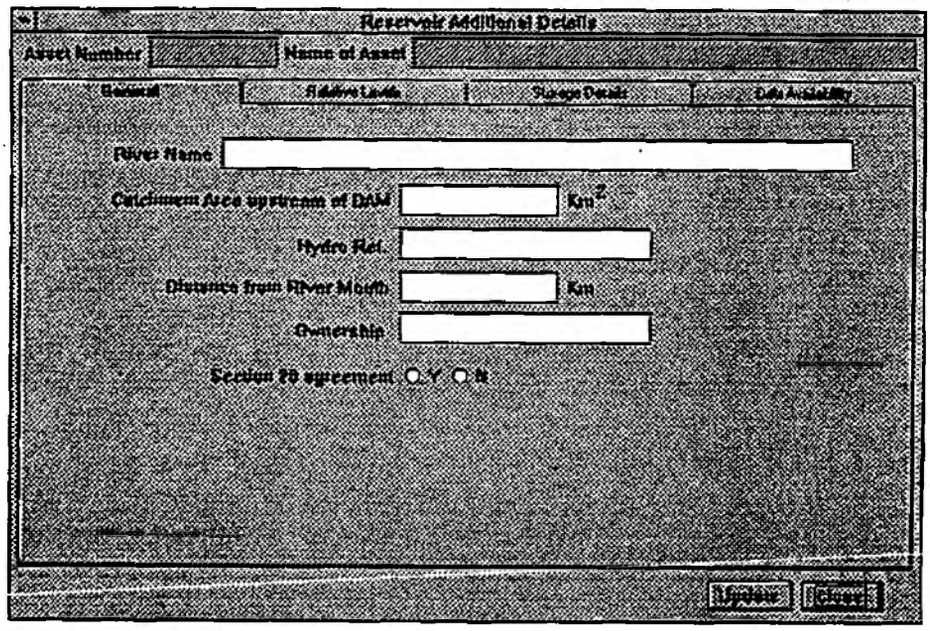
This is the name of the contact - It comes from the address table (see tableAddresses) and cannot be modified - to enter a new address the user must click on Search and enter into the main address entry form.

2.3.2.1.3.11 Reservoir fixed assets

When the main fixed asset registration form is used to enter RES (Reservoirs) *asset types*, then the additional details button can be used enter additional reservoir details.

The following screens show the additional RES screens:

2.3.2.1.3.11.1 Additional Details - Reservoirs General Information



River Name

The river name of the river on which the reservoir is placed is described here by the user and is a 40 character free text field.

Catchment Area Upstream of DAM

The area of the catchment area upstream of the DAM is entered here by the user in Km^2 it is a floating point number of up to 8 digits.

Hydro Reference

The hydro reference number is entered manually by the user as a 32 digit number.

Distance from River mouth

The distance from the river mouth in Km is entered here as a fixed point number of 3 decimal places accuracy.

Ownership

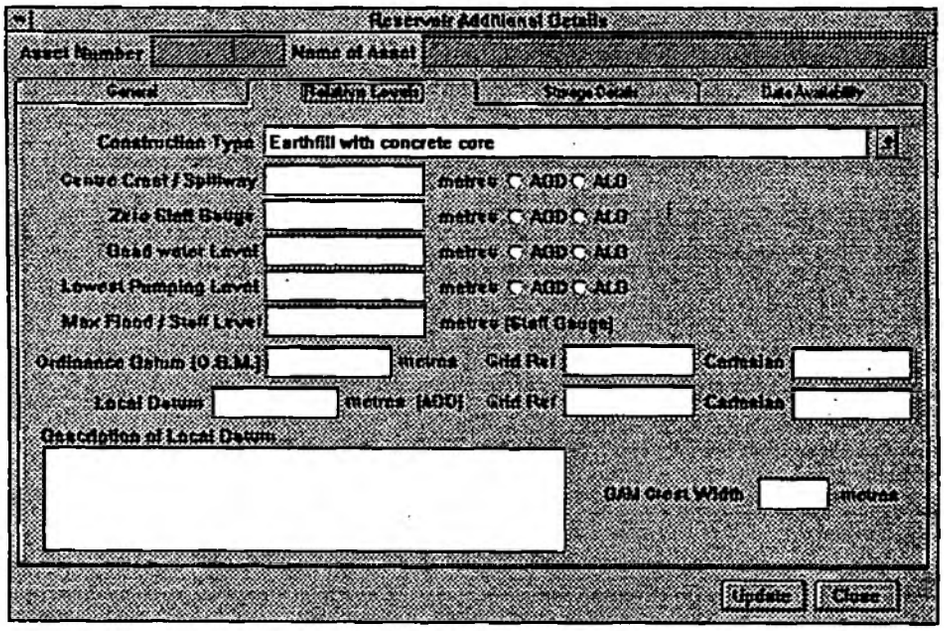
This free text field is used to indicate the ownership of the reservoir

Section 20 agreement (Y/N)

If there is a section 20 agreement associated with this reservoir then this option button should be set to "Y" otherwise it should be set to "N".

2.3.2.1.3.11.2 Additional Details - Reservoirs Relative Levels

The following form shows the reservoir relative levels details



Construction Type

This field is derived from the lookup table for construction types (maintained in the lookup tables section of the software - see below) and is a drop down list box of available types.

Centre Crest / Spillway (Metres AOD/ALD)

This field is the elevation of the centre crest or spillway of the reservoir and is entered here by the user. The field is a floating point number and is followed by a radio button to indicate whether the value is above either the ordnance or local datum point.

Zero Staff Gauge (Metres AOD/ALD)

This field is the elevation of the Staff gauges zero point and is entered here by the user. The field is a floating point number and is followed by a radio button to indicate whether the value is above either the ordnance or local datum point.

Dead water level (Metres AOD/ALD)

This field is the elevation of the dead water level and is entered here by the user. The field is a floating point number and is followed by a radio button to indicate whether the value is above either the ordnance or local datum point.

Lowest Pumping Level (Metres AOD/ALD)

This field is the elevation of the lowest pumping level and is entered here by the user. The field is a floating point number and is followed by a radio button to indicate whether the value is above either the ordnance or local datum point.

Max flood / Staff Level (Metres AOD/ALD)

This field is the elevation of the Maximum flood or maximum staff gauges level and is entered here by the user. The field is a floating point number and is followed by a radio button to indicate whether the value is above either the ordnance or local datum point.

Ordnance Datum in meters

These fields allow the fixed point value of the height of the ordnance datum (Ordnance Benchmark) in metres.

Grid Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Local Datum in meters

The height of the local datum as a fixed point number in metres is entered by the user into this field.

Grid Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

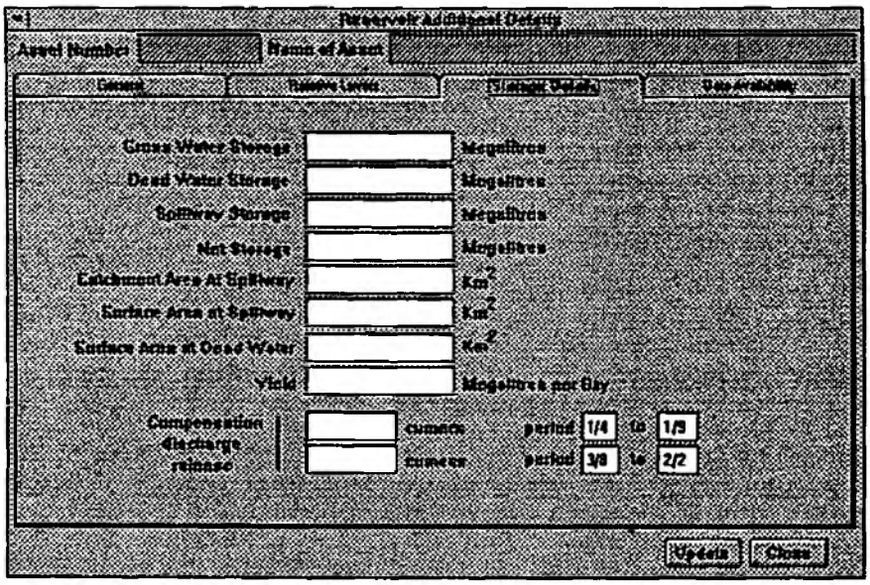
Description of local datum

This is a Memo edit field which is not restricted and has a length of 500 characters maximum. The text may need to scroll the memo field to fit in all text when fully filled in.

DAM Crest width

This field is the width of the DAM in meters and is entered as a fixed point value (to 3 decimal places)

2.3.2.1.3.11.3 Additional Details - Reservoirs - Storage details



Gross Water Storage (Megalitres)

The Gross storage capacity of the reservoir is entered here by the user and is in Megalitres. The field is a long integer.

Dead Water storage (Megalitres)

The dead water storage capacity of the reservoir is entered here by the user and is in Megalitres. The field is a long integer.

Spillway Storage (Megalitres)

The storage capacity of the reservoirs spillway is entered here by the user and is in Megalitres. The field is a long integer.

Net Storage (Megalitres)

The net storage capacity of the reservoir is entered here by the user and is in Megalitres. The field is a long integer.

Catchment area at spillway (Km^2)

The catchment area of the reservoir is entered here by the user and is in Km^2. The field is a long integer.

Surface area at spillway (Km^2)

The surface area of the reservoir is entered here by the user and is in Km^2. The field is a long integer.

Surface area at dead water (Km^2)

The surface area at dead water of the reservoir is entered here by the user and is in Km^2. The field is a long integer.

Yield

In this field the user should enter the yield of the reservoir in megalitres per day.

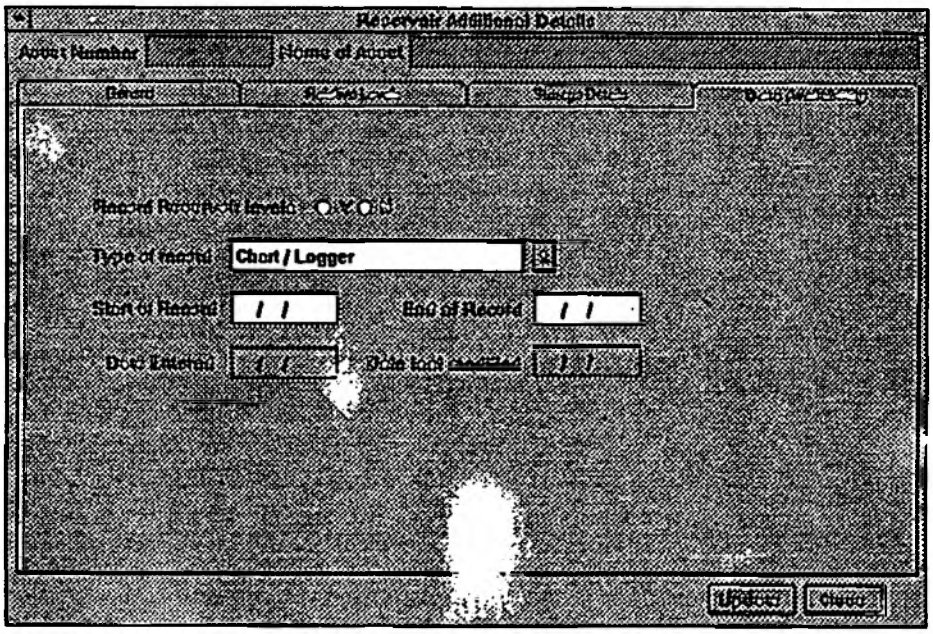
Compensation discharge release 1st entry

This field allows for the entry of a figure for the compensation discharge release and its period of validity. The period of validity is an annual figure and thus does not have a year associated with it.

Compensation discharge release 2nd entry

This field allows for the entry of a second figure for the compensation discharge release and its period of validity. The period of validity is an annual figure and thus does not have a year associated with it.

2.3.2.1.3.11.4 Additional Details - Reservoirs - Data availability



Record reservoir levels

If reservoir levels are to be recorded then the user clicks on the "Y" radio button otherwise he clicks on "N".

Type of record

This is a look up value for the types of record for this reservoir. (See lutReservoirRecordTypes)

Start of record

This date field is manually entered by the operator and is when the record started.

End of record

This date field is manually entered by the operator and is when the record ended.

Date entered

This date is automatically generated by the PC when the additional information for the data availability is first entered. (Read only)

Date updated

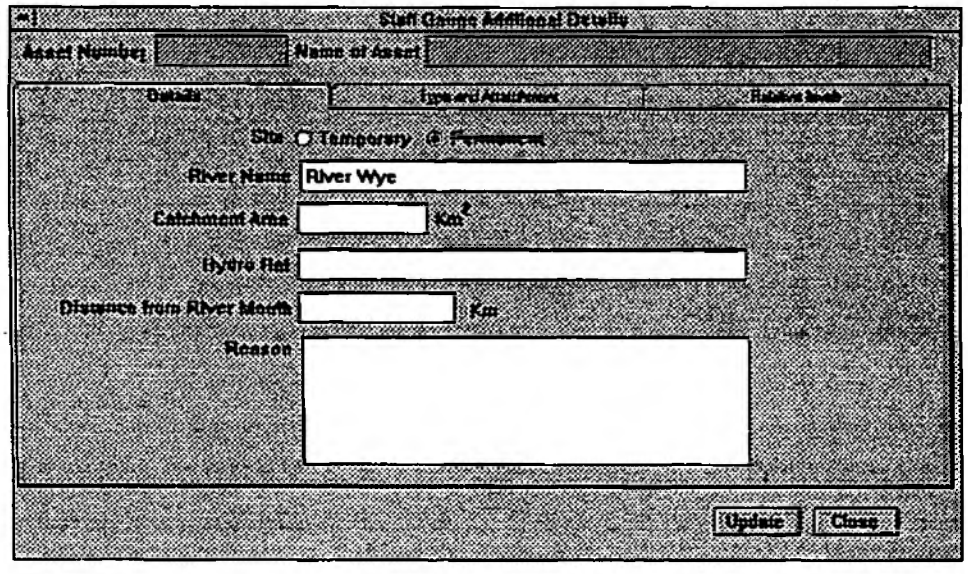
This date is automatically generated by the PC when the additional information for the data availability was last entered. (Read only)

2.3.2.1.3.12 STAFF fixed assets

When the main fixed asset registration form is used to enter STAFF (Staff gauge sites) *asset types*, then the additional details button can be used enter additional Staff site details.

The following screens show the additional STAFF screens:

2.3.2.1.3.12.1 Additional Details - STAFF - details



Site - Temporary / Permanent

The user must click on either "temporary" or "permanent" to indicate which type of fixed asset Staff Gauge site is being defined.

River name

The name of the river being monitored is entered here it is a free text field of 40 characters length.

Catchment Area

The area of the catchment area is entered here by the user in Km^2 It is a floating point number of up to 8 digits.

Hydro Reference

The hydro reference number is entered manually by the user as a 32 digit number.

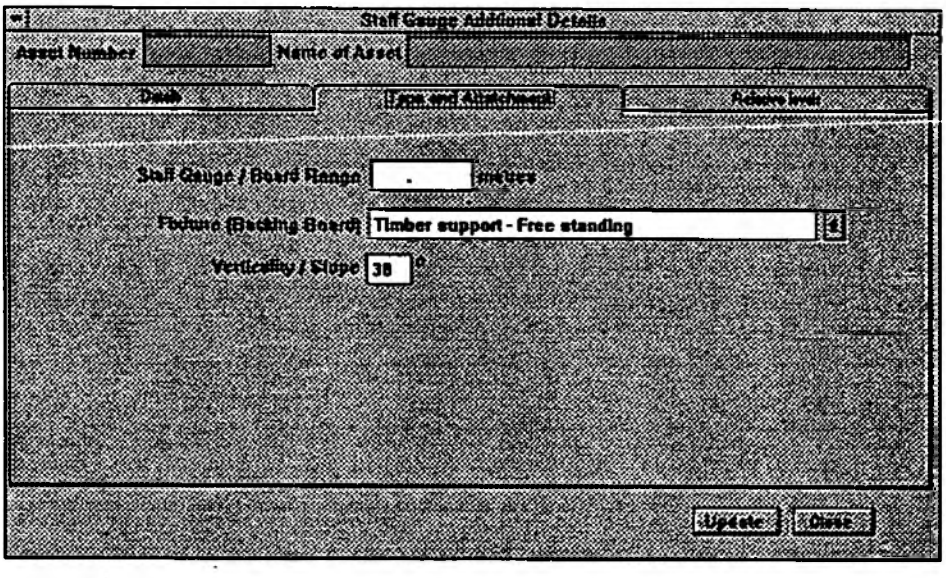
Distance from River mouth

The distance from the river mouth in Km is entered here as a fixed point number of 3 decimal places accuracy.

Reason

This field allows the user to enter a text reson for the staff asset being at that site. It is a memo field of up to 250 characters.

2.3.2.1.3.12.2 Additional Details - STAFF type and attachment



Staff gauge / Board range

The range (in metres) of the Staff Gauge used in this fixed asset is entered by the user in this field as a fixed point value (to 3 decimal places).

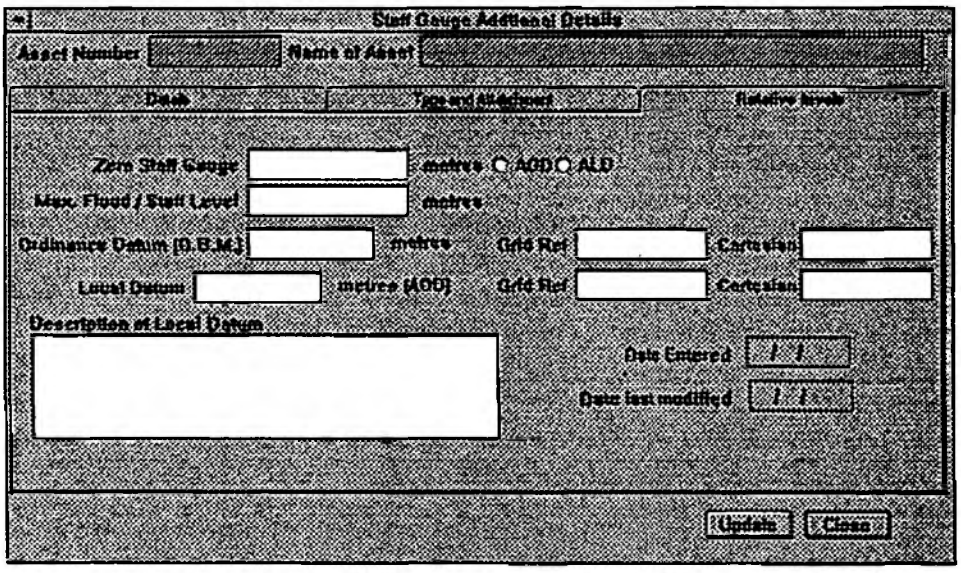
Backing Board

The kind of backing board for the Staff Gauge is entered here and is derived from a look up table (See lutBackingBoardTypes) and is entered by selecting an entry in the drop down list box.

Verticality / Slope

The verticality or slope value is entered here by the user as in integer value.

2.3.2.1.3.12.3 Additional Details - STAFF relative levels



Zero Staff gauge (metres AOD / ALD)

This fixed point field (to 3 decimal places) is entered by the user to indicate the elevation of the zero point on the staff gauge and whether it is above Local or Ordnance datum.

Maximum flood / staff level (metres)

This fixed point field (to 3 decimal places) is entered by the user to indicate the maximum flood or Staff level on the staff gauge to be fixed at this fixed asset.

Ordnance Datum in meters

These fields allow the fixed point value of the height of the ordnance datum (Ordnance Benchmark) in metres.

Grid Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of Ordnance datum

This text field allows the grid reference of the ordnance datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the ordnance datum will be calculated and updated according to known rules supplied by the Environment Agency

Local Datum in meters

The height of the local datum as a fixed point number in metres is entered by the user into this field.

Grid Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

SO-XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the cartesian reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Cartesian Reference of local datum

This text field allows the grid reference of the local datum to be entered according to certain rules:

XXXX-YYYY (Environment Agency to provide information)

Once this field has been entered, the national grid reference of the local datum will be calculated and updated according to known rules supplied by the Environment Agency

Description of local datum

This is a Memo edit field which is not restricted and has a length of 500 characters maximum. The text may need to scroll the memo field to fit in all text when fully filled in.

Date entered

The date is generated by the PC when the relative levels information is first entered and displayed here as a read only date field.

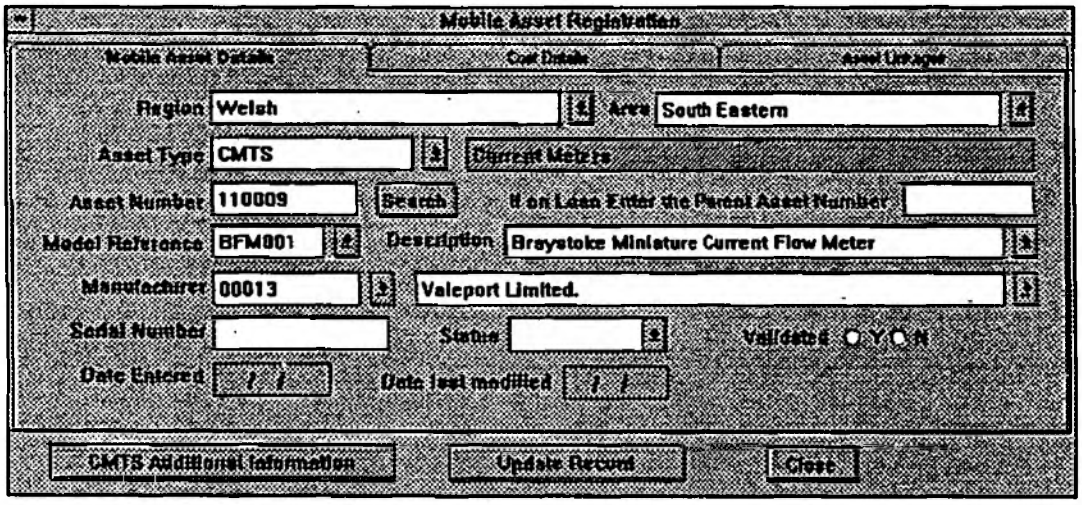
Date last modified

The date is generated by the PC when the relative levels information is changed and displayed here as a read only date field.

2.3.2.1.4 Register Mobile Assets

Returning to the Site asset definition, as described earlier, the user can associate mobile assets with a fixed asset by selecting the fixed asset within the site, and clicking on the "Add mobile asset" or "New mobile asset" buttons.

When the user has elected to enter a new mobile asset (or edit an existing one) the following form will be presented:



Region

This is a drop-down list box with a database lookup (lutAgencyRegions). (It should default to region set up during installation)

Area

This is a drop down list box with a database lookup (lutAgencyAreas). (It should default to area set up during installation)

Asset type

This is a drop down list box with a database lookup (lutAssetTypes) (Automatically updated when the Asset type description is changed.)

Asset type Description

Next to mobile asset types are the mobile asset type descriptions also a database lookup (lutAssetTypes). This is a read only field. (Automatically updated when the Asset type is changed.)

Asset Number

The asset number is calculated from a unique number (the next fixed asset record number) according to the following rules:

The asset seed is obtained from the areas look up tables using the mobile asset seed (lutAgencyAreas)

If on loan the parent asset number

This number is a unrestricted text field of 12 characters and may be entered if the mobile asset is on loan from another region or area to allow traceability of borrowed equipment.

Model reference

The model reference number of the mobile asset is derived from a lookup table of manufacturers and model details. (See lutModelDetails). The Model description is changed on selection of a new model reference.

Model Description

This model description field may be used to select the model also and is derived from a lookup table of manufacturers and model details. (See lutModelDetails). The Model reference is changed on selection of a new description.

Manufacturer ID

This is the ID from the main address table (all addresses are held in the one table). The filter used to list all those addresses for the mobile assets is address type = "Manufacturer". See tableAddresses.

Manufacturer Na

This is the name of the manufacturer from the main address table (all addresses are held in the one table). The filter used to list all those addresses for the mobile assets is address type = "Manufacturer". See tableAddresses.

Status

This is the status of the mobile asset (Such as active, inactive etc) This is a database look up table (lutStatus).

Record Validated

Simply a boolean (Yes/No) to indicate that the record has been checked by someone.

Date Entered

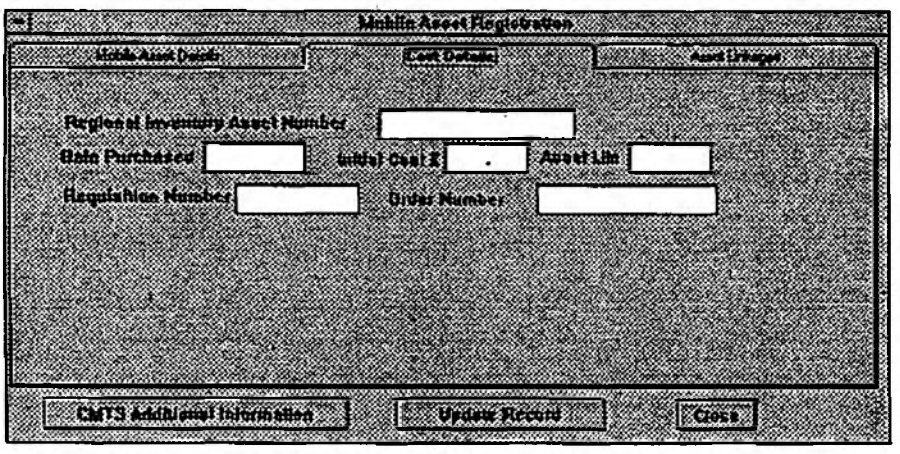
A computer generated date for when the fixed asset record was generated / entered first.

Date Last Modified

A computer generated date to indicate when the record was last changed. (used for the change history also)

2.3.2.1.4.1 Mobile Assets - Cost Details Tab.

If the user wishes to enter more information, specifically about the cost of the fixed asset, then the user must click on the Cost details Tab producing the following form page:



Regional Inventory Asset Number

The regional inventory asset number is entered here as a text field of 20 characters.

Date Purchased

The date the mobile asset was purchased is entered here by the user. It is a date field.

Initial Cost

The purchase cost of the asset is entered here, it is a cost field.

Asset Life

The asset life is a look up (read only) field attained from the asset type look up tables. (See lutAssetTypes)

Requisition Number

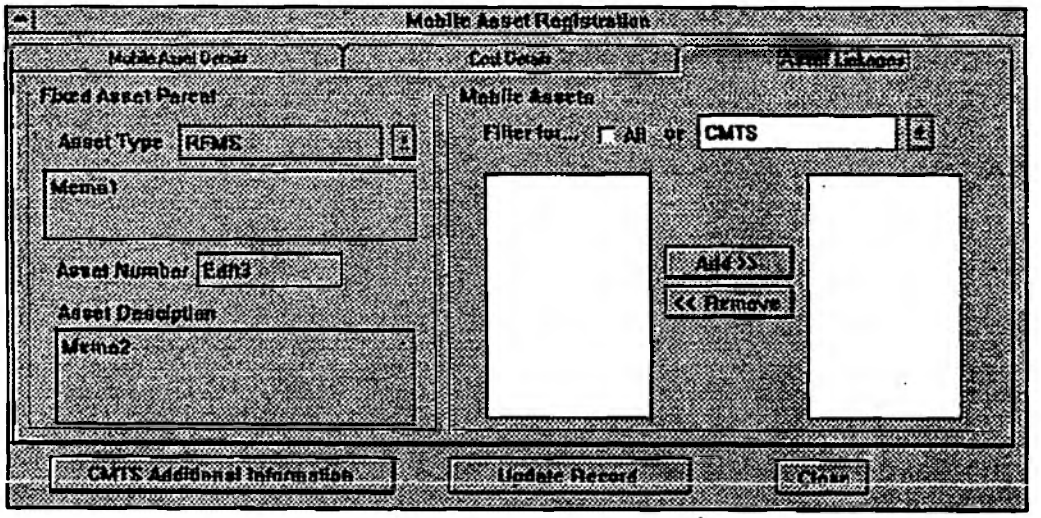
The purchase requisition number is entered here as a free text field of 10 characters in length.

Order Number

The purchase order number is entered here as a free text field of 15 characters in length.

2.3.2.1.4.2 Mobile Assets - Mobile Asset Linkages Tab.

Within each mobile asset, there can be links to other assets, such as Loggers which "contain sensors". the user must click on the linkages tab to define these links:



Fixed Asset Parent - Asset Type, Asset Number and Asset Description

In this group, the above information is shown relating to the parent fixed asset to remind the user which assets are being dealt with.

Mobile Assets:

Mobile Assets - Filter for All / List

Checking on the Filter for all checkbox will cause all available (un attatched) mobile assets to be listed on the left hand list box below. Clicking on one of the asset types list will deselect the check box and only allow assets of that type to be shown in the left hand list box below

Add Button

If the user wants to add mobile assets to this mobile asset (for example a sensor to a logger) then he / she must select the asset required on the left and then click on the add button. The mobile asset (in this example a sensor) would then appear on the right hand side and disappear from the left.

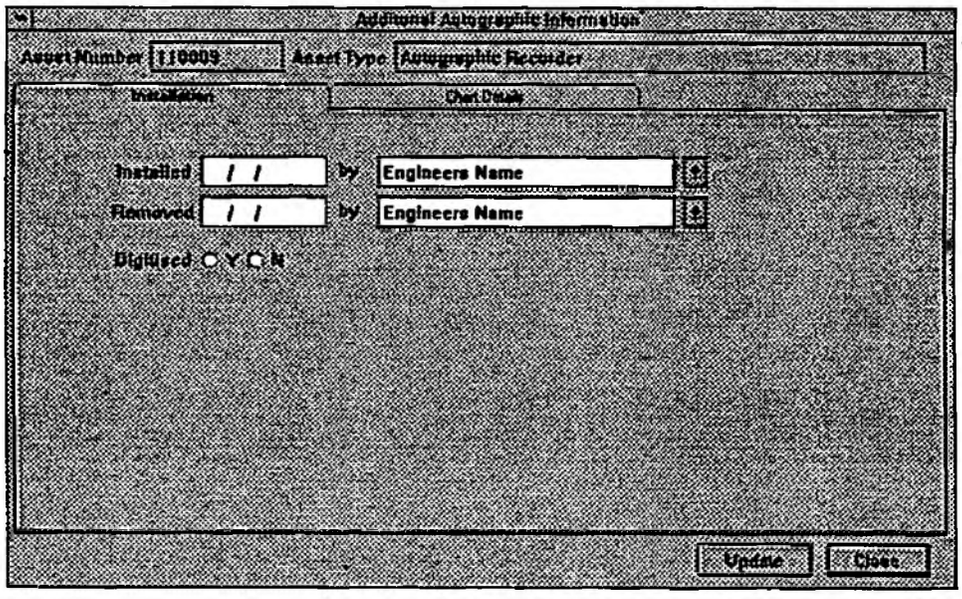
Remove Button

If the user wants to remove mobile assets from this mobile asset (for example a sensor from a logger) then he / she must select the asset to be removed on the right and then click on the remove button. The mobile asset (in this example a sensor) would then appear on the left hand side and dissappear from the right.

2.3.2.1.4.3 Mobile Assets additional details - Autographic recorders Installation Details

Returning to the mobile asset main entry form. For most of the mobile asset types, there are additional forms available depending on the asset types (rather similar to the fixed asset approach). To select these additional forms, the user must click on the "XXXX Additional Information" button at the bottom of the main mobile asset form, where XXXX is the asset type such as RAIN, AUTO etc.)

If the mobile asset being detailed is an autographic chart recorder, then by clicking on the Additional information button further details may be entered about the mobile asset. The following form will be displayed:



Installed

This is the date that the autographic chart recorder was installed. It is a date field.

Installed By

This is the name of the commissioning engineer and is obtained from the look up table for Staff - (See lutStaffDetails)

Removed

This is the date that the autographic chart recorder was removed. It is a date field.

Removed By

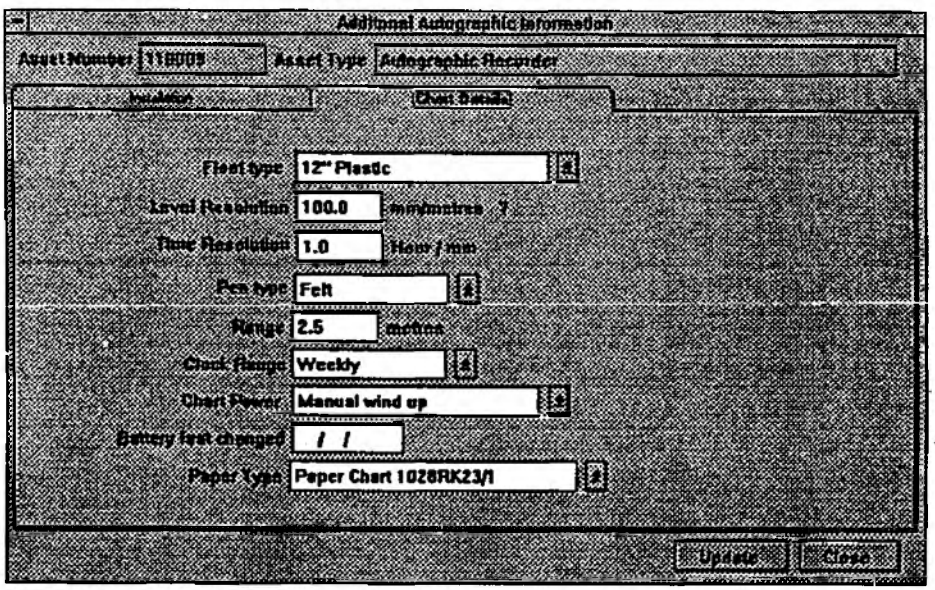
This is the name of the commissioning engineer and is obtained from the look up table for Staff - (See lutStaffDetails)

Digitised (Y/N)

This field is a boolean field which sets whether the results from the chart recorder are digitised or not.

2.3.2.1.4.4. Mobile Assets additional details - Autographic recorders Chart Details

Additional details may be entered about the autographic chart recorder type. The user must click on the Chart Details Tab and following form page will be displayed:



Float Type

This field describes the type of float used on the autographic chart recorder - It is derived from a look up table (See lutChartFloatTypes)

Level resolution

This field is the water level resolution and is entered as a fixed point number (to 3 decimal places)

Time resolution

This field is the chart time resolution and is entered as a fixed point number (to 1 decimal place)

Pen type

This field describes the type of pen used on the autographic chart recorder - It is derived from a look up table (See lutChartPenTypes)

Range

This field is the chart recorder range and is entered as a fixed point number (to 1 decimal place)

Clock range

This is the range of the clock in the chart reocrder and is derived from the frequencies in days look up table (See lutFrequenciesDays)

Chart power

This is the type of source of power for the chart reocrder and is derived from the Chart Power types look up table (See lutChartPowerTypes)

Battery last changed

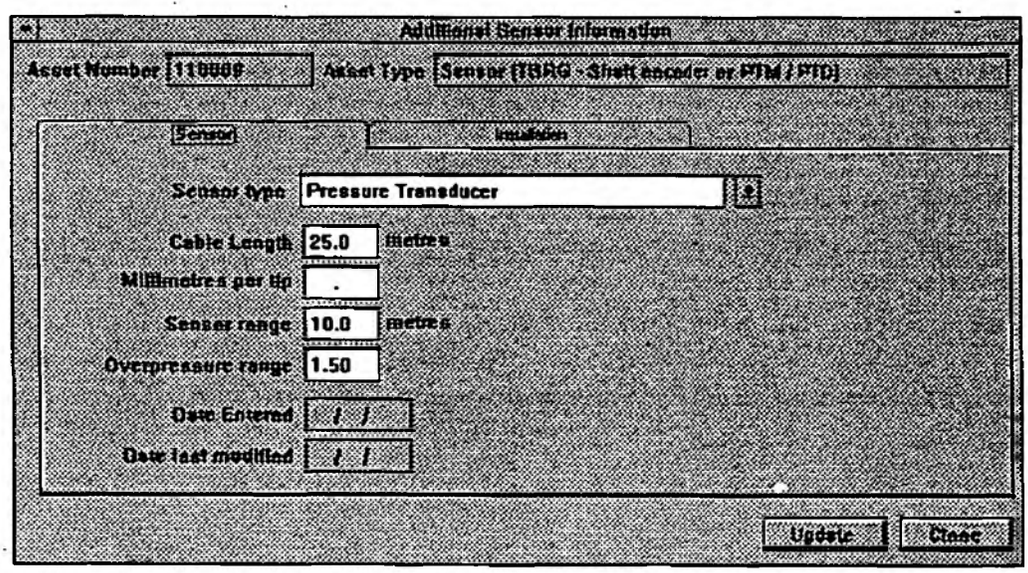
If applicable, this is the date that the user should use for the time when the battery was last replaced (only available if the chart power is a battery).

Paper type

This is the type of paper used with this chart recorder and is derived from the Chart Paper Types look up table (See lutChartPaperTypes).

2.3.2.1.4.5 Mobile Assets additional details - Sensor Information

If the mobile asset being detailed is a sensor, then by clicking on the Additional information button further details may be entered about the mobile asset. The following form will be displayed:



Sensor type

This field is entered by the user and is derived from a look up table of Sensor Types (See lutSensorTypes)

Cable Length

This is the length of cable attatched to the sensor and is in metres. It is a fixed point field of 1 decimal place accuracy.

Millimetres per tip

This is the size of the sensor tip and is a fixed point number of 2 decimal places accuracy.

Sensor range

This is the range that the sensor can measure in metres. It is a fixed point number of 2 decimal place accuracy.

Over pressure range

This is the overpressure range that the sensor can withstand . It is a fixed point number of 2 decimal place accuracy.

Date entered

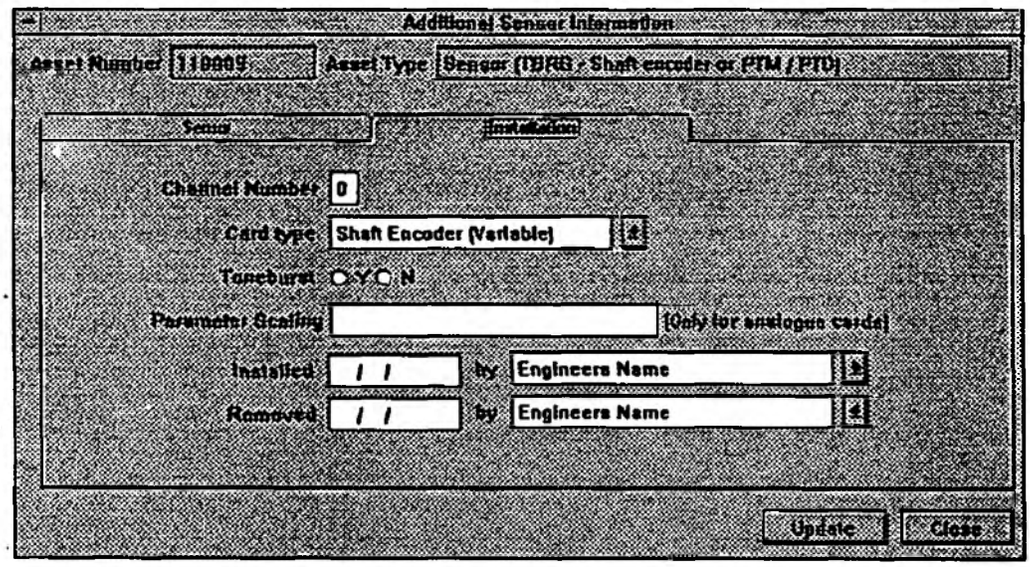
This is a computer generated date and is the date the additional information for a sensor is first entered by the user.

Date last Modified

This is a computer generated date and is the date the additional information for a sensor was last change by the user.

2.3.2.1.4.6 Mobile Assets additional details - Sensor Installation

The following page of the additional sensor form will be displayed allowing the installation details to be entered:



Channel Number

This is the channel number of the logger which has the sensor in question attatched. It is a single digit numerical field.

Card Type

This field is the Plug in card type for that type of sensor. It is derived from a look up table (See lutSensorCardTypes).

Tone Burst

This boolean field indicates whether tone burst is in use on this installation.

Parameter scaling

This free text field allows the user to enter any scaling factors for analogue cards.

Installed date

This is the date that the sensor was installed. It is a date field entered by the user.

Installed by

This is who installed the sensor it is derived from the staff details look up table (See lutStaffDetails)

Removed date

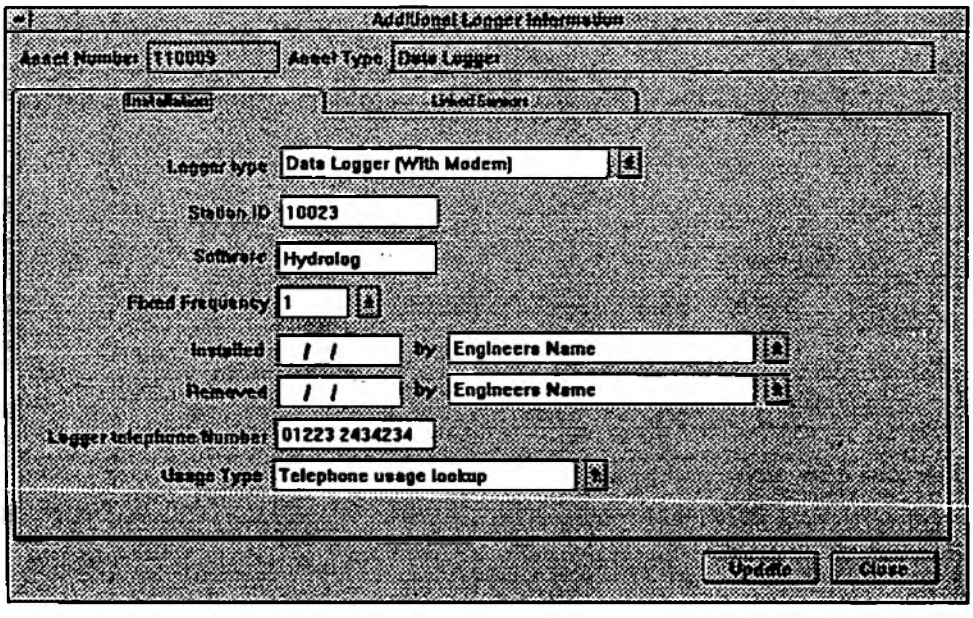
This is the date that the sensor was removed. It is a date field entered by the user.

Removed by

This is who removed the sensor it is derived from the staff details look up table (See lutStaffDetails)

2.3.2.1.4.7 Mobile Assets additional details - Data Logger Information

If the mobile asset being detailed is a Logger (LOGG, TELE or VFWS), then by clicking on the Additional information button further details may be entered about the mobile asset. The following form will be displayed:



Logger Type

This field is the type of logger at this site. It is derived from a look up table. (See lutLoggerTypes).

Station ID

This free text field is the ID entered by the user and is up to 15 characters in length.

Software

This free text field is the Software being used and is entered by the user and is up to 15 characters in length.

Fixed Frequency

This field is the number of readings per day made by the logger. It is derived from a look up table of logger event frequencies (See lutLoggerEventFrequecies)

Installed date

This is the date that the logger was installed. It is a date field entered by the user.

Installed by

This is who installed the logger, it is derived from the staff details look up table (See lutStaffDetails)

Removed date

This is the date that the logger was removed. It is a date field entered by the user.

Removed by

This is who removed the logger it is derived from the staff details look up table (See lutStaffDetails)

Logger Telephone Number

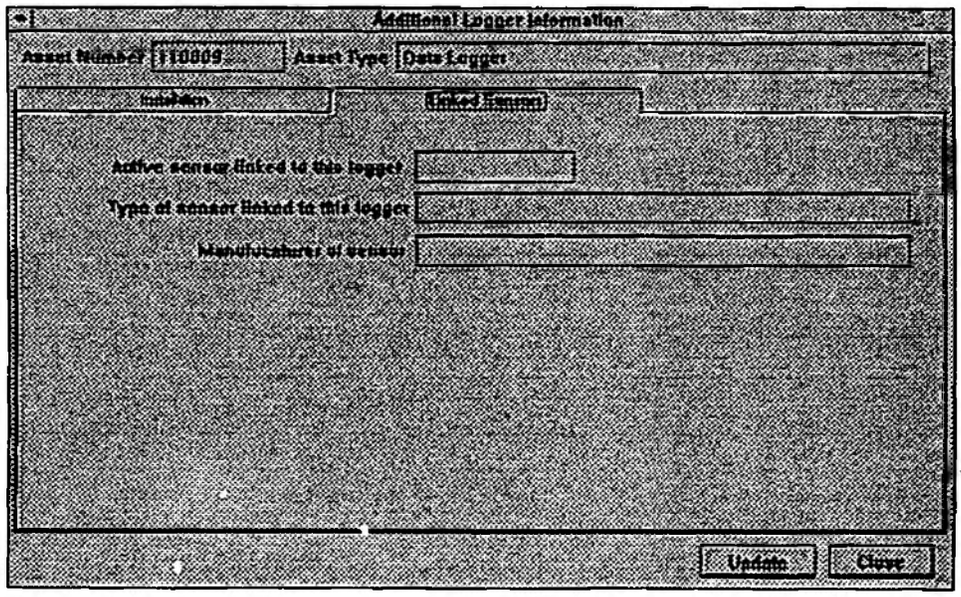
This free text field os the telephone number of the logger if is had a dedicated phone line. It is 15 characters long maximum.

Usage Type

This field is the usage type for that logger. It is derived from a look up table (See lutLoggerUsageTypes).

2.3.2.1.4.8 Mobile Assets additional details - Linked sensors

If the mobile asset is a data logger(LOGG, TELE or VFWS) then the user can check on which sensors are linked to the logger by clicking on the Linked Sensors tab. The following form page will be displayed:



Active sensor linked to this logger

If the logger mobile asset being dealt with here has a sensor associated (which is active), then the sensor asset number will appear here.

Type of sensor linked to this logger

If the logger mobile asset being dealt with here has a sensor associated (which is active), then the type of sensor will appear here.

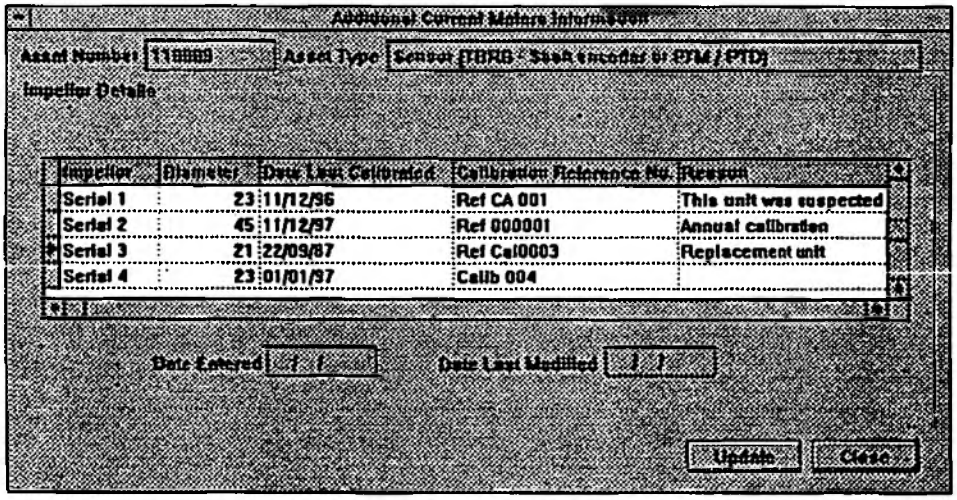
Manufacturer of sensor

If the logger mobile asset being dealt with here has a sensor associated (which is active), then the manufacturer of the sensor will appear here.

2.3.2.1.4.9 Current Meters additional details -

If the mobile asset is a Current Meter (CMTS) then the user can press the CMTS additional information button to enter more details.

The following form page will be displayed:



As can be seen, this is a database lookup table allowing a number of impellors to be associated with this CMTS mobile asset.

Impellor serial number

The user must enter the serial number of each of the impellors here.

Impellor diameter

The diameter of each impellor is entered here . The field is an integer field.

Date last calibrated

The user enters here the date of the last calibration as a date field.

Calibration reference number

For each impellor there will be a calibration reference number which the user must enter as a 20 digit text field.

Reason

This field is for the reason for the calibration that was carried out.

Date entered

This is a date field and is generated by the computer.

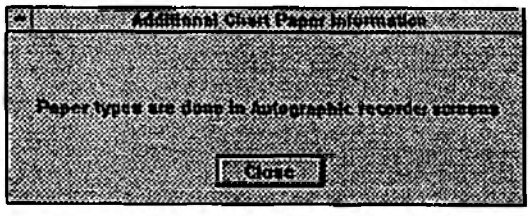
Date last modified

This is a date field and is generated by the computer

2.3.2.1.4.10 Chart additional details

If the mobile asset is a Chart type then the user is reminded that Chart Paper is entered in the Autographic chart screens.

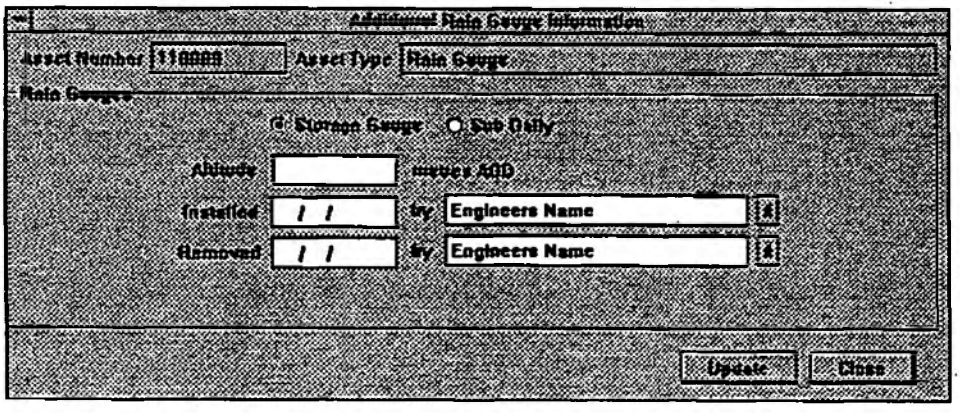
The following message will be displayed:



2.3.2.1.4.11 Rain gauge additional details -

If the mobile asset is a rain gauge then the user can enter further specific information about the rain gauge:

The following form will be displayed:



Altitude

The user must enter the altitude above the local datum of the rain gauge here as an integer field.

Installed date

This is the date that the rain gauge was installed. It is a date field entered by the user.

Installed by

This is who installed the rain gauge, it is derived from the staff details look up table (See lutStaffDetails)

Removed date

This is the date that the rain gauge was removed. It is a date field entered by the user.

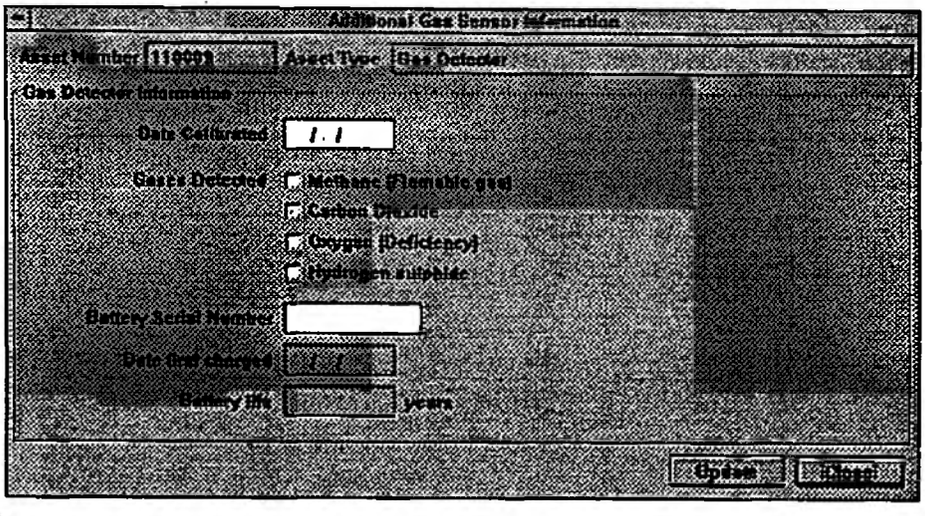
Removed by

This is who removed the rain gauge it is derived from the staff details look up table (See lutStaffDetails)

2.3.2.1.4.12 Gas Sensor additional details

If the mobile asset is a Gas Sensor then the user can add additional information about the sensor types etc..

The following form will be displayed:



Date calibrated

This date field is entered by the user to indicate when the last calibration was done of the gas sensor.

Gases detected

These four check boxes are stored as 4 booleans in the database table and are to indicate which of up to 4 gases can be detected by this gas sensor.

Battery serial number

The serial number of the gas sensor battery is entered here - only certain kinds of battery can be used in these gas sensors and the battery information will contain the serial number of this kind of battery.

Date last charged

This is obtained by looking up the battery information based on the above serial number.

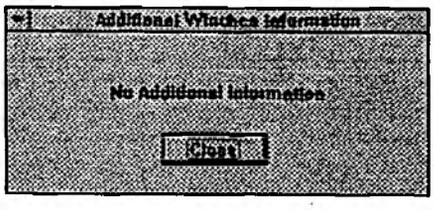
Battery life (Years)

This is obtained by looking up the battery information based on the above serial number.

2.3.2.1.4.13 Winch additional details

If the mobile asset is a Winch then the user is reminded that there is no more information required.

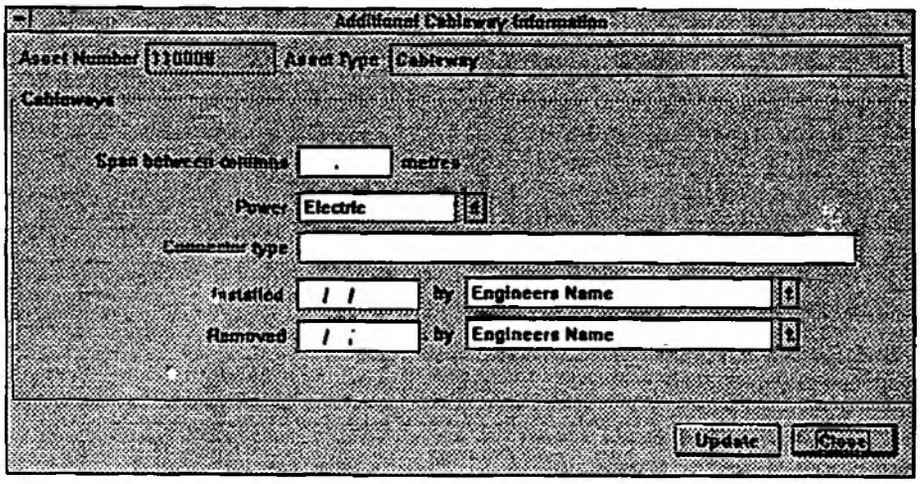
The following message will be displayed:



2.3.2.1.4.14 Cableway additional details

If the mobile asset is a Cable type then the user can add further information about the cable way.

The following form will be displayed:



Span between columns

This is the distance between supporting columns for the cableway and is in metres - The field is a fixed point number of 1 decimal place accuracy.

Power

This field is the type of power used for the cableway - It is derived from a look up table. (See lutCablewayPowerTypes)

Connector type

This free text field allows the user to type type in the cableway connector type. It is a free text field of 50 characters length.

Installed date

This is the date that the cableway was installed. It is a date field entered by the user.

Installed by

This is who installed the cableway, it is derived from the staff details look up table (See lutStaffDetails)

Removed date

This is the date that the cableway was removed. It is a date field entered by the user.

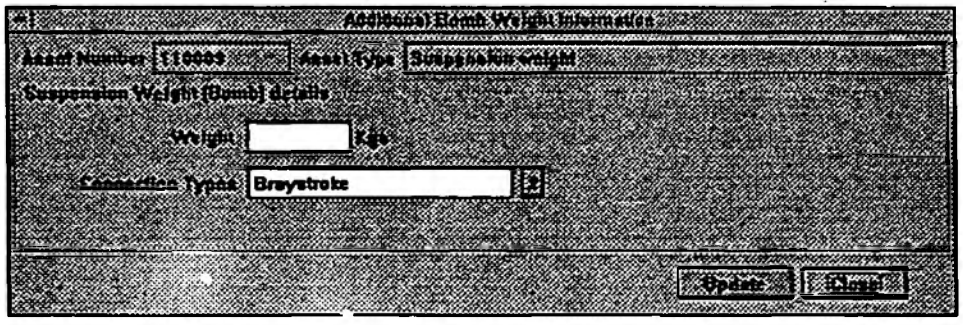
Removed by

This is who removed the cableway it is derived from the staff details look up table (See lutStaffDetails)

2.3.2.1.4.15 Bomb additional details

If the mobile asset is a bomb (suspension weight) then the user can

The following form page will be displayed:



Weight

The user must enter the weight in Kilogrammes of the suspension weight it is a fixed point field of 1 decimal place accuracy.

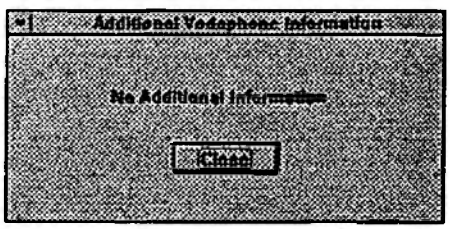
Connection type

This field is the type of connection for the suspension weight. it is derived from a look up table. (See lutBombConnectionTypes)

2.3.2.1.4.16 Vodaphone additional details

If the mobile asset is a vodaphone then there is no additional information to add. (Vodaphones are used for the utilities only).

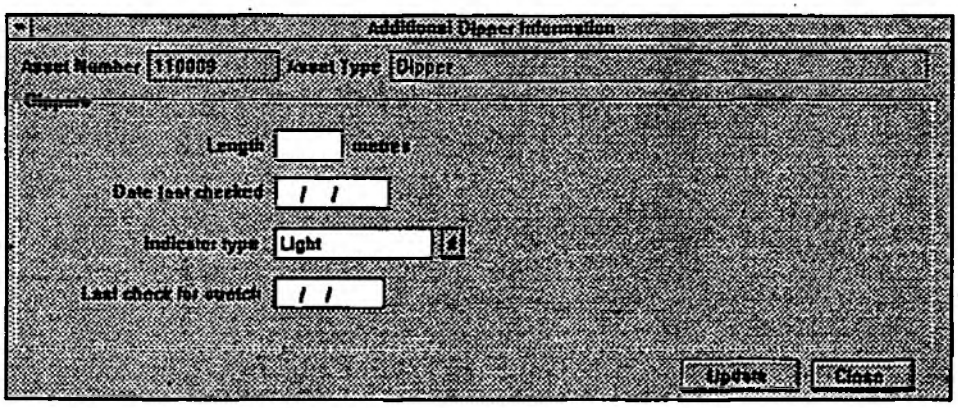
The following form page will be displayed:



2.3.2.1.4.17 Dipper additional details

If the mobile asset is a dipper, then the user can add the following information.

The following form will be displayed:



Length (Metres)

The length of the dipper is entered here by the user and is a fixed point number of 1 decimal place accuracy.

Date last checked

The date the dipper was last checked is entered here - the field is a date field.

Indicator type

The dipper or dip tone asset indicator type is entered by the user - It is derived from a look up table (see lutDipperIndicatorTypes)

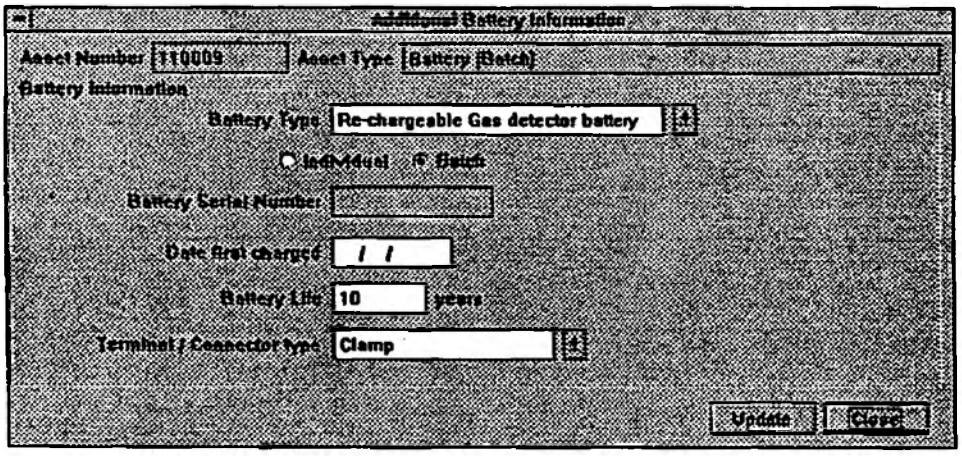
last check for stretch

The date the cable was last checked for stretch is entered here - the field is a date field.

2.3.2.1.4.18 Battery and Battery batches additional details

If the mobile asset is a battery then the user has the choice of entering information about the batch of batteries (most often) or about individual batteries (such as gas sensor batteries) and can enter the following information.

The following form page will be displayed:



Battery type

This field is the type of battery being details under this asset. It is derived from a look up table. (see lutBatteryTypes).

Individual or batch

This field is a boolean field which allows the user to indicate whether the information being entered is about a single battery or a batch of batteries. In the case of a batch then the battery serial number field is not an editable field. In the case of an individual battery then the serial number field should be enabled.

Battery serial number

As decribed above, the serial number can be entered for a single battery- It is a text field of 20 characters length.

Date first charged

The user can use this field to indicate when a battery or batch or batteries where first charged.

Battery life

The expected battery life is entered here as a fixed point field (to 1 decimal place) indicating the number of years.

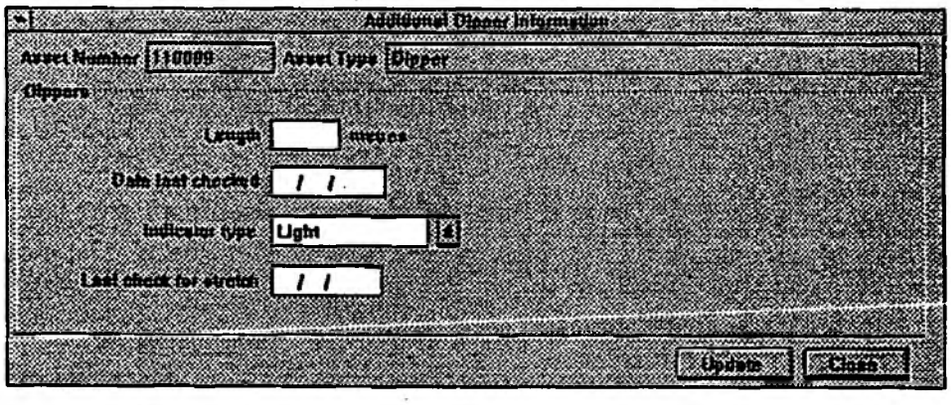
Terminal / connector type

The type of terminal type for the battery are indicated here by the user - This is derived from a look up table (See lutBatteryConnctorTypes).

2.3.2.1.4.19 Diptone additional details

If the mobile asset is a diptone, then the user can add the following information.

The following form will be displayed:



Length (Metres)

The length of the dipper is entered here by the user and is a fixed point number of 1 decimal place accuracy.

Date last checked

The date the dipper was last checked is entered here - the field is a date field.

Indicator type

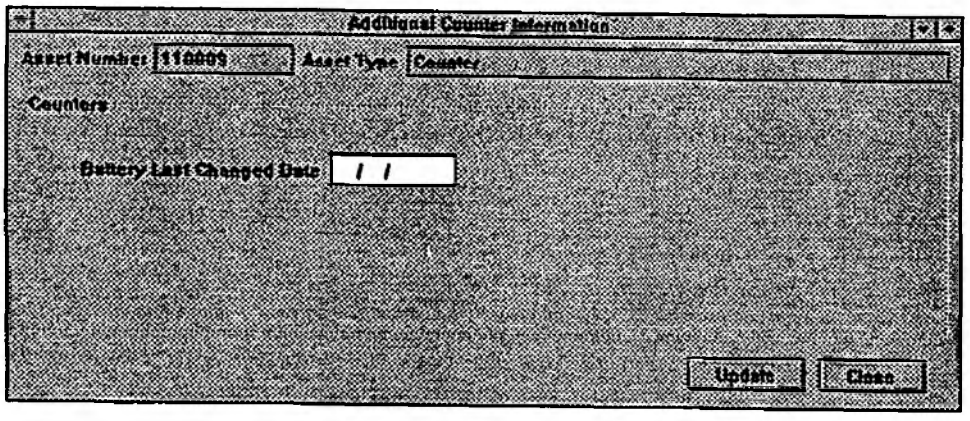
The dipper or dip tone asset indicator type is entered by the user - It is derived from a look up table (see lutDipperIndicatorTypes)

last check for stretch

The date the cable was last checked for stretch is entered here - the field is a date field.

2.3.2.1.4.20 Counter additional details

If the mobile asset is a Counter then there is no further data to enter. The following message will be displayed:



Battery last changed date

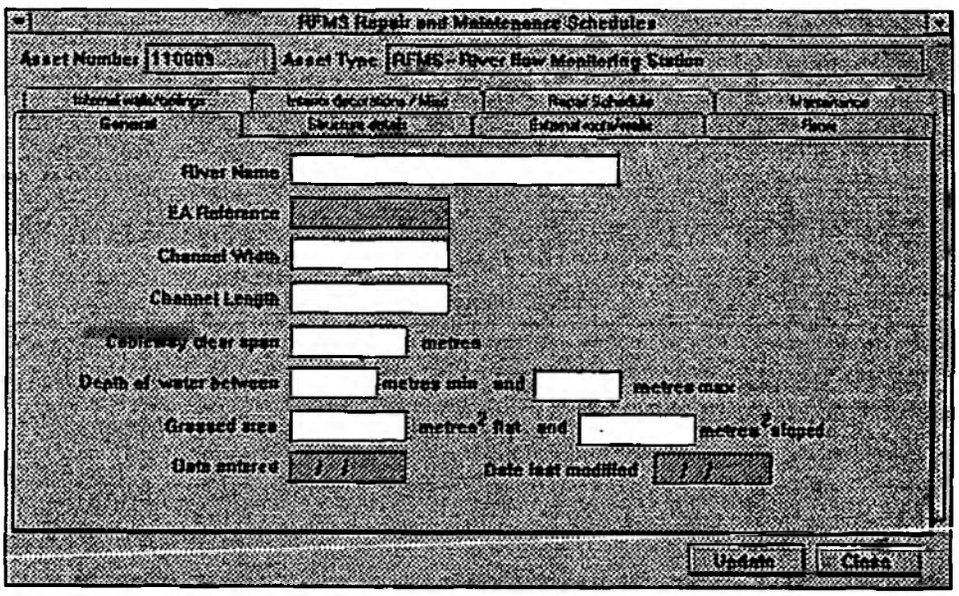
This is used to keep a record of when batteries are changed on the counters. This is a date field.

2.3.2.1.5 Repairs and Maintenance

Only the RFMS asset types have a repair or maintenance requirement, and so only when the user clicks on the site asset and has an RFMS asset type selected in the tree of assets within the site, will the maintenance button be enabled. (Refer back to the Site details form)

The following form will be displayed for the repair and maintenance of an RFMS station when the maintenance button is pressed:

2.3.2.1.5.1 RFMS Repair and Maintenance - General



This tab on the form contains further basic information about the site and does not allow the user to type specific repair requirements.

River Name

The user types in the name of the river. It is a text field of 40 characters in length.

EA Reference

This is the EA reference number which is looked up from the fixed asset database (see tableFixedAssets).

Channel Width

The user enters the channel width in metres (to 3 decimal place) to indicate the size of the RFMS structure.

Channel Length

The user enters the channel length in metres (to 3 decimal place) to indicate the size of the RFMS structure.

Cableway clear span (metres)

The user enters the cableway clear span in metres (to 3 decimal place) to indicate the size of the cableway structure.

Grassed area m^2 flat

The area of grass on the flat is recorded here. This is used for grass cutting maintenance.

Grassed area m^2 sloped

The area of grass on a sloped surface is recorded here. This is used for grass cutting maintenance.

Depth of water between minimum metres

The user enters the minimum depth of water in metres. The field is a fixed point number to 3 decimal place.

Depth of water maximum metres

The user enters the maximum depth of water in metres. The field is a fixed point number to 3 decimal place.

Date entered

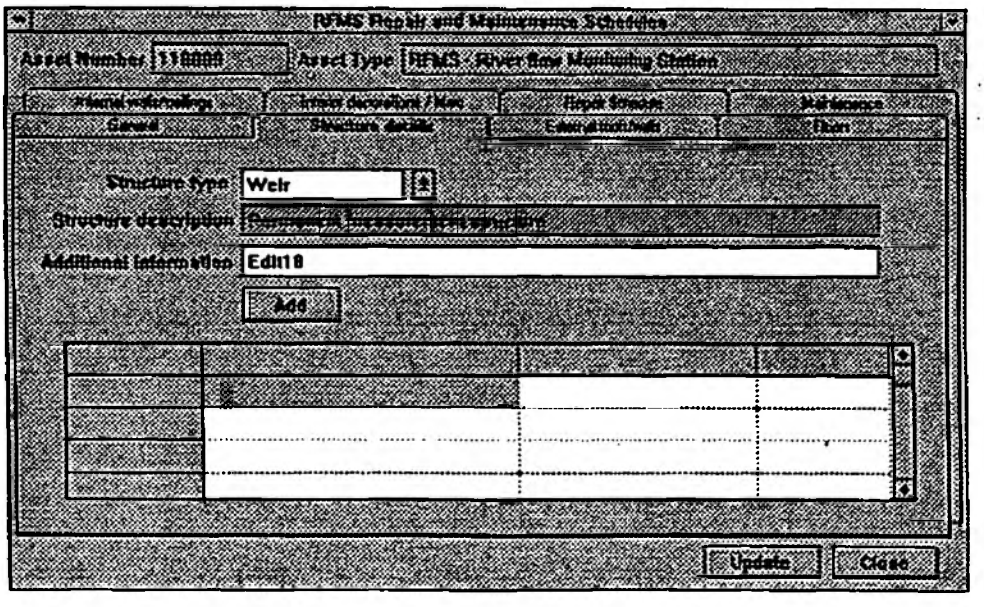
This computer generated date is created when the repair or maintenance details are first entered.

Date Last Modified:

This computer generated date is created when the repair or maintenance details are last modified.

2.3.2.1.5.2 RFMS repair and maintenance - Structure details

To enter the structure details , the user should click on the Structure details tab. The following form is displayed for data entry:



Structure type

The user should enter the structure type here - It is derived from a look up table - See lutStructureTypes

Structure description

This read only field will be updated from the structure type here - It is derived from a look up table - See lutStructureTypes

Additional information

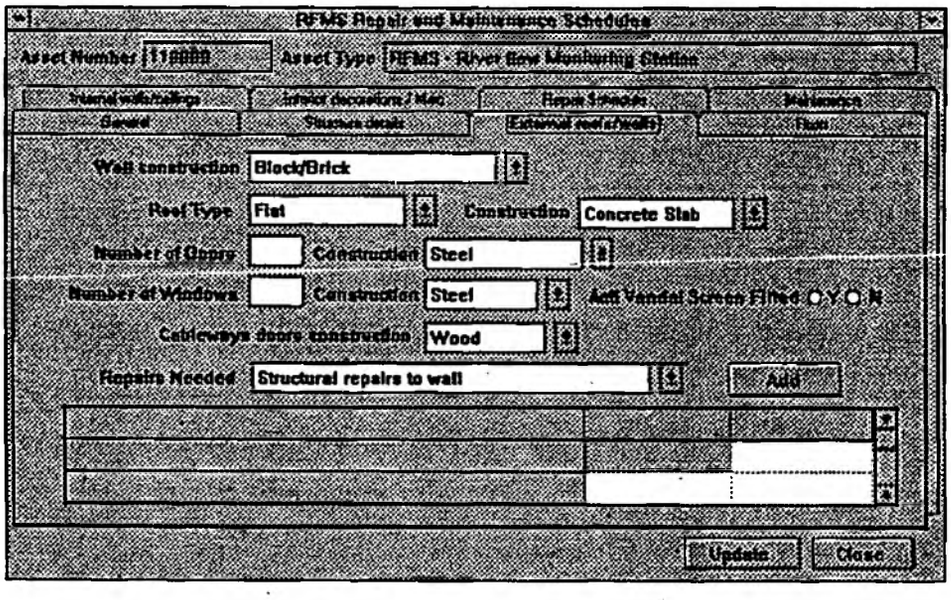
The user can enter further details here such as the type of weir. It is a text field.

Add button

The structure types and additional text should then be added to the table below on the form.

2.3.2.1.5.3 RFMS repair and maintenance - External Roofs / Walls repair

To enter the external wall repair requirements, the following form is displayed for data entry:



Wall Construction

The construction type of the external walls is entered here. It is derived from a look up table - see lutExternalWallConstructionTypes

Roof Type

The roof type is entered here by the user, it is derived from a look up table - see lutRoofTypes

Roof Construction

The roof type is entered here by the user, it is derived from a look up table - see lutRoofConstructionTypes

Number of Doors

The user enters the number of doors in this field. It is a single digit number.

Door Construction

The door construction type is entered here by the user, it is derived from a look up table - see lutDoorConstructionTypes

Number of windows

The user enters the number of windows in this field. It is a single digit number.

Window construction

The windows construction type is entered here by the user, it is derived from a look up table - see lutWindowConstructionTypes

Anti-vandal screen fitted

The user enters whether there is an anti-vandal screen fitted to the windows. It is a boolean field. (Y or N)

Cableways door construction

The construction type of the cableway door is entered here by the user, it is derived from a look up table - see lutCablewayDoorConstructionTypes

Repairs needed

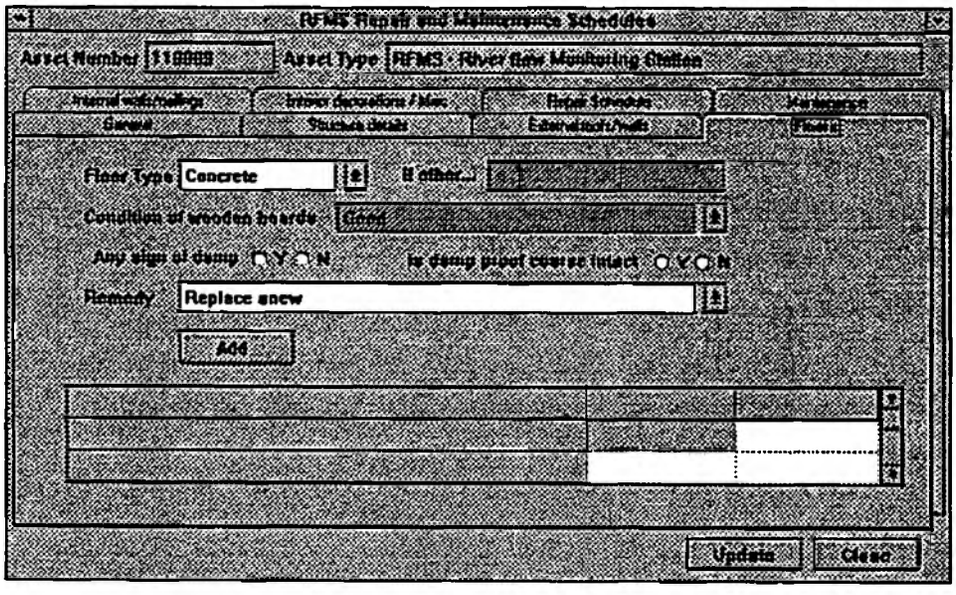
The user enters the repairs required from a look up table of possible repairs, or types in a new repair kind into the combo-edit list box. The entry is derived from a look up table or creates a new entry in the look up table. See lutExternalRepairs.

Add button

When the user clicks on this, the above repairs will be added to the repair table. (See tableRepairRequirements)

2.3.2.1.5.4 RFMS repair and maintenance - Floors repair

To enter the floor repair details , the user should click on the Structure details tab. The following form is displayed for data entry:



Floor Type

The type of floors in this building is entered here by the user. It is derived from a lookup table - See lutFloorTypes

If other

If the floor is of type "other" then this field is to be filled with the type of floor.

Condition of wooden boards

If the boards are wooden then this field is enabled and the user can select one of the kinds of condition of floor - It is selected from a look up table (See lutWoodenFloorConditions)

Any sign of damp

This is a boolean field which should be selected to "Y" when any damp signs have been seen. The default will be "N".

Is damp proof coarse intact

This is a boolean field which should be selected to "N" when the damp coarse shows signs of deterioration. The default will be "Y".

Remedy

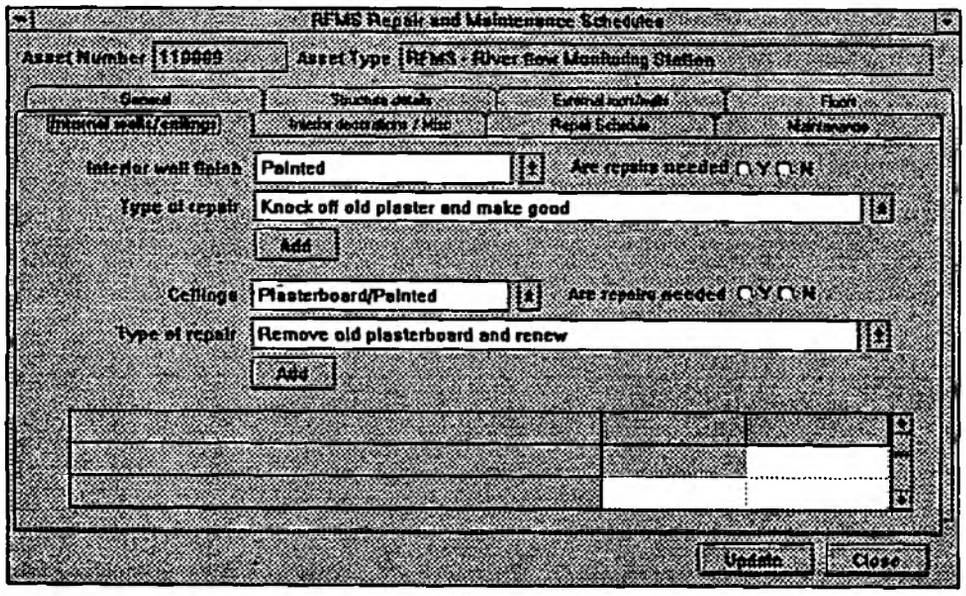
This field should be used by the user if repairs are required on this fixed asset. The user can either select one of the options from the list, or type in a new repair description which will then be added to the list. The list is derived from a look up table- See lutFloorRepairTypes.

Add button

When the user clicks of this, the above repairs will be added to the repair table. (See tableRepairRequirements) The table at the bottom of the form shows the existing repair requirements for floors.

2.3.2.1.5.5 RFMS repair and maintenance - Internal Walls / Ceilings repair

To enter the structure details , the user should click on the Structure details tab. The following form is displayed for data entry:



Interior Wall finish

The user enters the interior wall finish here. It is derived from a look up table (See lutInteriorWallFinishTypes.)

Are repairs needed

If the user feels that repairs are required then he will click on "Y" and this will in turn enable the Type of repair field.

Type of repair

The user can enter the type of repair here if it is required. The field is derived from a look up table or the user can enter a new repair description, which will be added to the list for future use. It derived from the look up table - See lutInteriorWallRapairTypes

Add button

When the user clicks on this, the above repairs will be added to the repair table. (See tableRepairRequirements) The table at the bottom of the form shows the existing interior wall and ceilings repair requirements.

Ceilings

The user enters the ceiling type here. It is derived from a look up table (See lutCeilingTypes.)

Are repairs needed

If the user feels that repairs are required then he will click on "Y" and this will in turn enable the Type of repair field.

Type of repair

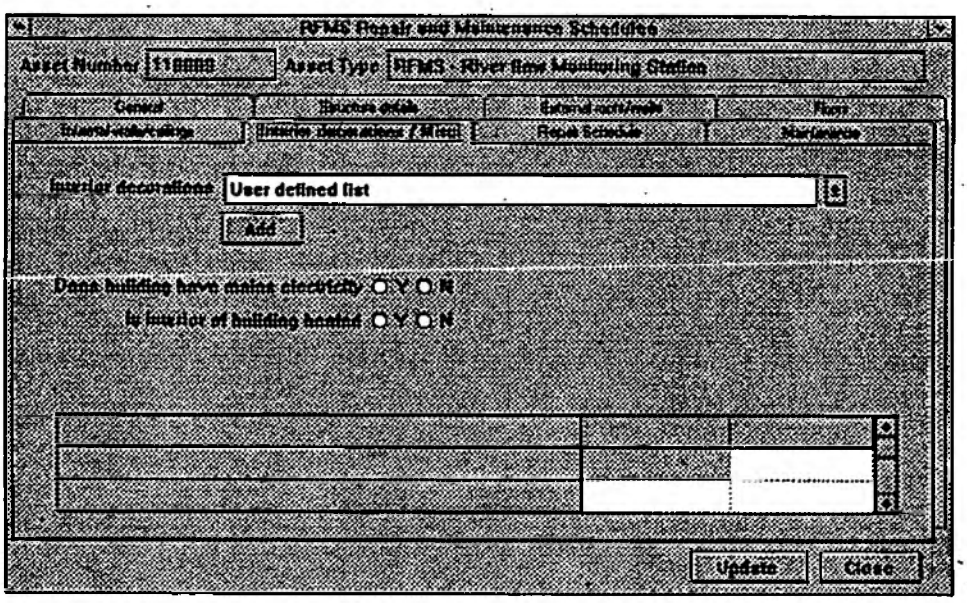
The user can enter the type of repair here if it is required. The field is derived from a look up table or the user can enter a new repair description, which will be added to the list for future use. It derived from the look up table - See lutCeilingRepairTypes

Add button

When the user clicks on this, the above repairs will be added to the repair table. (See tableRepairRequirements) The table at the bottom of the form shows the existing interior wall and ceilings repair requirements.

2.3.2.1.5.6 RFMS repair and maintenance - Interior decorations / Miscellaneous repairs

To enter the internal decorations / miscellaneous details , the user should click on the Interior decorations / Misc tab. The following form is displayed for data entry:



Interior decorations

The user should enter any interior decorations required to the building here. The user can select either an entry from the pre-defined list of decorations, or type in a new one which will then be added to the list. (See lutInteriorDecorationsTypes)

Add button

When the user has entered the above field, clicking on this Add button will add the repair to the table of repairs. The table at the bottom of the form shows the decoration repairs required so far.

Does building have mains electricity ?

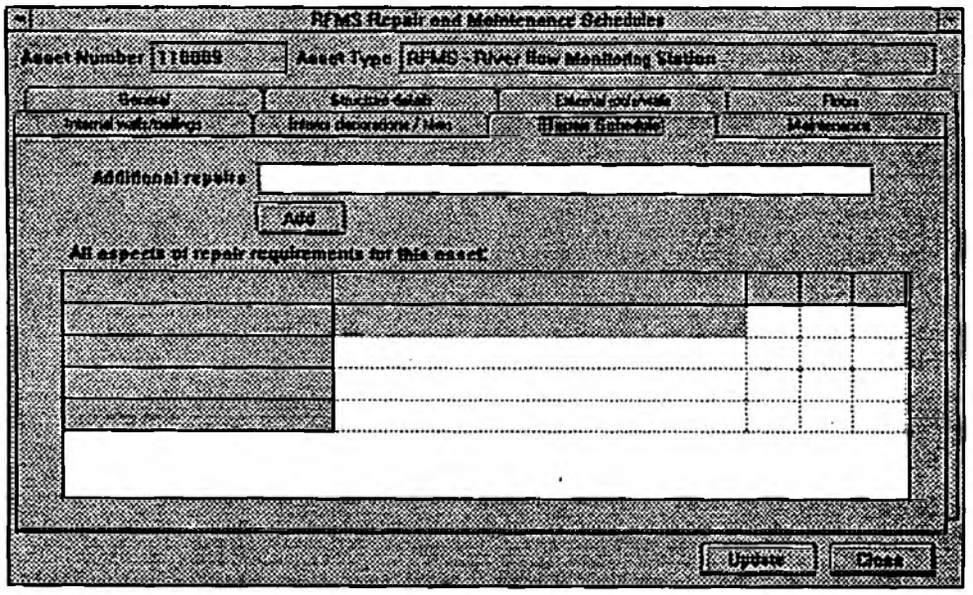
The user selects "Y" or "N" accordingly

Is interior of building heated ?

The user selects "Y" or "N" accordingly

2.3.2.1.5.7 RFMS repair and maintenance - repair schedule

The next tab allows the user to see all repairs required. The following form is displayed for data entry:



Additional repair

Any additional repair items can be added here by entering text up to 80 characters in length.

Add button

For each additional maintenance item required, the user must click on this button to add the item to the repair table

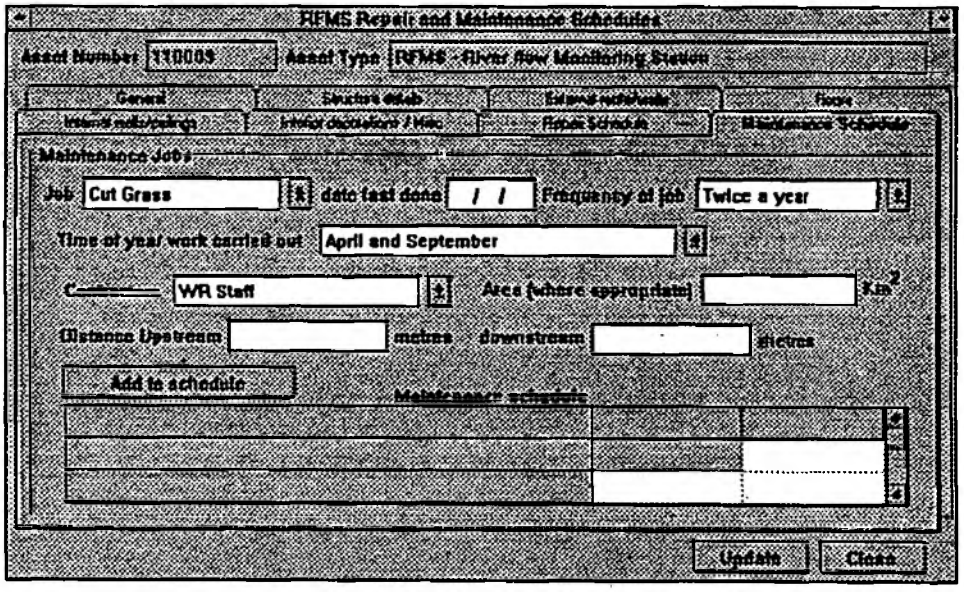
Table

This table shows the total repair tasks to be done on this station, it is derived from all the previous sub forms data which have been added. The fields are:

Type	Repair Description	Date to be done by.	Started Date	Completed Date

2.3.2.1.5.8 RFMS repair and maintenance - Maintenance Schedule

When regular maintenance is required for the RFMS station, then the user should use the repair schedule.



Job

This is a drop down list box with all the maintenance items available to be added to the schedule for this station - See lutMaintenanceItems

Date last done

This is the date the maintenance was last done on the station - It is a date field

Frequency of job

The regularity with which the maintenance has to be done is entered here - It is a lookup table see lutMaintenanceFrequencies

Time of year work carried out

The period in the year when the work should be done is entered here by the user. It is also a lookup table See lutMaintenancePeriods

Contractors

The names of the contractors should be entered here, also selected form a look up table - See lutMaintenanceContractors.

Area (where appropriate)

The area (such as for grass cutting) can be entered here - it is an optional parameter.

Distance upstream (where appropriate)

The distance upstream (such as for gravel and weed clearance) can be entered here - it is an optional parameter.

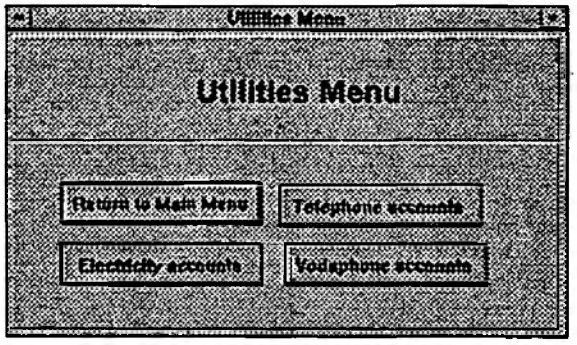
Distance downstream (where appropriate)

The distance downstream (such as for gravel and weed clearance) can be entered here - it is an optional parameter.

2.3.2.2 Utilities menu

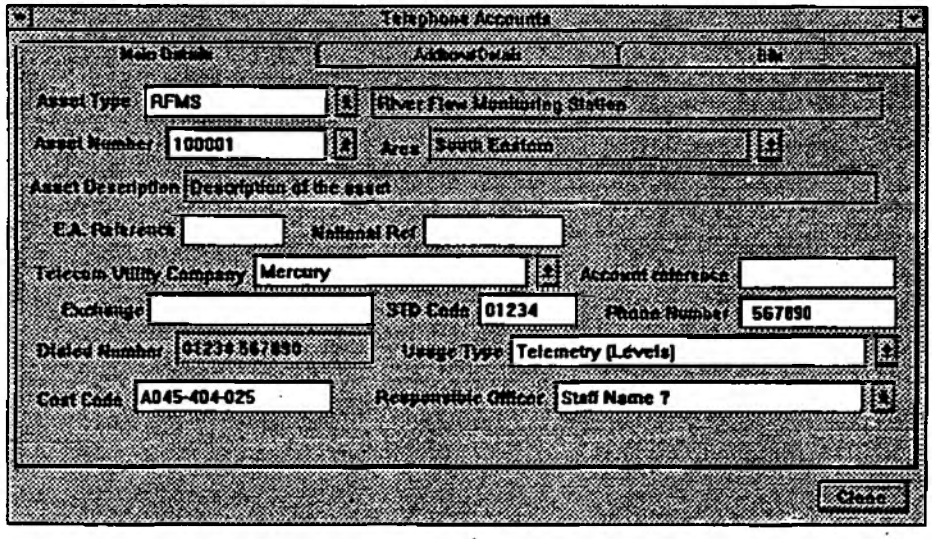
This menu essentially give access to the Telephone, Vodaphone and Electricity accounts information in the asset database. There are some look ups within the main database by the utilities data, but the main asset database does not reference any data within the utilities.

The following shows the utilities menu:



2.3.2.2.1 Telephone accounts - Main details

To enter telephone account details, the user must click on the Telephone accounts button, and the following form will appear:



Asset Type

This field is the asset type of the fixed asset with a telephone account. It is derived from a lookup table (See lutAssetTypes)

Asset type description

This field is the description of the fixed asset type with a telephone account. It is derived from a lookup table (See lutAssetTypes)

Asset Number

This is the asset number which has the telephone line. it refers to the asset numbers of the main database.

Area

This is the area in which the fixed asset resides. It is a read only field as it is read from the asset database.

Asset Description

This is the description of the asset. It is a read only field as it is read from the asset database.

EA Reference

This is the EA Reference number of the asset. It is a read only field as it is read from the asset database.

National reference

This is the National Reference number of the asset. It is a read only field as it is read from the asset database.

Telecom Utility Company

This field is the name of the utility company providing the phone service. It is derived from a look up table. (See lutTelecomUtilityCompanies).

Account Reference

This is the account reference number of the phone line in question. It is a text field of 20 characters.

Exchange

This is the name of the exchange providing the service. It is a text field of 30 characters.

STD Code

This is the STD Area code for that exchange. It is a numerical field.

Phone Number

This is the phone number of the fixed asset. It is a numerical field.

Dialed Number

This field is a read only field and is derived from the STD code and Phone number above.

Usage Type

This field defines the type of use made of the phone line. It is derived from a look up table. (See lutTelecomUsageTypes).

Cost Code

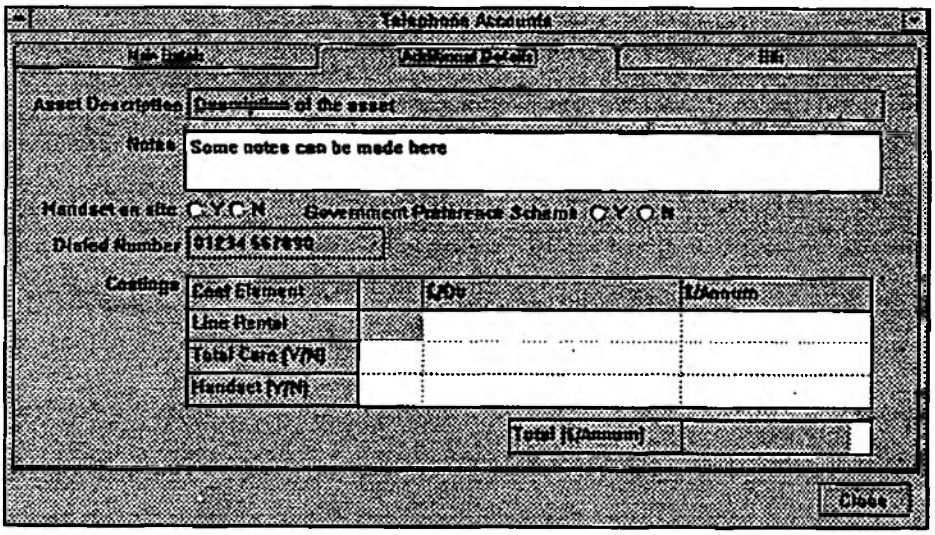
This is the cost code for that phone line. It is a text field of 20 characters.

Responsible Officer

This field is the name of the officer responsible for that phone line. It is derived from a look up table. (See lutStaffDetails)

2.3.2.2.2 Telephone accounts - Additional details

To enter telephone account additional details, the user must click on the additional details Tab, and the following sub form will appear:



Asset Description

This is the description of the asset in question and is looked up from the asset number from the main asset database.

Notes

This field is to allow the user to any short text descriptions / notes. It is a memo field of 2 lines of 80 characters.

Handset on site

This radion button is used to indicate whether a handset is available on site to make speech calls.

Government Preference scheme

The radio button is used to indicate whether the asset is part of a government preference scheme.

Dialed number

This is the phone number of the line - It is looked up from the main details screen of the telephone accounts.

Costings Line rental Y/N

This field is always 'Y'

Costings Line rental £/QTR

The user enters the line rental cost per quarter here. It is a cost field.

Costings Line rental £/Annum

This read only field is filled in with 4 x the quarterly cost field above.

Total care Y/N

The user enters here whether there is a total care package with this line.

Total care £/QTR

The user enters here the quarterly cost for the total care package. It is a cost field.

Total care £/Annum

This read only field is calculated from the above field x 4.

Handset rental Y/N

The user enters here whether there is handset rental with this line.

Handset rental £/QTR

The user enters here the quarterly cost of the handset rental on this line.

Handset rental £/Annum

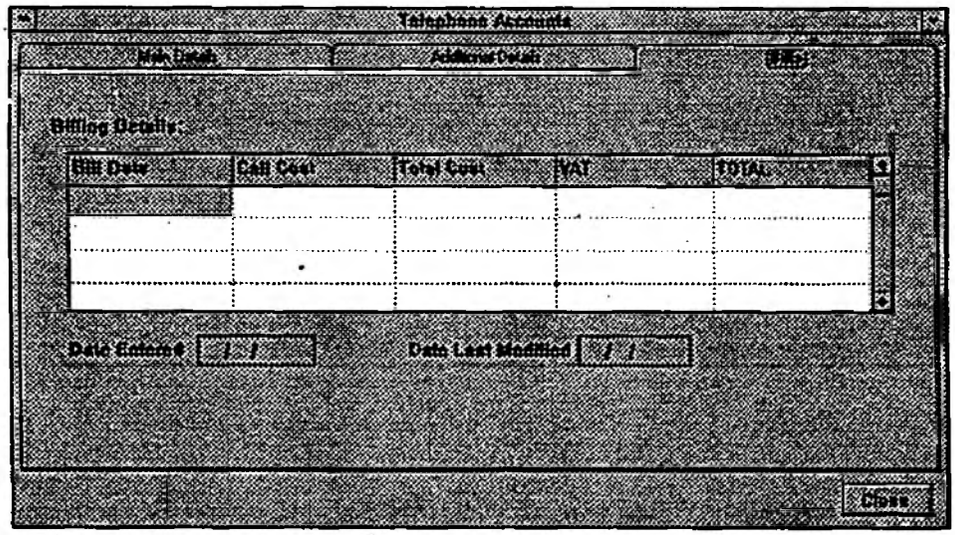
This read only field is calculated from the above field x 4.

Total £/Annum

This read only field is the sum of the right hand column and shows the total cost of the items.

2.3.2.2.3 Telephone accounts - Bill details

To enter telephone account Bill details, the user must click on the Bills Tab, and the following sub form will appear:



For each phone bill received for this fixed asset, a table entry is completed filling the following details from the bill.

Bill Date

A date field

Call Cost

A cost field

Total Cost

A cost field

VAT

A cost field

Total

A cost field

Date entered

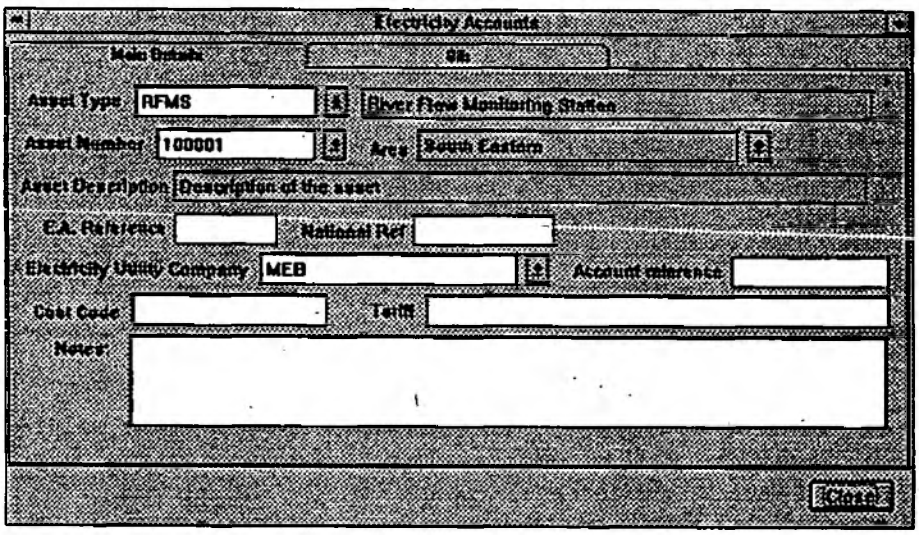
A computer generated date field (read only).

Date last modified

A computer generated date field (read only).

2.3.2.2.4 Electricity accounts - Main Details

To enter Electricity Account Details, the user must click on the Electricity accounts button, and the following form will appear:



Asset Type

This field is the asset type of the fixed asset with a telephone account. It is derived from a lookup table (See lutAssetTypes)

Asset type description

This field is the description of the fixed asset type with a telephone account. It is derived from a lookup table (See lutAssetTypes)

Asset Number

This is the asset number which has the telephone line. it refers to the asset numbers of the main database.

Area

This is the area in which the fixed asset resides. It is a read only field as it is read from the asset database.

Asset Description

This is the description of the asset. It is a read only field as it is read from the asset database.

EA Reference

This is the EA Reference number of the asset. It is a read only field as it is read from the asset database.

National reference

This is the National Reference number of the asset. It is a read only field as it is read from the asset database.

Electricity Utility Company

This field is the name of the utility company providing the electricity. It is derived from a look up table. (See lutElectricityUtilityCcompanies).

Account Reference

This is the account reference number of the electricity meter in question. It is a text field of 20 characters.

Cost Code

This is the cost code for that electricity service. It is a text field of 20 characters.

Tarrif

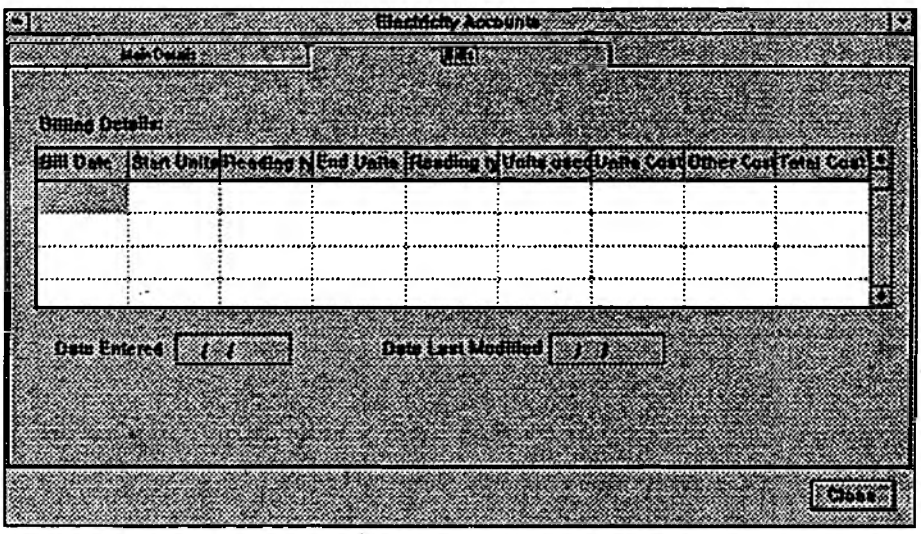
This is a text field detailing the tarrif type. It is a text field of 50 characters.

Notes

This field allows the user to type in notes up to 3 lines of 80 characters. (it is a memo field).

2.3.2.2.5 Electricity accounts - Bill Details

To enter Electricity Bill details, the user must click on the Bills Tab, and the following sub form will appear:



For each electricity bill received for this fixed asset, a table entry is completed filling the following details from the bill.

Bill Date

A date field.

Start Units

The number of units at the start of the bill period. A long integer field.

Reading type

Whether estimated read etc.

End Units

The number of units at the end of the bill period. A long integer field.

Reading Type

Whether estimated read etc.

Units Used

The number of units used in the bill period. A long integer field.

Units Cost

A cost field

Other Cost

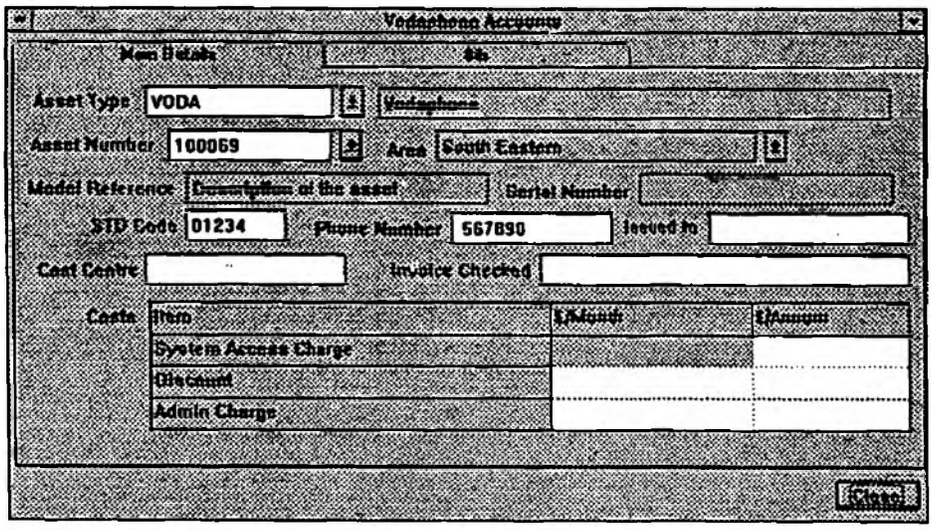
A cost field

Total Cost

A cost field

2.3.2.2.6 Vodaphone accounts - Main details

To enter Vodaphone Account Details, the user must click on the Vodaphone accounts button, and the following form will appear:



Asset Type

This read only field will always be VODA (A vodaphone mobile asset).

Asset Description

This read only field will show the asset description for a vodaphone. It will come from the asset types look up tabel (See lutAssetTypes).

Asset Number

This is the number of the asset in question. It is entered by the user, or selected from the drop down list box. (VODA mobile assets only are listed).

Area

This read only field is the area of the currently selected asset. It is looked up from the main database mobile asset table. (See tableMobileAssets)

Model reference

This read only field is the model reference of the currently selected asset. It is looked up from the main database mobile asset table. (See tableMobileAssets)

Serial Number

This read only field is the serial number of the currently selected asset. It is looked up from the main database mobile asset table. (See tableMobileAssets)

STD Code

This field is a numeric field for the STD code. It is up to 10 digits in length.

Phone Number

This field is the vodaphone number (Less the STD code). It is up to 15 digits in length.

Issued to

This free text field is the name of the person who has had the phone issued to them. It is up to 30 characters in length.

Cost Centre

This free text field is the cost centre for this vodaphone. It is up to 30 characters in length.

Invoice checked

This field is a text field and the user will type in the name of the person who checked the details of this form.

System access charge £/QTR

The Access charge for this vodaphone is entered here. It is a cost field.

System access charge £/Annum

This read only field is generated by the computer and is the above field x 4.

Discount £/QTR

The discount amount for this vodaphone is entered here. It is a cost field.

Discount £/Annum

This read only field is generated by the computer and is the above field x 4.

Admin charge £/QTR

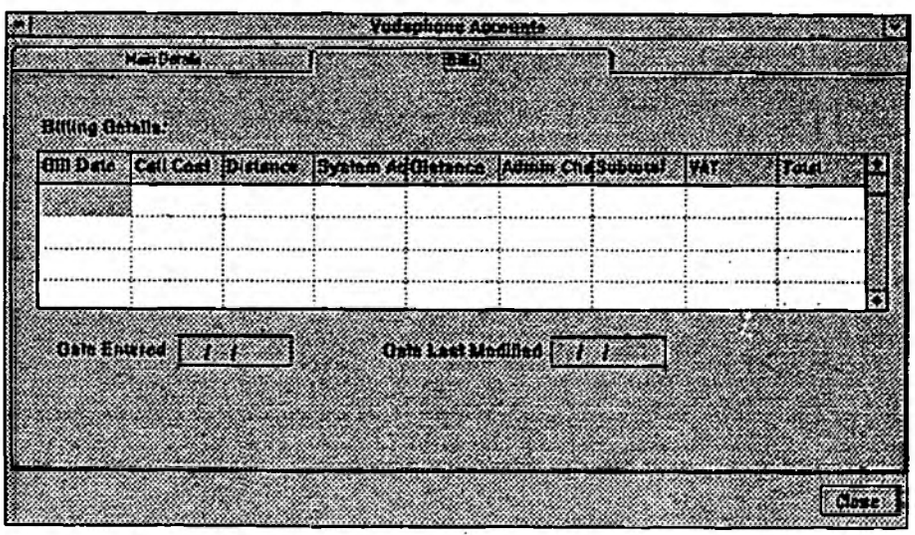
The admin charge for this vodaphone is entered here. It is a cost field.

Admin charge £/Annum

This read only field is generated by the computer and is the above field x 4.

2.3.2.2.7 Vodaphone accounts - Bill details

To enter Vodaphone Bill Details, the user must click on the Bills Tab, and the following sub form will appear:



For each vodaphone bill received, a table entry is completed filling the following details from the bill.

Bill Date

A date field

Call Cost

A cost field

Distance

System Access

A cost field

Admin Charge

A cost field

Subtotal

A cost field

VAT

A cost fielsd

Total

A cost field

Date entered

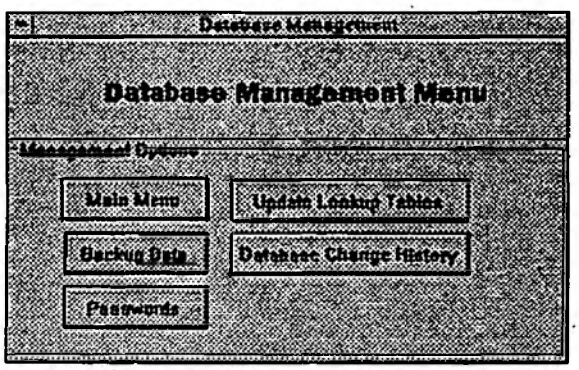
A computer generated date field

Date Last Modified

A computer generated date field

2.3.2.2.8 Supporting activities

From the Main Menu the user has access to another menu called "supporting activities". This menu appears as follows:



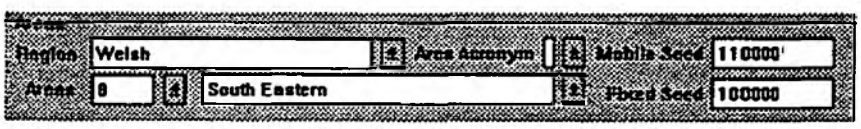
2.3.2.2.8.1 Update Lookup Tables

As will be apparent at this stage of the specification, there are many lookup tables involved in providing the user choices for fields with the main forms. These are all contained on a multipage form for ease of access and will take the following general format:

Lookup tables with many fields

These tables are shown on the form within a frame so as to make it obvious which items relate to that table.

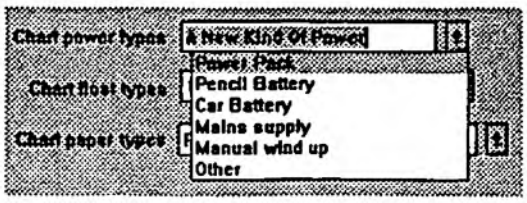
For Example:



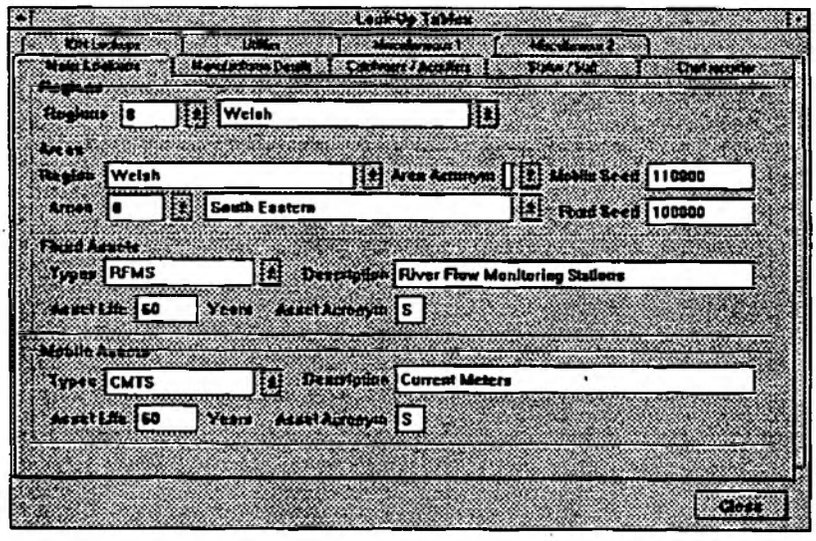
Lookup tables with Single fields

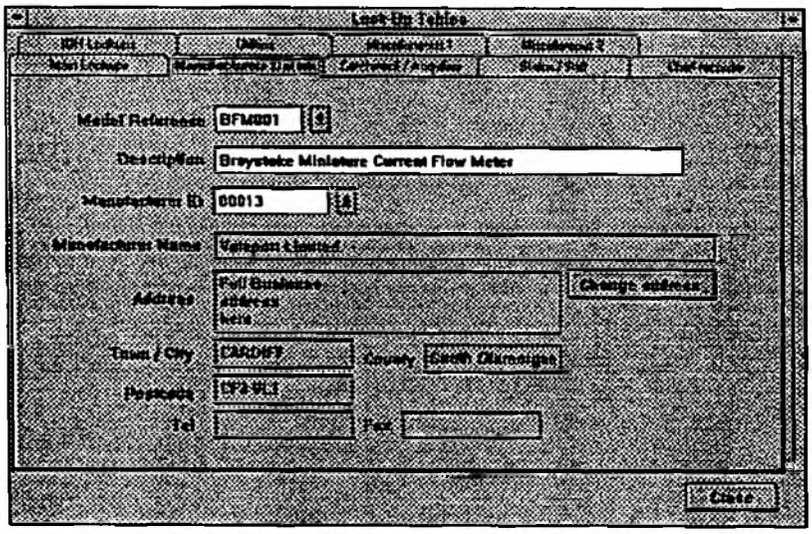
These tables are shown as simple combo text and drop down list boxes. The user can simply type in a new item and the computer will ask for a confirmation of the new item and it will be added to the table.

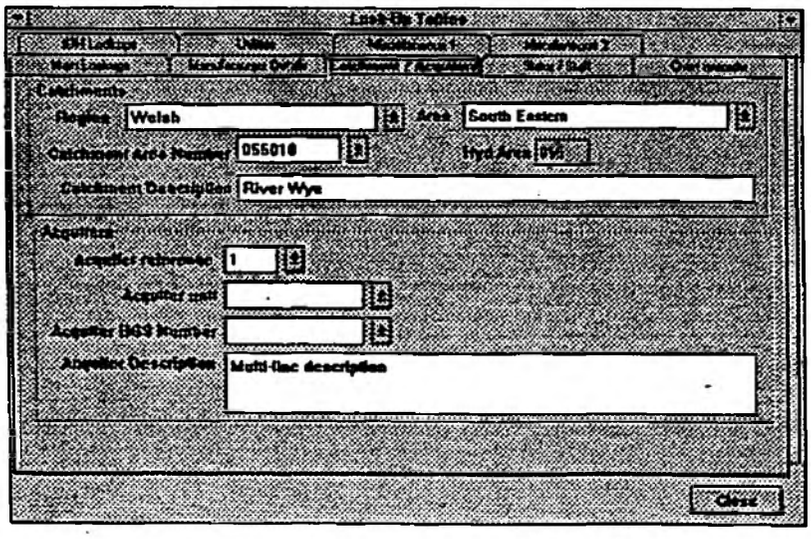
For example:

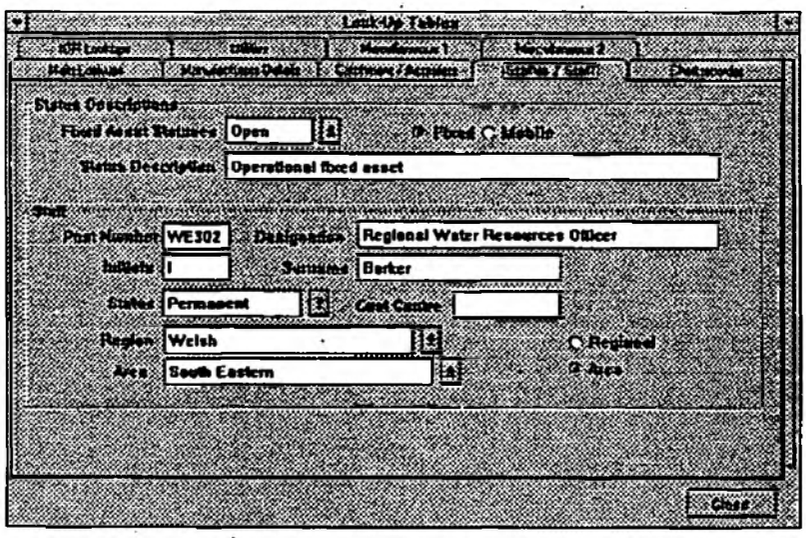


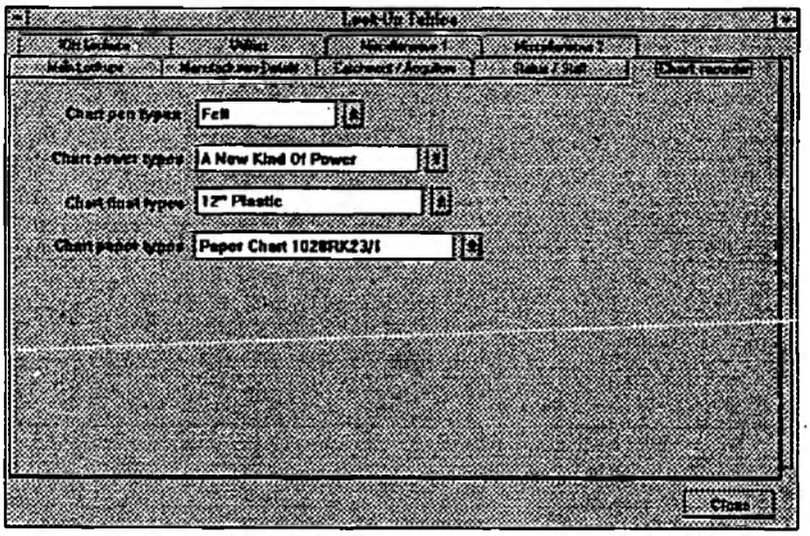
The following screens are the sub forms for look up tables:

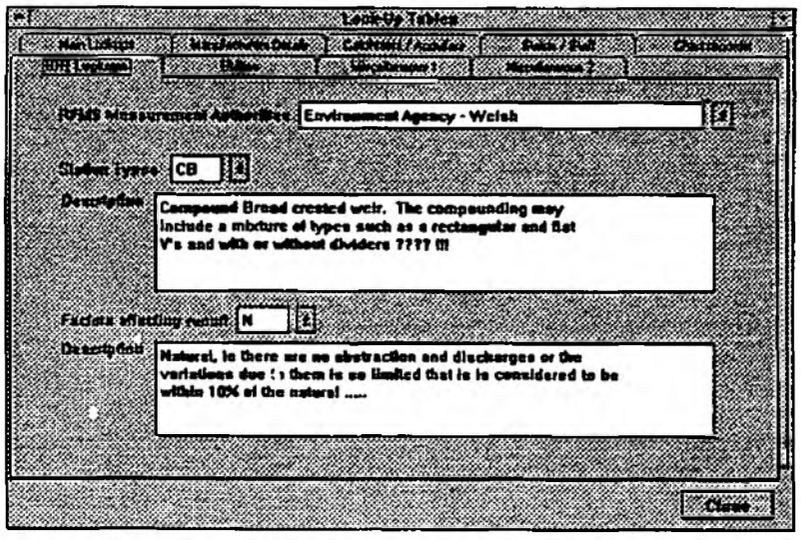


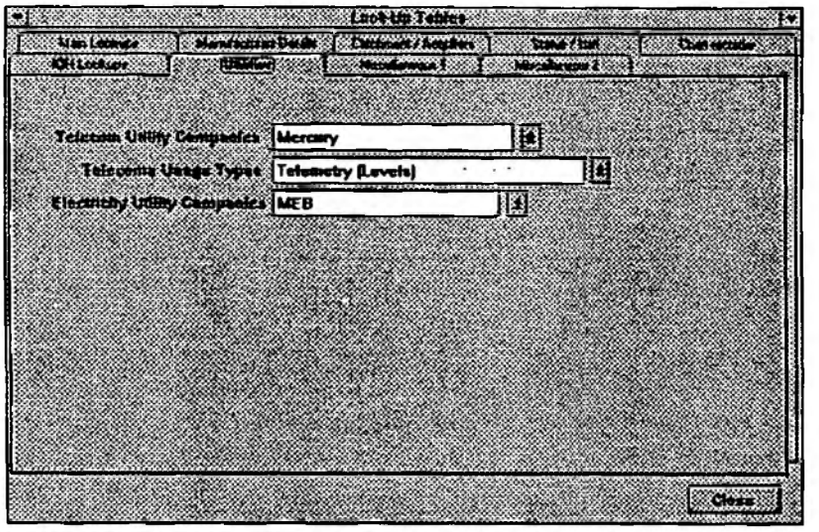


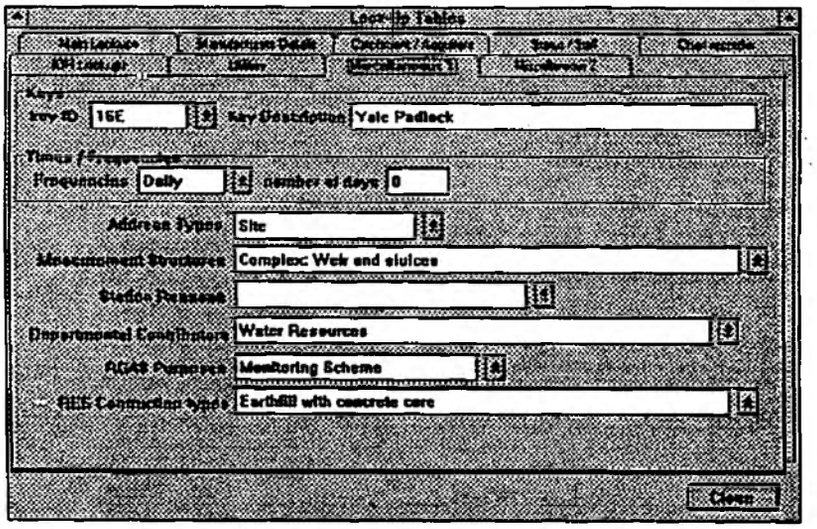


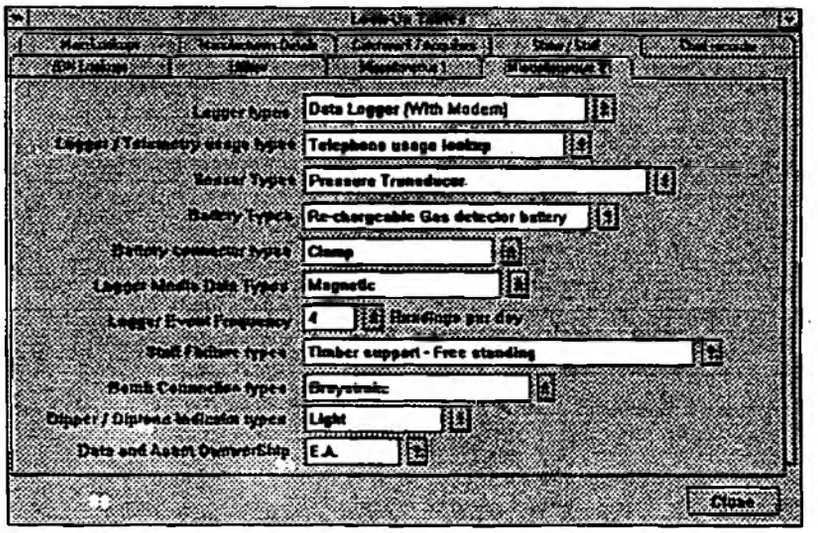

Look-Up Tables
Status Descriptions
Fixed Asset Statuses
Open
Fixed
Mobile
Status Description
Operational fixed asset
Staff
Staff Number
WE302
Designation
Regional Water Resources Officer
Initials
I
Surname
Barker
Status
Permanent
Cost Centre
Region
Welsh
Regional
Area
South Eastern
Area
Close


Look-Up Tables
Chart pen types
Felt
Chart power types
A New Kind Of Power
Chart final types
12" Plastic
Chart paper types
Paper Chart 1028RK23/1
Close


Look-Up Tables
Environment Agency - Welsh
Station types
CB
Description
Compound Broad crested weir. The compounding may include a mixture of types such as a rectangular and flat V's and with or without dividers ???? !!!
Factors affecting runoff
N
Description
Natural, ie there are no abstraction and discharges or the variations due to them is so limited that is is considered to be within 10% of the natural .....
Close

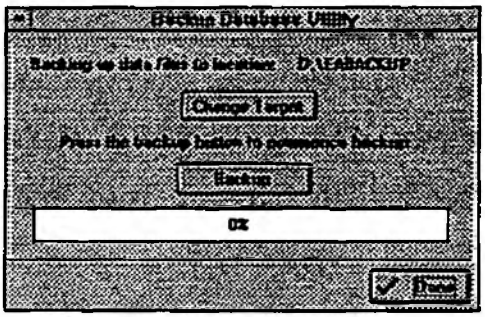

Look-Up Tables
Telecom Utility Companies
Mercury
Telecoms Usage Types
Telemetry (Levels)
Electricity Utility Companies
MEB
Close


Look-Up Tables
Keys
Key ID
16E
Key Description
Yale Padlock
Frequencies
Daily
number of days
0
Address Types
Site
Measurement Structures
Complex: Weir and sluices
Station Reasons
Departmental Contributors
Water Resources
RGAS Purposes
Monitoring Scheme
Earthfill with concrete core
Close

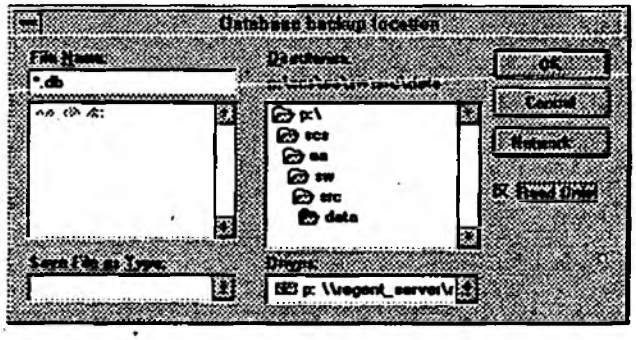

Look-Up Tables
Logger types
Data Logger (With Modem)
Telephone usage lookup
Sensor Types
Pressure Transducer
Battery Types
Re-chargeable Gas detector battery
Clamp
Magnetic
Logger Event Frequency
4
Timber support - Free standing
Bluetooth
Light
Data and Asset Ownership
E.A.
Close

2.3.2.2.8.2 Backup Data

Under some circumstances, there will be a need for the user to make a backup copy of the database onto disks as well as working off of the network. The following screen is an example of a simple backup facility which could support this requirement:

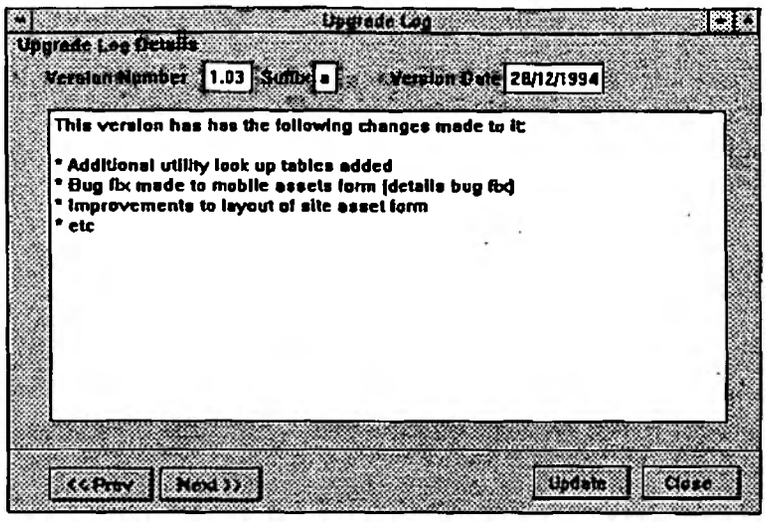


The exact requirements of such a system would need defining in detail at the design stage, although a requirement is to allow the user to change the directory / drive of the target backup media. When the user presses the "Change Target" button a similar dialog to the following would be displayed:



2.3.2.2.8.3 Change Database History

To maintain a history of the database versions (ie: each time the database structure or program changed) a facility similar to the following form would need to be provided:



The previous and next buttons would be used to navigate other version details.

The update button would create a new version log according to details entered on the form.

Version Number

The version number would be a text field entered by the user.

Suffix

This would be a release ID letter entered by the user

Version Date

This would be a date field entered by the user.

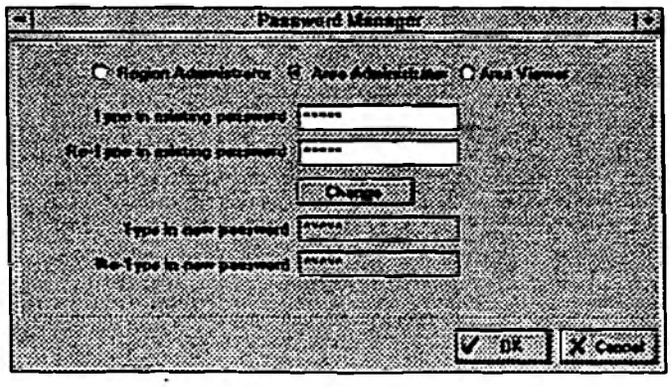
Details

The memo field would store up to 500 characters.

2.3.2.2.8.4 Passwords

The asset database system, as decribed in the introductory sections, has several levels of access, depending on the requirements of that person.

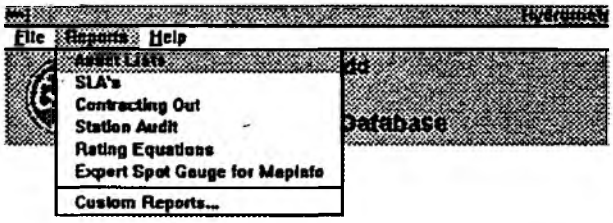
The following form allows the user to change the passwords for the access levels:



The Region Administrator would be able to select which level of access to change using the radio buttons, and then type in the existing access passwords and the new passwords (two fields for each to reduce the chance of typing errors from "locking out" passwords).

2.3.2.2.9 Reports

The following reports will be made available from the main menu:



All reports are simple text reports.

Additionally, some form of user defineable reports should be able to be created, for example using off the shelf database report generator software, or by a allowing simple means of adding reoprts to the software.

It not necessary to define each field in detail at this level of specification, however, where possible examples of the existing reports have been included:-

2.3.2.2.9.1 General Reports:

2.3.2.2.9.1.1 Current Meters / Impellors:

The following is a sample Current Meters / Impellors report from the database

NATIONAL RIVERS AUTHORITY - WELSH

CURRENT METER / IMPELLOR DETAILS

AREA : SOUTH EASTERN

MODEL REF : BFM001 : Braystoke Miniature Current Flow Meter

MANUFACTURER : Valeport Ltd

Asset	Serial Ref	Impellor Ref	Calib Date	Calib Ref
110009	2521	- 8011-1606	01/01/93	
110077	75-493	- 8011-1948		
110010	WYE-1	- 8011-754	01/02/91	
110011	WYE-2	- 475-1428	01/03/91	

MODEL REF : BFM002 : Braystoke Miniature Current Flow Meter

MANUFACTURER : Valeport Ltd

Asset	Serial Ref	Impellor Ref	Calib Date	Calib Ref
110019	1259	- 1178-1433	01/02/93	
110018	1522	- 1178-1331	01/02/93	
110020	1636	- 1178-1478	01/03/93	
110819	1899	- 1178-2051	25/03/97	
110075	638	- 1178-17		
110076	675	- 1178-606		
110016	743	- 1178-1434	01/01/93	
110074	767	- 1178-1430		
		- 1178-1433		
110017	834	- 1178-1018	01/11/89	
		- 1178-1181	01/05/92	
		- 1178-1412	01/02/93	

2.3.2.2.9.1.2 Makers of Mobile Assets

The following report is an example of makers of Mobile assets:

NATIONAL RIVERS AUTHORITY

SUMMARY of MOBILE ASSETS TYPES / MODEL REFS & DESCRIPTIONS

ASSET TYPE : AUTO - Autographic Chart Recorder

MANUFACTURER : Leica UK Ltd

Model Reference	Description
Ott Type R16	Vertical Water Level Recorder
OTT TYPE X	Horizontal Water Level Recorder

NATIONAL RIVERS AUTHORITY

SUMMARY of MOBILE ASSETS TYPES / MODEL REFS & DESCRIPTIONS

ASSET TYPE : BATT - Battery

MANUFACTURER : Delta Technical Services Ltd

Model Reference	Description
Saft Lithium Battery LS6415	Lithium Batt for Aqualog 135/Eurolog 110

MANUFACTURER : Neotronics Limited

Model Reference	Description
Rechargeable Battery Pack	Gas Monitor Battery Pack

NATIONAL RIVERS AUTHORITY

SUMMARY of MOBILE ASSETS TYPES / MODEL REFS & DESCRIPTIONS

ASSET TYPE : BOMB - Suspension Weight

MANUFACTURER : Leica UK Ltd

Model Reference	Description
OTT 25kg Flat Bottomed	Suspension Weight(Bomb)
OTT 50kg Flat Bottomed	Suspension Weight(Bomb)

2.3.2.2.9.1.3 Location of Loggers and sensors

The following report is an example of location of loggers and sensors:

NATIONAL RIVERS AUTHORITY - WELSH

INVENTORY of SENSORS - LOGGERS - STATIONS

Sensor Asset	Manufacturer Serial No / Range	Installed or Removed by	Logger Asset	Manufacturer Asset Type	Installed or Removed by	Station District	NRA Ref Station Name	Old NRA Ref
110170 - Delta Technical Serv : 24/09/92 - H.W Cuddihee			110136 - Delta Technical Serv : 24/09/92 - H.W Cuddihee			BORE	: 056G0134E	: 1011
0507	-	0072	-	CAERWENT ROF BASE - UPPER BORE		0		
110164 - Delta Technical Serv : 05/03/93 - H.W Cuddihee			110130 - Delta Technical Serv : 05/03/93 - H.W Cuddihee			BORE	: 056G0135E	: 1013
0500/0349	05/05/94 - H.W Cuddihee	0050		31/01/96 - H.W Cuddihee	FIVE LANES	0		
110249 - Druck Ltd	: 05/05/94 - H.W Cuddihee		110130 - Delta Technical Serv : 05/03/93 - H.W Cuddihee			BORE	: 056G0135E	: 1013
0500/0349	31/01/96 - H.W Cuddihee	0171		31/01/96 - H.W Cuddihee	FIVE LANES	0		

2.3.2.2.9.1.4 List of Fixed Assets (Registered)

NATIONAL RIVERS AUTHORITY - WELSH

FIXED ASSETS INDEX

ASSET TYPE : BORE - Groundwater Monitoring Station

AREA : SOUTH EASTERN

Asset	NRA Ref	Grid Reference	Asset Description	Status
100121 :	055G0121E [-bgs1	] : SO 5050 -4750	: WELLINGTON NO 2	Open
100122 :	055G0122E [-bgs2	] : SO 5050 -4750	: WELLINGTON NO 1	Open
100123 :	055G0123E [4405	] : SO 4918 -4159	: WIGGINS	Open
100124 :	055G0124E [5401	] : SO 5066 -4065	: WIDEMARSH COMMON	Open
100125 :	055G0125E [4403	] : SO 4840 -4115	: HUNTINGTON LANE	Open
100126 :	055G0126E [4402	] : SO 4683 -4252	: STRETTON	Open
100127 :	055G0127E [4401	] : SO 4384 -4342	: KENCHESTER	Open
100128 :	055G0128E [4603	] : SO 4440 -6162	: CROASE	Closed

100129 : 055G0129E [4602] : SO 4358 -6192 : LUCTONIANS Open

100130 : 055G0130E [4601] : SO 4326 -6280 : FIELD BARN Open

100131 : 055G0131E [5901] : SO 5984 -2301 : FERN BANK Open

100132 : 055G0132E [4404] : SO 4670 -4128 : WYEVALE NURSERIES Open

100133 : 055G0133E [5402] : SO 5010 -4090 : SUN VALLEY Closed

2.3.2.2.9.1.5 List of Mobile Assets (Registered)

NATIONAL RIVERS AUTHORITY - WELSH

MOBILE ASSETS INDEX

ASSET TYPE : AUTO - Autographic Chart Recorder

AREA : SOUTH EASTERN

Asset	Manufacturer	Model Reference	Model Description	Serial No	Status
110406 :	Leica UK Ltd	: Ott Type R16	: Vertical Water Level : 17145		: Operable
110421 :		: Ott Type R16	: Vertical Water Level : 19091		: Operable
110428 :		: OTT TYPE X	: Horizontal Water Lev : 031096		: Operable
110128 :		: OTT TYPE X	: Horizontal Water Lev : 115528		: Operable
110427 :		: OTT TYPE X	: Horizontal Water Lev : 115529		: Operable
110423 :		: OTT TYPE X	: Horizontal Water Lev : 115532		: Operable
110412 :		: OTT TYPE X	: Horizontal Water Lev : 115533		: Operable
110422 :		: OTT TYPE X	: Horizontal Water Lev : 115534		: Operable
110426 :		: OTT TYPE X	: Horizontal Water Lev : 115535		: Operable
110114 :		: OTT TYPE X	: Horizontal Water Lev : 115536		: Operable
110416 :		: OTT TYPE X	: Horizontal Water Lev : 115537		: Operable
110117 :		: OTT TYPE X	: Horizontal Water Lev : 115538		: Operable
110120 :		: OTT TYPE X	: Horizontal Water Lev : 115539		: Operable
110118 :		: OTT TYPE X	: Horizontal Water Lev : 115542		: Operable
110122 :		: OTT TYPE X	: Horizontal Water Lev : 115543		: Operable
110121 :		: OTT TYPE X	: Horizontal Water Lev : 115548		: Operable
110115 :		: OTT TYPE X	: Horizontal Water Lev : 115550		: Operable
110419 :		: OTT TYPE X	: Horizontal Water Lev : 115552		: Operable
110417 :		: OTT TYPE X	: Horizontal Water Lev : 115553		: Operable

2.3.2.2.9.1.6 List of RFMS

NATIONAL RIVERS AUTHORITY - WELSH REGION

RIVER LEVEL / FLOW MONITORING STATIONS

Fixed Asset Reference	New NRA Reference	Old NRA Reference	Grid Reference	Station Name	River Name	Catchment (km2)	Status
100001	055S0001E	055002	SO 4851 :3881	- BELMONT	R.WYE	1,900.00	Open
100002	055S0002E	055003	SO 5485 :4060	- LUGWARDINE	R.LUGG	885.80	Open
100003	055S0003E	055004	SN 8927 :4598	- ABERNANT	R.IRFON	72.80	Open
100004	055S0004E	055006	SN 92600:64500	- CABAN COCH RESERVOIR	R.ELAN	184.00	Closed

100005 055S0005E 055007	SO 0758 :4449 - ERWOOD	R.WYE	1,280.00	Open
100006 055S0006E 055008	SN 82900:83800 - CEFN BRWYN	R.WYE	10.60	Closed
100007 055S0007E 055010	SN 8442 :8251 - PANT MAWR	R.WYE	27.20	Open
100008 055S0008E 055011	SO 1046 :6829 - LLANDEWI	R.ITHON	111.00	Open
100009 055S0009E 055012	SN 9954 :5082 - CILMERY	R.IRFON	244.00	Open
100010 055S0010E 055013	SO 3283 :5849 - TITLEY MILL	R.ARROW	126.00	Open
100011 055S0011E 055014	SO 3646 :6471 - BYTON	R.LUGG	203.00	Open
100012 055S0012E 055015	SO 2787 :2944 - TAFOLOG	R.HONDDU	24.60	Open

2.3.2.2.9.1.7 List of RGAS

NATIONAL RIVERS AUTHORITY - WELSH REGION

RAINFALL MONITORING STATIONS

Fixed Asset Reference	New NRA Ref	M.O Grid Reference	Station Name	Elevation	Status
100143	057R0143E	SO 03000:00000	- ABERCWMBOI		Closed
100474	055R0474E	SO 07911:47400	- ABEREDW		Closed
100525	055R0525E	SN 89250:46010	- ABERNANT TELEMETRY		Open
100490	056R0490E	ST 27250:96900	- BLAEN BRAN LOGGER		Closed
100280	056R0280E	SO 17300:12700	- BLAEN-Y-CWM RES (EBBW VALE)		Closed
100524	055R0524E	SO 60991:56391	- BREDENBURY TELEMETRY		Open
100145	057R0145E	ST 16200:86400	- CAERPHILLY		Closed
100536	055R0536E	SO 45853:49725	- CANON PYON SCHOOL		Closed
100528	056R0528E	SO 16213:13030	- CARNO RESERVOIR SOUTH TELEMETRY		Open
100517	058R0517E	SS 99660:73705	- COWBRIDGE STW TELEMETRY		Open
100415	056R0415E	SN 887 :22200	- CRAY FWS		Closed
100231	056R0231E	SN 88700:22000	- CRAY RESERVOIR NO.1 GROUND LEVEL		Closed

2.3.2.2.9.1.8 List of RFMS in CSV format

This table was not operable in the DOS version.

2.3.2.2.9.1.9 Station Audit Report

NATIONAL RIVERS AUTHORITY - WELSH

INVENTORY of STATIONS (SENSORS - LOGGERS)

Station District	NRA Ref Station Name	Old NRA Ref Asset	Logger Asset Type	Manufacturer	Installed or Removed by	Sensor Asset	Manufacturer Serial No / Range	Installed or Removed by
RFMS	: 055S0001E : 055002		110567	- Delta Technical Serv	: 01/01/89 - J Marsh	110491	- Delta Technical Serv	: 01/01/89 - J Marsh
BELMONT		115/04		20/06/96 - J Marsh		SE0206		20/06/96 - J Marsh
RFMS	: 055S0001E : 055002		110771	- Delta Technical Serv	: 21/06/96 - J Marsh	110491	- Delta Technical Serv	: 21/06/96 - J Marsh

BELMONT	115/2010	-	SE0206	-
RFMS : 055S0002E : 055003	110552 - Delta Technical Serv : 01/01/89 - J Marsh		110467 - Delta Technical Serv : 01/01/89 - J Marsh	
LUGWARDINE	115/028	-	SE308	-
RFMS : 055S0003E : 055004	110705 - Delta Technical Serv : 01/01/89 - J Marsh		110468 - Delta Technical Serv : 01/01/89 - J Marsh	
ABERNANT	115/1931	-	SE993	-
RFMS : 055S0005E : 055007	110558 - Delta Technical Serv : 01/01/89 - J Marsh		110469 - Delta Technical Serv : 01/01/89 - J Marsh	
ERWOOD	115/1632	-	SE999	-
RFMS : 055S0007E : 055010	110548 - Delta Technical Serv : 01/01/89 - J Marsh		110492 - Delta Technical Serv : 01/01/89 - J Marsh	
PANT MAWR	115/741	-	SE0207	-
RFMS : 055S0008E : 055011	110553 - Delta Technical Serv : 01/01/89 - J Marsh		110470 - Delta Technical Serv : 01/01/89 - J Marsh	
LLANDEWI	115/1554	-	SE1081	-

2.3.2.2.9.1.10 Ratings Equations

This report was not operable in the DOS version.

2.3.2.2.9.1.11 Export SPOT gauging data for MAPINFO

This report was not operable in the DOS version.

2.3.2.2.9.1.12 List of RFMS on site

ENVIRONMENT AGENCY - WELSH REGION

List of Assets at a RFMS Station

STATION : 100755/-999 - Letton(Goring)

River : R. WYE : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers						
Sensors						
Cableways						
Autographic						
Loggers						
Sensors						

Cableways :
Autographic :
Loggers :
Sensors :
Cableways :
Autographic :

STATION : 100001/055002 - BELMONT

River : R.WYE : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers	110567	115/04	TG1150	TELEMETRY LOGGING OUTSTATION	01/01/89	20/06/96
Sensors	110491	SE0206	TK560	SHAFT ENCODER	01/01/89	20/06/96
Cableways	110448	14303	SK190	EM2	01/04/94	
Autographic						
Loggers	110771	115/2010	TG1150	TELEMETRY LOGGING OUTSTATION	21/06/96	
Sensors	110491	SE0206	TK560	SHAFT ENCODER	21/06/96	
Cableways	110448	14303	SK190	EM2	01/04/94	
Autographic						

2.3.2.2.9.1.13 List of RGAS on site

ENVIRONMENT AGENCY - WELSH REGION

List of Assets at a RGAS Station

STATION : 100528/-999 - CARNO RESERVOIR SOUTH TELEMETRY

Met.Office Reference : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers	110568	115/TEMP100	TG1150	TELEMETRY LOGGING OUTSTATION	01/08/95	
Sensors	110388	DID025	Didcot	Tipping Bucket	01/08/95	05/09/96
Loggers	110568	115/TEMP100	TG1150	TELEMETRY LOGGING OUTSTATION	01/08/95	
Sensors	110657	029609	Casella	Tipping Raingauge	05/09/96	
Loggers						
Sensors						
Loggers						
Sensors						
Loggers	110667	95465887	NEWLOG	(Babylog)	30/01/97	
Sensors	110780	031886	Casella	Tipping Raingauge	30/01/97	
Loggers						
Sensors						
Loggers	110670	95465893	NEWLOG	(Babylog)	14/10/96	

Sensors	110658	029607	Casella Tipping Raingauge	: 14/10/96
Loggers	110669	95465890	NEWLOG (Babylog)	: 14/10/96
Sensors	110655	029606	Casella Tipping Raingauge	: 14/10/96
Loggers			:	
Sensors			:	
Loggers			:	
Sensors			:	
Loggers	110214	94114840	NEWLOG (Babylog)	: 19/12/95
Sensors	110635	CAS009	Casella Tipping Raingauge	: 19/12/95
Loggers			:	
Sensors			:	
Loggers			:	
Sensors			:	
Loggers	110212	94114843	NEWLOG (Babylog)	: 03/10/95
Sensors	110569	CAS008/02526	Casella Tipping Raingauge	: 03/10/95
Loggers			:	
Sensors			:	
Loggers			:	
Sensors			:	
Loggers			:	
Sensors			:	
Loggers			:	
Sensors			:	

2.3.2.2.9.1.14 List of RES on site

ENVIRONMENT AGENCY - WELSH REGION

List of Assets at a RES Station

STATION : 100655/30356 - BEACONS

River : TAF FAWR : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers				:		
Sensors				:		
Autographic				:		

STATION : 100825/30357 - BLAENAVON (NO.2)

River : TRIB OF AFON LWYD : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers				:		
Sensors				:		

Autographic :

STATION : 100624/30358 - BLAENAVON (NO.3)

River : TRIB OF AFON LWYD : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers						
Sensors						
Autographic						

STATION : 100673/30359 - BWLLFA DARE

River : : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers						
Sensors						
Autographic						

STATION : 100560/30360 - CABAN COCH

River : R.ELAN : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed
Loggers						
Sensors						
Autographic						

2.3.2.2.9.1.15 List of BORE on SITE

ENVIRONMENT AGENCY - WELSH REGION

List of Assets at a BORE Station

STATION : 100725/-999 - RHYDHALOG NORTH

BGS References ST07/11 / : Status Open

Asset Type	Asset	Serial No	Model Reference	Description	Date Install	Date Removed

Loggers :

Sensors :

Autographic :

Loggers :

Sensors :

Autographic :

Loggers :

Sensors :

Autographic :

Loggers 110682 961001 CTL203 : 17/06/96

Sensors 110741 724157 Druck PTX 161/D (17.6mm Diameter) : 17/06/96

Autographic :

Loggers 110704 951223 CTL203 : 17/06/96

Sensors 110726 724156 Druck PTX 161/D (17.6mm Diameter) : 09/05/95 01/04/96

Autographic :

Loggers 110704 951223 CTL203 : 17/06/96

Sensors 110763 827569 Druck PTX 161/D (17.6mm Diameter) : 17/06/96

Autographic :

Loggers :

Sensors :

Autographic :

2.3.2.2.9.1.16 River Flow Measurement Stations Service Level agreements

"1","055002","055S0001E","BELMONT","R.WYE","SO 4851 -3881 ","LF2MF2HF2R1","Y","Y","Y","0.000","7.000","1.849","890.30","Y","Y","Y"

"2","055003","055S0002E","LUGWARDINE","R.LUGG","SO 5485 -4060 ","","Y","","Y","0.000","0.000","0.000","0.00","Y","Y","Y"

"3","055007","055S0005E","ERWOOD","R.WYE","SO 0758 -4449 ","LF4MF2HF2R1","Y","Y","Y","0.000","6.000","1.137","1755.00","Y","Y","Y"

"4","055012","055S0009E","CILMERY","R.IRFON","SN 9954 -5082 ","LF3MF3HF3R2","Y","Y","Y","0.059","3.000","0.000","215.40","Y","Y",""

"5","055013","055S0010E","TITLEY MILL","R.ARROW","SO 3283 -5849 ","LF3MF3HF4R1","Y","Y","Y","0.000","2.000","0.039","69.75","Y","Y","Y"

"6","055014","055S0011E","BYTON","R.LUGG","SO 3646 -6471 ","LF3MF3HF3R1","Y","Y","Y","0.000","2.000","0.010","45.33","Y","Y","Y"

"7","055016","055S0013E","DISSERTH","R.ITHON","SO 0246 -5779 ","LF4MF4HF4R2","Y","Y","Y","0.096","3.500","0.000","181.60","Y","Y",""

"8","055018","055S0015E","YARKHILL","R.FROME","SO 6146 -4270 ","LF4MF4HF4R1","Y","Y","Y","0.098","2.500","0.000","24.04","Y","Y","Y"

"9","055020","055S0056E","CHOLSTREY MILL","PINSLEY BROOK","SO 4620 -5980 ","","Y","","Y","0.000","0.000","0.000","0.00","Y","Y",""

"10","055021","055S0017E","BUTTS BRIDGE","R.LUGG","SO 5021 -5896 ","LF3MF3HF3R1","Y","Y","Y","0.685","2.550","0.000","23.95","Y","Y","Y"

"11","055023","055S0019E","REDBROOK","WYE","SO 5276 -1108 ","LF3MF3HF3R1","Y","Y","Y","0.000","7.000","1.998","807.70","Y","Y","Y"

"12","055025","055S0020E","THREE COCKS","R.LLYNFI","SO 1661 -3760 ","LF3MF3HF3R1","Y","Y","Y","0.000","2.000","0.002","347.30","Y","Y","Y"

"13","055026","055S0021E","DDOL FARM","R.WYE","SN 9758 -6758 ","LF2MF2HF2R1","Y","Y","Y","0.155","2.500","0.000","159.10","Y","Y","Y"

"14","055027","055S0022E","SANDFORD BRIDGE","RUDHALL BROOK","SO 6400 -2571 ","","Y","","Y","0.000","0.000","0.000","0.00","Y","Y",""

"15","055028","055S0023E","BISHOPS FROME","R.FROME","SO 6666 -4866 ","LF4MF4HF4R1","Y","Y","Y","0.502","1.500","0.000","14.18","Y","Y","Y"

"16","055029","055S0024E","GROSMONT","R.MONNOW","SO 4165 -2489 ","LF4MF4HF2R1","Y","Y","Y","0.000","4.100","0.000","179.60","Y","Y","Y"

"17","055031","055S0025E","THREE ELMS","YAZOR BROOK","SO 4913 -4148 ","","Y","","Y","0.000","0.000","0.000","0.00","Y","Y",""

2.3.2.2.9.1.17 River Level Measurement Stations Service Level agreements

"1","055003","055S0002E","LUGWARDINE","R.LUGG","SO 5485 -4060 ","","","Y","Y","Y","Y"

"2","055004","055S0003E","ABERNANT","R.IRFON","SN 8927 -4598 ","LS1MS1HS1R1","","Y","Y","Y","Y"

"3","055010","055S0007E","PANT MAWR","R.WYE","SN 8442 -8251 ","LS1MS1HS1R1","","Y","Y","Y","Y"

"4","055011","055S0008E","LLANDEWI","R.ITHON","SO 1046 -6829 ","LS1MS1HS1R1","","Y","Y","Y","Y"
"5","055015","055S0012E","TAFOLOG","R.HONDDU","SO 2767 -2944 ","LS1MS1HS1R1","","Y","Y","Y",""
"6","055020","055S0056E","CHOLSTREY MILL","PINSLEY BROOK","SO 4620 -5980 ","","","Y","Y","Y",""
"7","055022","055S0018E","MITCHEL TROY","R.TROTHY","SO 5025 -1122 ","LS1MS1HS1R1","","Y","Y","Y",""
"8","055027","055S0022E","SANDFORD BRIDGE","RUDHALL BROOK","SO 6400 -2571 ","","","Y","Y","Y",""
"9","055031","055S0025E","THREE ELMS","YAZOR BROOK","SO 4913 -4146 ","","","Y","Y","Y",""
"10","055036","055S0730E","MARSTOW MILL - RIVER GARREN","R.GARREN","SO 5605 -1935 ","","","Y","Y","Y",""
"11","055801","055S0032E","MONNOW GATE BRIDGE","R.MONNOW","SO 5045 -1249 ","LUMS2HS2R1","","","","","Y"
"12","055802","055S0033E","MONMOUTH (WYEBRIDGE)","R.WYE","SO 5112 -1277 ","LS4MS4HS4R1","","","Y","",""
"13","055804","055S0035E","HAY-ON-WYE","R.WYE","SO 2288 -4262 ","LS1MS1HS1R1","","Y","Y","Y","Y"
"14","055807","055S0038E","HEREFORD, OLD WYE BRIDGE","R.WYE","SO 5060 -3945 ","LUMS1HS1R1","","Y","","Y",""
"15","055811","055S0041E","BREDWARDINE","R.WYE","SO 3370 -4467 ","LS1MS1HS1R1","","Y","Y","Y","Y"
"16","055813","055S0043E","BUILTH WELLS","R.WYE","SO 0351 -5153 ","LS1MS1HS1R1","","Y","Y","Y","Y"
"17","055814","055S0044E","GLASBURY","R.WYE","SO 1804 -3930 ","LS2MS2HS2R1","","Y","","Y","Y"
"18","055816","055S0046E","MORDIFORD","R.WYE","SO 5688 -3663 ","LS1MS1HS1R1","","Y","","Y","Y"
"19","055817","055S0047E","ROSS-ON-WYE","R.WYE","SO 5968 -2425 ","LUMS2HS2R1","","Y","","Y","Y"

2.3.2.2.9.1.18 Ground Water Measurement Stations Service Level agreements

"1","","055G0121E","WELLINGTON NO 2","Carboniferous Limestone","SO 5050 -4750 ","M","","",""
"2","","055G0122E","WELLINGTON NO 1","Carboniferous Limestone","SO 5050 -4750 ","M","","",""
"3","","055G0123E","WIGGINS","Carboniferous Limestone","SO 4918 -4159 ","M","","48",""
"4","","055G0124E","WIDEMARSH COMMON","Carboniferous Limestone","SO 5068 -4085 ","M","","48",""
"5","","055G0125E","HUNTINGTON LANE","Carboniferous Limestone","SO 4840 -4115 ","M","","48",""
"6","","055G0126E","STRETTON","Carboniferous Limestone","SO 4683 -4252 ","M","","48",""
"7","","055G0127E","KENCHESTER","Carboniferous Limestone","SO 4364 -4342 ","M","","48",""
"8","","055G0129E","LUCTONIANS","Carboniferous Limestone","SO 4358 -6192 ","M","","48",""
"9","","055G0130E","FIELD BARN","Carboniferous Limestone","SO 4326 -6280 ","M","","12",""
"10","","055G0131E","FERN BANK","Carboniferous Limestone","SO 5984 -2301 ","M","","12",""
"11","","055G0132E","WYEVALE NURSERIES","Carboniferous Limestone","SO 4670 -4128 ","M","","48",""
"12","","056G0134E","CAERWENT ROF BASE - UPPER BOREHOLE","Carboniferous Limestone","ST 4770 -8055 ","M","","48",""
"13","","056G0135E","FIVE LANES","Carboniferous Limestone","ST 4470 -9087 ","M","","48",""
"14","","056G0136E","TYNE COTTAGES","Carboniferous Limestone","ST 4721 -8990 ","M","","",""
"15","","056G0137E","DEWSTOW ROAD","Carboniferous Limestone","ST 4707 -8851 ","M","","",""
"16","","056G0138E","CALDICOT COUNTRY PARK","Carboniferous Limestone","ST 4888 -8828 ","M","","48",""
"17","","057G0139E","LLANHARRY IRON ORE MINE","Carboniferous Limestone","ST 0184 -8093 ","M","","48",""
"18","","055G0544E","CHICORY CROPS 1 - PHOCLE GREEN","Devonian (Old Red) Sandstone","SO 6317 -2661 ","M","","48",""
"19","","055G0545E","CHICORY CROPS 2 - PHOCLE GREEN","Devonian (Old Red) Sandstone","SO 6317 -2663 ","M","","48",""
"20","","055G0546E","CHICORY CROPS 3 - PHOCLE GREEN","Devonian (Old Red) Sandstone","SO 6318 -2656 ","M","","48",""
"21","","057G0547E","ST MELL-SHALLOW","Devonian (Old Red) Sandstone","ST 2481 -8218 ","M","","48",""
"22","","057G0548E","ST MELL-DEEP","Devonian (Old Red) Sandstone","ST 2481 -8217 ","M","","48",""

2.3.2.2.9.1.19 Reservoirs Service Level Agreements

"1","30356","057I0655E","BEACONS","TAF FAWR","SN 98800-18200","","","",""
"2","30357","056I0625E","BLAENAVON (NO.2)","TRIB OF AFON LWYD","SO 26050-08730","","","",""
"3","30358","056I0624E","BLAENAVON (NO.3)","TRIB OF AFON LWYD","SO 26560-08450","","","",""
"4","30359","057I0673E","BWLLFA DARE","","SN 97300-02700","","","",""
"5","30360","055I0560E","CABAN COCH","R.ELAN","SN 92450-64450","","","",""

"6","30361","056I0635E","CAIRN MOUND","NANT MELYN TRIB","SO 20100-13600","","","",""
"7","30362","057I0654E","CANTREF","TAF FAWR","SN 99600-15400","","","",""
"8","30363","057I0660E","CASTELL NOS","RHONDDA FACH","SN 96300-00300","","","",""
"9","30364","055I0565E","CLAERWEN","R.CLAERWEN","SN 86900-63620","","","",""
"10","30365","057I0666E","CLYDACH","NANT CLYDACH","ST 02800-96700","","","",""
"11","30366","056I0618E","COURT FARM","CAERLEON","ST 33580-93690","","","",""
"12","30367","055I0563E","CRAIG GOCH","R.ELAN","SN 89380-68680","","","",""
"13","30369","056I0611E","CWMAVON","","SO 26900-07125","","","",""
"14","30370","056I0583E","CWMTILLERY","AFON TILLERY","SO 22050-06850","","","",""
"15","30371","055I0564E","DOL-Y-MYNACH","R.CLAERWEN","SN 90800-61900","","","",""
"16","30372","055I0561E","GARREG DDU","R.ELAN","SN 91050-63950","","","",""
"17","30373","056I0636E","GRWYNE FAWR","GRWYNE FAWR","SO 23280-30710","","","",""
"18","30374","057I0648E","LISVANE","NANT FAWR","ST 19000-82200","","","",""

2.3.2.2.9.1.20 Storage Raingauges Service Level Agreements

"1","","055R0475E","TALGARTH STW","SO 15222-34784","D","Y","","Y"
"2","","055R0521E","TITLEY MILL TELEMETRY","SO 32830-58490","","Y","","Y"
"3","","055R0522E","TAFOLOG TELEMETRY","SO 27670-29440","","Y","","Y"
"4","","055R0523E","PANT MAWR TELEMETRY","SN 84420-82510","","Y","","Y"
"5","","055R0525E","ABERNANT TELEMETRY","SN 89250-46010","","Y","","Y"
"6","","056R0515E","USK RESERVOIR TELEMETRY","SN 83988-29056","","Y","","Y"
"7","","056R0516E","CRAY RESERVOIR TELEMETRY","SN 88405-22259","","Y","","Y"
"8","","057R0519E","PONTSTICILL UPPER TELEMETRY","SO 05985-11520","","Y","","Y"
"9","","057R0746E","PONTSTICILL TELEMETRY RAINGAUGE","SO 05880-11910","","Y","","Y"
"10","484015","055R0437E","ESGAIR Y MAEN (LLUGNANT)","SN 80979-85800","M","Y","","Y"
"11","484041","055R0434E","LLECHWEDD HIRGOED (CEFN-BRWYN)","SN 82568-83871","M","Y","","Y"
"12","484108","055R0754E","PANTMAWR(STORAGE)","SN 84425-82515","M","Y","","Y"
"13","484224","055R0457E","LLANGURIG","SN 90800-79651","","Y","","Y"
"14","484321","055R0435E","DERNOL","SN 91504-74844","M","Y","","Y"
"15","484675","055R0463E","RHAYADER S.WKS.","SN 97882-67400","D","Y","","Y"
"16","484761","055R0418E","ABERGWNGU","SN 87044-73484","D","Y","","Y"
"17","484923","055R0467E","TYNANT","SN 89949-67322","D","Y","","Y"
"18","484939","055R0462E","PEN-Y-GARREG","SN 92602-67784","M","Y","","Y"
"19","484991","055R0459E","GARREG-DDU RESERVOIR (NANTGWILLT CHURCH)","SN 90931-63900","D","Y","","Y"

2.3.2.2.9.1.21 Telemetric/ Logger Raingauges Service Level Agreements

"1","","055R0492E","GLASBURY LOGGER","SO 17920-39550","Y","","0.2","","Y",""
"2","","055R0493E","DUNFIELD LOGGER","SO 26969-57896","Y","","0.2","","Y",""
"3","","055R0524E","BREDENBURY TELEMETRY","SO 60991-58391","","15","0.2","D","Y","Y"
"4","","056R0491E","ESTARVARNEY FARM LOGGER","SO 35390-03210","Y","","0.2","","Y",""
"5","","056R0528E","CARNO RESERVOIR SOUTH TELEMETRY","SO 16213-13030","","15","0.2","D","Y","Y"
"6","","057R0518E","DUFFYRN ISAF STW TELEMETRY","ST 02811-84089","","15","0.2","D","Y","Y"
"7","","057R0520E","TYNYWAUN TELEMETRY","SS 93329-99195","","15","0.2","D","Y","Y"
"8","","058R0517E","COWBRIDGE STW TELEMETRY","SS 99660-73705","","15","0.2","D","Y","Y"
"9","484225","055R0494E","LLANGURIG LOGGER","SN 90800-79650","Y","","0.2","M","Y",""
"10","484676","055R0495E","RHAYADER STW LOGGER","SN 97880-67399","Y","","0.2","D","Y",""
"11","485925","055R0496E","LLANBADARN LOGGER","SO 09576-77843","Y","","0.2","M","Y",""
"12","487004","055R0497E","LLANDRINDOD LOGGER","SO 04977-60524","Y","","0.2","D","Y",""

"13","467282","055R0498E","LLANERCH-YRFA LOGGER","SN 83624-55510","Y","","0.2","M","Y",""
"14","470081","055R0499E","TREGOYD LOGGER","SO 19573-37823","Y","","0.2","M","Y",""
"15","471317","055R0500E","BROOMY HILL LOGGER","SO 49592-39510","Y","","0.2","D","Y",""
"16","471837","055R0733E","BLEDDFA LOGGER STATION","SO 2045 -6775 ","Y","","0.2","M","Y",""
"17","473152","055R0503E","LEOMINSTER LOGGER","SO 50378-58080","Y","","0.2","M","Y",""
"18","473260","055R0504E","NEWCHURCH LOGGER","SO 21604-50775","Y","","0.2","M","Y",""

2.3.2.2.9.1.22 Temperature Measurement Service Level Agreements

"1","055002","055S0001E","BELMONT","R.WYE","SO 4851 -3881 ","Y","Y","","Y"
"2","055007","055S0005E","ERWOOD","R.WYE","SO 0758 -4449 ","Y","Y","","Y"
"3","055023","055S0019E","REDBROOK","WYE","SO 5276 -1108 ","Y","Y","","Y"
"4","055032","055S0026E","CABAN (ELAN VILLAGE)","R.ELAN","SN 9283 -6461 ","Y","Y","","Y"

2.3.2.2.9.2 Maintenance Reports:

2.3.2.2.9.2.1 Schedule 1 (Grass cutting) contracting out reports

This report was not operable in the DOS version.

2.3.2.2.9.2.2 Schedule 2 (Weed Clearance) contracting out reports

This report was not operable in the DOS version.

2.3.2.2.9.2.3 Schedule 3 (Weircrest and gauge board cleaning) contracting out reports

This report was not operable in the DOS version.

2.3.2.2.9.2.4 Schedule 4 (Cableway maintenance) contracting out reports

This report was not operable in the DOS version.

2.3.2.2.9.2.5 Schedule 5 (gravel / silt removal) contracting out reports

This report was not operable in the DOS version.

2.3.2.2.9.2.6 Schedule 6 (Building maintenance) contracting out reports

This report was not operable in the DOS version.

3 Database Design

3.1 Overall Structure of the database

The database design is intended to be implemented using a moderm relational database. It is intended that all the database tables discussed in this document are to be implemented as part of the same database, all of which will be stored on the server within each of the three areas in Wales.

3.2 Entity relationship diagram

The following figure shows the overall entity relationships of the new database design.

For simplicity, tables with similar functionality (such as additional information tables for fixed assets) have been cascaded to reduce the notation for the number of individual links which really exist.

PTO.

Entity Relationship diagram:

3.3 General notes on field checking

As can be seen from the discussions on the user interface earlier in this specification, there are many restrictions on fields in terms of length and type. Most of these have been detailed in this specification at a fairly simple level (due to the vast number of fields involved). It is envisaged that when the full design is undertaken these restrictions will need further investigation to ensure that the migrated database does not have truncated text etc.

3.4 Main Analysis of Main Tables

The following list details all the main tables within the database:

Table description	Name
MAIN TABLES	
Site Description	tableSiteDescription
Fixed Assets	tableFixedAssets
RFMS Additional Information	tableRFMSAdditionalInformation
RGAS Additional Information	tableRGASAdditionalInformation
BORE Additional Information	tableBOREAdditionalInformation
Store Additional Information	tableStoreAdditionalInformation
RES Additional Information	tableRESAdditionalInformation
Staff Additional Information	tableSTAFFAdditionalInformation
Mobile Assets	tableMobileAssets
Current meters	tableCMTSAdditionalInformation
Autographic Additional Information	tableAUTOAdditionalInformation
Logger Additional Information	tableLOGGAdditionalInformation
Raingauge Additional Information	tableRAINAdditionalInformation
Gas Detector Additional Information	tableGASAdditionalInformation
Cable Way Additional Information	tableCABLEAdditionalInformation
BOMB Additional Information	tableBOMBAdditionalInformation
Dipper Additional Information	tableDIPPAdditionalInformation
Battery Additional Information	tableBATTAdditionalInformation
Counter Additional Information	tableCounterAdditionalInformation
Ratings	tableRFMSRatings
Addresses	tableAddressDetails

Upgrade Log	tableUpgradeLog
Impellors	tableImpellorDetails
Station Classifications	tableStationClassifications
Station maintenance	tableRFMSStationMaintenance
RFMS Structure Type List	tableRFMSStructureTypeList
Maintenance Requirements	tableMaintenanceRequirements
UTILITY TABLES	
Telephone Details	tableTelephoneDetails
Electricity Details	tableElectricityDetails
Vodaphone Details	tableVodaPhoneDetails
Telephone Bills	tableTelephoneBills
Electricity Bills	tableElectricityBills
Vodaphone Bills	tableVodaPhoneBills

3.4.1 Site Asset Definition

Name: tableSiteDescription

Section	Site Asset	Type	Restrictions
	Site ID	Integer	
	Asset Description	Text	50
	Address ID	LUT	
	History	Memo	5 x 80

3.4.2 Fixed Assets

Name: tableFixedAssets

Section	Fixed Asset Register	Type	Restrictions
Fixed Assets	Region	lut	
Fixed Assets	Area	"	
Fixed Assets	Asset Type	LUT	
Fixed Assets	Regional inventory asset number	Integer	
Fixed Assets	Asset description	Text	100
Fixed Assets	Grid reference	Text	20
Fixed Assets	Cartesian	Text	20
Fixed Assets	Status	LUT	

Fixed Assets	EA reference	ID	
Fixed Assets	Old NRA reference	Text	
Fixed Assets	National reference	Text	
Fixed Assets	Catchment reference	LUT	
Fixed Assets	Catchment description	Text	30
Fixed Assets	Commission date	Date	
Fixed Assets	Asset ownership	LUT	
Fixed Assets	Date Ownership	LUT	
Address Details	Occupier	Text	60
Address Details	Address	Memo	3x60
Address Details	Town/city	Text	20
Address Details	County	Text	20
Address Details	Postcode	Text	20
Address Details	Tel	Text	20
Address Details	Fax	Text	20
Terrier Details	Land description	Text	100
Terrier Details	Deed reference number	Integer	
Terrier Details	Finance asset number	Integer	
Terrier Details	Tenure		
Terrier Details	Lease expires		
Terrier Details	Rental costs	Integer	Pounds
Terrier Details	Month rental due	Text	15
Terrier Details	Rental review date	Date	
Terrier Details	Station description	Memo	2x80
Capital Details	Original cost	Integer	Pounds
Capital Details	Departmental Contributors ID	LUT	
Capital Details	Comments	Memo	2x80
Linkages	Site Membership	LUT	
Linkages	Mobile Assets	LUT	
	History	Memo	5 x 80

3.4.3 RFMS Additional Information

Name: tableRFMSAdditionalInformation

Section	RFMS Additional Information	Type	Restrictions

River Details	ID		
River Details	River Name	Text	40 characters
River Details	Fresh/Tidal	Enum	
River Details	Catchment Area	Num	
River Details	F/B Acronym		4 characters
River Details	Hydro Reference	Text	30 characters
River Details	Distance from River Mouth		
Relative Levels	Measurement Structure	Text	
Relative Levels	Centre Crest/Channel Metres		
Relative Levels	Centre Crest/Channel Datum		AOD/ALD
Relative Levels	Upstream Zero Staff Gauge Metres		
Relative Levels	Upstream Zero Staff Gauge Datum		AOD/ALD
Relative Levels	Downstream Zero Staff Gauge Metres		
Relative Levels	Downstream Zero Staff Gauge Datum		AOD/ALD
Relative Levels	Crest tapping	boolean	Y/N
Relative Levels	Max Flood/Staff Level Metres		
Relative Levels	Max Flood/Staff Level Datum		AOD/ALD
Relative Levels	Bankfull Stage Metres		
Relative Levels	Bankfull Stage Datum		AOD/ALD
Relative Levels	Ordnance Datum OBM		Metres
Relative Levels	Grid Reference & Cartesion		
Relative Levels	Local Datum		Metres
Relative Levels	Grid Reference & Cartesian		
Relative Levels	Description of Local Datum	Text/Memo	
Relative Levels	Channel Width		Metres
Relative Levels	Channel Length		
Data Availability	Fixed Frequency		Minutes
Data Availability	Time Series Levels Tidal		Boolean
Data Availability	Time Series Levels Fresh		Boolean
Data Availability	Time Series Flows		Boolean
Data Availability	Autographic Chart (Level)		Boolean
Data Availability	Telemetry		Boolean
Data Availability	Alarms		Boolean
Data Availability	Daily Mean Flows		Boolean
Data Availability	River Temperature		Boolean
Data Availability	Temperature Chart		Boolean
Data Availability	Time Series Temperature		Boolean

Data Availability	Fish Counter		Boolean
Data Availability	Fish Pass		Boolean
Data Availability	No of Rating Equations Entered		
Data Availability	Level Class		
Data Availability	Date Entered		
Data Availability	Date Last Modified		
Intake Details	Upstream Stilling Well Diameter	Num	Metres
Intake Details	No of Upstream Intakes		
Intake Details	Top of stilling well Metres		
Intake Details	Top of stilling well Datum		
Intake Details	Highest Intake Invert Metres		
Intake Details	Highest Intake Invert Datum		
Intake Details	Highest Intake Invert Diameter Metres		
Intake Details	Intermediate (1) Metre		
Intake Details	Intermediate (1) Datum		
Intake Details	Intermediate (1) Diameter		
Intake Details	Intermediate (2) Metres		
Intake Details	Intermediate (2) Datum		
Intake Details	Intermediate (2) Diameter		
Intake Details	Lowest Intake Invert Metres		
Intake Details	Lowest Intake Invert Datum		
Intake Details	Lowest Intake Invert Diameter		
Intake Details	Down Stream Stilling Well Diameter		
Intake Details	Down Stream Stilling Well Metres		
Intake Details	Down Stream Stilling Well Datum		
Intake Details	No of Down Stream Intęgerakes		
Intake Details	Integererrnediate (1) Metre		
Intake Details	Integererrnediate (1) Datum		
Intake Details	Integererrnediate (1) Diameter		
Intake Details	Integererrnediate (2) Metres		
Intake Details	Integererrnediate (2) Datum		
Intake Details	Integererrnediate (2) Diameter		
Intake Details	Lowest Integerake Invert Metres		
Intake Details	Lowest Integerake Invert Datum		
Intake Details	Lowest Integerake Invert Diameter		
Ratings	Rating Table		
Ratings	Date Range Start		

Ratings	Date Range End		
Ratings	Station Dess		
Ratings	Min Stage		Metres
Ratings	Min Flow		cumecs
Ratings	Max Stage		Metres
Ratings	Max Flow		cumecs
Ratings	Ratings (1)		
Ratings	Ratings (2)		
Ratings	Ratings (3)		
IOH Details	Measuring Authority (Index)		
IOH Details	Level		
IOH Details	Sensitivity		
IOH Details/Table Prob	Station Type		
IOH Details/Table Prob	Station Description		
	Station Description		
	History	Memo	5 x 80

3.4.4 RGAS Additional Information

Name: tableRGASAdditionalInformation

Section	RGAS Additional Information	Type	Restrictions
RGAS	RGAS ID		
RGAS	* Parent Asset No		
RGAS	MET Office Ref No	Text	30 characters
RGAS	Altitude Metres AOD		Float
RGAS	Date RGAS Entered		calculated
RGAS	Date Last Modified		calculated
Observer	* Observer Address ID		Address Table
Observer	Observer Paid		Boolean
Observer	Observer Payment		money
Observer	Observer Text	Text 50	radio
Station Details	Raingauge Type	Text	50 characters
Station Details	Measure Type	Text	50 characters
Station Details	Raingauge Make Tipping Bucket	Text	50 characters
Station Details	* Purpose ID		Lookup RGAS Purpose
Station Details	Check gauge		Boolean

Station Details	Date Opened	Date	
Station Details	Date Closed	Date	
Station Details	Date Last Refurbished	Date	
Station Details	Date of Last MET Office Inspection	Date	
Recording details	Fixed Frequency Sub Daily	Boolean	
Recording details	Fixed Frequency ID	Boolean	Iut
Recording details	* Bucket size MM/tip		Radio 0.2 - 0.5
Recording details	* Manual Reading Interval		Interval Lookup
Recording details	* Media Type for Data		Media Lookup Table
Recording details	* Data Frequency		Interval Lookup
Recording details	* History	Memo	5 x 80

3.4.5 BORE Additional Information

Name: tableBOREAdditionalInformation

Section	BORE Additonal Information	Type	Restrictions
General	Bore ID	index	
BGS Referance No's	Keyworth reference No	Text	20
BGS Referance No's	Wallingford reference No	Text	20
Aquifer Details	Aquifer Ref	ID	
Aquifer Details	Location	Memo	5x100
Relative Levels	Depth below lcoal datum	Integer	Metres
Relative Levels	Depth below local datum	Boolean	OAD/ALD
Relative Levels	Ordnance datum (OBM)	Integer	Metres
Relative Levels	Grid reference	Text	12
Relative Levels	Cartesian	Text	12
Relative Levels	Dipping/Local datum	Integer	Metres
Relative Levels	Grid Reference	Text	12
Relative Levels	Cartesian	Text	12
Relative Levels	Description	Memo	4x100
Borehole Well Details	Well diameter	Integer	Metres
Borehole Well Details	Depth of borehole	Integer	Metres
Borehole Well Details	Casing depth	Integer	Metres
Borehole Well Details	Pumped	Boolean	Y/N
Borehole Well Details	Pump test	Boolean	Y/N
Borehole Well Details	Date of pump test ID	Date	tablePumpTests

Borehole Well Details	Borehole log	Boolean	Y/N
Borehole Well Details	Geophysical log	Boolean	Y/N
Borehole Well Details	Start of monitoring	Date	
Borehole Well Details	End of monitoring	Date	
Borehole Well Details	On going	Boolean	Y/N
Borehole Well Details	Pump Tests reasons	Memo	5x80
Database Records	Start of record on Hydrolog	Date	
Database Records	End of record on Hydrolog	Date	
Database Records	Initial water supply sample	Date	
Database Records	Water quality sample reference number	Text	
Database Records	Water quality software ID	Text	
Database Records	Quality parameters	Memo	5x80
Data Availability	Frequency of manual dip	Text	
Data Availability	Event Frequency	lut	
Data Availability	Event Frequency unit ID	lut	
	History	Memo	5x80

3.4.6 STORE Additional Information

Name: tableStoreAdditionalInformation

Section	Res Additional Information	Type	Restrictions
General	Store ID	index	
General	Address ID	table	

3.4.7 RES Additional Information

Name: tableRESAdditionalInformation

Section	Res Additional Information	Type	Restrictions
General	Res ID	index	
General	River Name	Text	100
General	Catchment area upstream of DAM	Integer	Km2
General	Hydro reference	Text	50
General	Distance from river mouth	Integer	km
General	Ownership	text	50
General	Section 20 agreement	boolean	Y/N
Relative Levels	Construction Type	Text	100
Relative Levels	Centre Crest/Spillway	Integer	Metres

Relative Levels	Centre Crest/Spillway	Boolean	AOD/ALD
Relative Levels	Zero Staff Gauge	Integer	Metres
Relative Levels	Zero Staff Gauge	Boolean	AOD/ALD
Relative Levels	Dead Water Level	Integer	Metres
Relative Levels	Dead Water Level	Boolean	AOD/ALD
Relative Levels	Lowest Pumping Level	Integer	Metres
Relative Levels	Lowest Pumping Level	Boolean	AOD/ALD
Relative Levels	Max Flood/Staff Level	Integer	Metres
Relative Levels	Ordnance Datum (OBM)	Integer	Metres
Relative Levels	Grid Reference	Integer	
Relative Levels	Cartesian	Integer	
Relative Levels	Local Datum	Integer	Metres AOD
Relative Levels	Grid Reference	Integer	
Relative Levels	Cartesian	Integer	
Relative Levels	Description of Local Datum	Memo	5x100
Storage Details	Gross water storage	Integer	MegaLitres
Storage Details	Dead water storage	Integer	MegaLitres
Storage Details	Spillway storage	Integer	MegaLitres
Storage Details	Net storage	Integer	MegaLitres
Storage Details	Catchment area at spillway	Integer	km2
Storage Details	Surface area at spillway	Integer	km2
Storage Details	Surface area at dead water	Integer	km2
Storage Details	Yield	long	Megalitres/ day
Storage Details	Compensation discharge release 1	long	cumecs
Storage Details	Compensation discharge start date 1	long	DD/MM only
Storage Details	Compensation discharge end date 1	long	DD/MM only
Storage Details	Compensation discharge release 2	long	cumecs
Storage Details	Compensation discharge start date 2	long	DD/MM only
Storage Details	Compensation discharge end date 2	Date	DD/MM only
Data Availability	Record reservoir levels	Boolean	Y/N
Data Availability	Type of record ID	lut	
Data Availability	Start of record	Date	
Data Availability	End of record	Date	
	History	Memo	5x80

3.4.8 Staff Additional Information

Name: tableSTAFFAdditionalInformation

Section	Staff Additional Information	Type	Restrictions
Details	Site (Temp/Perm)	Boolean	
	River Name	Text	80
	Catchment area	Integer	km2
	Hydro ref	Text	
	Distance from river mouth	Integer	km
	Reason	Memo	4x80
Type & Attachment	Staff gauge/board range	Integer	Metres
	Backing board	Text	50
	Verticality/slope	Integer	Degrees
Relative Levels	Zero staff gauge	Integer	Metres
	Zero staff gauge	Boolean	AOD/ALD
	Max flood/staff level	Integer	Metres
	Ordnance datum (OBM)	Integer	Metres
	Grid reference	Integer	
	Cartesian	Integer	
	Local datum	Integer	Metres AOD
	Grid reference	Integer	
	Cartesian	Integer	
	Description of local datum	Memo	4x80
	History	Memo	5x80

3.4.9 Mobile Assets

Name: tableMobileAssets

Section	Mobile Asset Register	Type	Restrictions
Details	Region	LUT	
Details	Area	LUT	
Details	Asset number	Integer	
Details	If on loan, parent asset number	Integer	
Details	Model reference	LUT	
Details	Description	LUT	
Details	Manufacturer ID	LUT	
Details	Serial number	Integer	
Details	Status	LUT	
Details	Validated	Boolean	Y/N
Cost Details	Regional inventory asset number	Integer	
Cost Details	Date purchased	Date	

Cost Details	Initial cost	Integer	Pounds
Cost Details	Asset life	Integer	Years
Cost Details	Requisition number	Integer	
Cost Details	Order number	Integer	
Asset Linkages	Mobile assests	LUT	
	History	Memo	5x80

3.4.10 CMTS Additional Information table

Name: tableCMTSAdditionalInformation

Section	Autographic Additional Information	Type	Restrictions
	ID		
	Parent asset ID	link	
	Diameter	float	2 dp
	Date last calibrated	Date	
	Calibration reference number	Text	20
	Reason for calibration	Text	40

3.4.11 Autographic Additional Information

Name: tableAUTOAdditionalInformation

Section	Autographic Additional Information	Type	Restrictions
Installation	Installed	Date	
Installation	Engineers name	LUT	
Installation	Removed	Date	
Installation	Engineers name	LUT	
Installation	Digitised	Boolean	Y/N
Chart Details	Float type	LUT	
	Level resolution	Integer	mm
	Time resolution	Integer	
	Pen type	LUT	
	Range	Integer	Metres
	Clock range		
	Chart power	LUT	
	Battery last changed	Date	
	Paper type	LUT	
	History	Memo	5x80

3.4.12 Logger Additional Information

Name: tableLOGG AdditionalInformation

Section	Logger Additional Information	Type	Restrictions
Installation	Logger type	LUT	
Installation	Station ID	Integer	
Installation	Software	Text	20
Installation	Fixed frequency	LUT	
Installation	Installed	Date	
Installation	Engineers name	LUT	
Installation	Removed	Date	
Installation	Engineers name	LUT	
Installation	Logger tel number	Text	20
Installation	Usage type	LUT	
	History	Memo	5x80

3.4.13 Raingauge Additional Information

Name: tableRAINAdditionalInformation

Section	Rain Guage Additional Information	Type	Restrictions
	Storage / sub-daily	boolean	
	Altitude	Integer	Metres AOD
	Installed	Date	
	Engineers name	LUT	
	Removed	Date	
	Engineers name	LUT	
	History	Memo	5x80

3.4.14 Gas Detector Additional Information

Name: tableGASAdditionalInformation

Section	Gas Detector Additional Information	Type	Restrictions
	Date calibrated	Date	
	Gases Detected	Enum	
	Battery serial number	Integer	
	History	Memo	5x80

3.4.15 Cable Way Additional Information

Name: tableCABLEAdditionalInformation

Section	Cableway Additional Information	Type	Restrictions

	Span between columns	Integer	Metres
	Power	LUT	
	Connector type	Text	60
	Installed	Date	
	Engineers name	LUT	
	Removed	Date	
	Engineers name	LUT	
	History	Memo	5x80

3.4.16 BOMB Additional Information

Name: tableBOMBAdditionalInformation

Section	Bomb Weight Additional Information	Type	Restrictions
	Weight	Integer	kgs
	Connection types	LUT	
	History	Memo	5x80

3.4.17 Dipper Additional Information

Name: tableDIPPAdditionalInformation

Section	Dipper Additional Information	Type	Restrictions
	Length	Integer	Metres
	Date last checked	Date	
	Indicator type	LUT	
	Last check for stretch	Date	
	History	Memo	5x80

3.4.18 Battery Additional Information

Name: tableBATTAdditionalInformation

Section	Battery Additional Information	Type	Restrictions
	Bettery type	LUT	
	Battery type (individual/batch)	Boolean	
	Date first changed	Date	
	Battery life	Integer	Years
	Terminal/connector type	LUT	
	History	Memo	5x80

3.4.19 Counter Additional Information

Name: tableCounterAdditionalInformation

Section	Counter Additional Information	Type	Restrictions
	Date for last battery change	Date	

3.4.20 Ratings

Name: tableRFMSRatings

Section	RFMS Ratings tables	Type	Restrictions
	Rating ID	Integer	
	Asset Number		
	Constant A	Float Point	
	Constant B	Float Point	
	Slope C	Float Point	
	Hmas H	Float Point	
	Date Raneg Start Date	Date	
	Date Range End Date		

3.4.21 Addresses

Name: tableAddressDetails

Section	Address Details	Type	Restrictions
	Address ID	Integer	
	Address Name	Text	40
	Address	Memo	4 x 40
	Town / City	Text	20
	County	Text	20
	Postcode	Text	20
	Tel	Text	20
	Fax	Text	20
	Address Type ID		
	Occupier Name	Text	40
	Occupier Tel	Text	20
	Occupier Fax	Text	20
	Internet Email	Text	60
	Compuserve Email	Text	20
	History	Memo	5x80

3.4.22 Upgrade Log

Name: tableUpgradeLog

Upgrade Log	Type	Restrictions
Upgrade ID		
Version No		X.XX
Version Letter		A
Version Date		dd.mm.yyyy
Version Details		T Strings 70x12 or better

3.4.23 Impellors

Name: tableImpellorInformation

Impellors	Type	Restrictions
Impellor ID	Integer	
Mobile Asset Number	table	
Impellor Serial No	Text	20 characters
Impellor Diameter (mm)	Integer	
Date Last Callibrated	Date	
Calibration Ref No	Text	10 characters
History	Memo	5x80

3.4.24 Telephone Details

Name: tableTelephoneDetails

Section	Address Details	Type	Restrictions
Main details	Asset type	lut	
	Asset Number	ID	
	Telecom Utility Company	lut	
	Account Reference	Text	
	Exchange	Text	
	STD Code	Numeric	
	Phone Number	Numeric	
	Cost Code	Text	
	Responible Officer	lutStaff	
Additional Details	Notes	Memo	3x80
	Handset on site	boolean	Y/N
	Government Preference Scheme	boolean	Y/N
	Line Rental / Qtr	Cost	
	Total care cost / Qtr	Cost	

	Handset cost / QTR	Cost	

3.4.25 Telephone Bills

Name: tableTelephoneBills

Section	Address Details	Type	Restrictions
Bills	Asset Number	ID	
	Call Cost	Cost	
	Total Cost	Cost	
	VAT Total	Cost	
	Date Entered	Date	
	Date last modified	Date	

3.4.26 Electricity Details

Name: tableElectricityDetails

Section	Address Details	Type	Restrictions
Main details	Asset type	lut	
	Asset Number	ID	
	Electricity Utility Company	lut	
	Account Reference	Text	
	Cost Code	Text	
	Tariff	Text	
	Notes	Memo	3x80

3.4.27 Electricity Bills

Name: tableElectricityBills

Section	Address Details	Type	Restrictions
Bills	Asset Number	ID	
	Bill Date	Date	
	Start Units	Integer	
	Reading Type	Text	
	End Units	Integer	
	Reading Type	Text	
	Units used	Integer	
	Unit cost	Cost	
	Other Cost	Cost	

	Total cost	Cost	
	Date Entered	Date	
	Date last modified	Date	

3.4.28 Vodaphone Details

Name: tableVodaPhoneDetails

Section	Address Details	Type	Restrictions
Main details	Asset type	lut	
	Asset Number	ID	
	STD Code	Numeric	
	Issued to	Text	
	Cost Centre	Text	
	Invoice checked	Text	
	System Access charge / Month	Cost	
	Discount / Month	Cost	
	Admin Charge / Month	Cost	

3.4.29 Vodaphone Bills

Name: tableVodaphoneBills

Section	Address Details	Type	Restrictions
Bills	Asset Number	ID	
	Bill Date	Date	
	Call Cost	Cost	
	Distance	Numeric	
	System Access	Cost	
	Distance	Numeric	
	Admin Charge	Cost	
	Subtotal	Cost	
	VAT	Cost	
	Total	Cost	
	Date Entered	Date	
	Date last modified	Date	

3.5 Look up tables

The following list details all the look up tables within the database:

Look Up Tables	Table name
Address Types	lutAddressDetails
Agency Regions	lutAgencyRegions
Asset Types	lutAssetTypes
Fixed Asset Status Description	lutFixedStatuses
Mobile Asset Status Description	lutMobileStatuses
Catchment Area	lutCatchmentAreas
Asset Ownership	lutAssetOwnerships
Departmental Contribution	lutDepartmental Contributors
Measurement Structures	lutMeasurementStructures
RFMS Measurement Authorities	lutRFMSMeasurementAuthorities
RFMS Station Types	lutRFMSStationTypes
RFMS Runoff Factors	lutRFMSRunoffFacors
RGAS Purposes	lutRGASPurposes
Frequencies/Days	lutFrequenciesDays
Media Types	lutLoggerMediaTypes
Aquifer Details	lutAquiferDetails
Logger Event Frequency	lutLoggerEventFrequencies
Construction Types	lutConstructionTypes
Backing Board Types	lutBackingBoardTypes
Model Details	lutModelDetails
Records	lutReservoirRecordTypes
Staff	lutStaffDetails
Keys	lutAccessKeys
Visit Reasons	lutVisitReasons
Battery Connector Terminal	lutBatteryConnectorTypes
Telephone Usage	lutTelecomUsageTypes
Impellors	lutImpellorTypes
Logger Types	lutLoggerTypes
Dipper Indicator	lutDipperIndicators

BOMB Connection Type	lutBombConnectionTypes
Sensor Type	lutSensorTypes
Chart float types	lutChartFloatTypes
Chart pen types	lutChartPenTypes
Chart power types	lutChartPowerTypes
Chart paper types	lutChartPaperTypes
Sensor Card types	lutSensorCardTypes
Logger Usage Types	lutLoggerUsageTypes
Cableway power types	lutCablewayPowerTypes
Battery types	lutBatteryTypes
Telecom companies	lutTelecomCompanies
Electric companies	lutElectricCompanies
RFMS Structure types for repair	lutStructureTypes
RFMS Wall constructiontypes	lutExternalWallConstructionTypes
RFMS roof types	lutRoofTypes
RFMS roof construction types	lutRoofConstructionTypes
RFMS door construction types	lutDoorConstructionTypes
RFMS window construction types	lutWindowConstructionTypes
Cableway door construction types	lutCablewayDoorConstructionTypes
RFMS external repair types	lutExternalRepairs
RFMS floor types	lutFloorTypes
RFMS wooden floor types	lutWoodenFloorConditions
RFMS floor repair types	lutFloorRepairTypes
RFMS interior wall finshes	lutInteriorWallFinishTypes
Interior wall repair types	lutInteriorWallRepairTypes
RFMS ceiling types	lutCeilingTypes
RFMS ceiling repair types	lutCeilingRepairTypes
RFMS Interior decoration types	lutInteriorDecorationsTypes

3.5.1 Address Types

Name: lutAddressDetails

Section	Address Types	Type	Restrictions
Miscellaneous 1	ID		

Miscellaneous 1	Type	Text	20

3.5.2 Agency Regions

Name: lutAgencyRegions

Regions	Type	Restrictions
ID (Region No)	Integer	
Region Name	Text	20 characters

3.5.3 Asset Types

Name: lutAssetTypes

Asset Types	Type	Restrictions
Asset Type ID		
Asset Type Name (RFMS)		5 characters
Fixed or Mobile		Enum
Asset Type Description	Text	60 characters
Asset Life (years)	Integer	
Asset Acronym		
Group Index		

3.5.4 Fixed Asset Status Description

Name: lutFixedStatuses

Status	Type	Restrictions
Status ID		
Fixed Status	Text	14 characters
Status Description	Text	60 characters

3.5.5 Mobile Asset Status Description

Name: lutMobileStatuses

Status	Type	Restrictions
Status ID		
Mobile Status	Text	14 characters
Status Description	Text	60 characters

3.5.6 Catchment Area s

Name: lutCatchmentAreas

Catchment Areas	Type	Restrictions
ID		
Region No	Integer	
Area No	Integer	
Catchment Area No	Text	
Catchment Area Description	Text	50 characters
Hyd (Hydrological) Area	Text	

3.5.7 Asset Ownership

Name: lutAssetOwnerships

Section	Data & Asset Ownership	Type	Restrictions
Miscellaneous 2	ID		
Miscellaneous 2	Ownership	Text	15

3.5.8 Departmental Contribution

Name: lutDepartmentalContributors

Section	Departmental Contribution	Type	Restrictions
Miscellaneous 1	ID		

3.5.9 Measurement Structures

Name: lutMeasurementStructures

Section	Measurement Structures	Type	Restrictions
Miscellaneous 1	ID		
Miscellaneous 1	Measurement Structure	Text	60

3.5.10 RFMS Measurement Authorities

Name: lutRFMSMeasurementAuthorities

Section	RFMS Measurement Authorities	Type	Restrictions

IOH	ID		
IOH	Measurement Authority	Text	40

3.5.11 RFMS Station Types

Name: lutRFMSStationTypes

Section	Station Types	Type	Restrictions
IOH	ID		
IOH	Station Type	Text	
IOH	Description	Memo	

3.5.12 RFMS Runoff Factors

Name: lutRFMSRunoffFacors

Section	RFMS Runoff Factors	Type	Restrictions
IOH	ID		
IOH	Factors Affecting Ruoff	Text	1
IOH	Description	Memo	

3.5.13 RGAS Purposes

Name: lutRGASPurposes

Section	RGAS Monitoring Purposes	Type	Restrictions
Miscellaneous 1	ID		
Miscellaneous 1	Purpose	Text	30

3.5.14 Frequencies/Days

Name: lutFrequenciesDays

Frequencies/Days	Type	Restrictions
Frequency ID		
Frequency	Text	10 characters
Days	Integer	0 to 366

3.5.15 Media Types

Name: lutLoggerMediaTypes

Section	Logger Media Data Type	Type	Restrictions
Miscellaneous 2	ID		
Miscellaneous 2	Data Type	Text	20

3.5.16 Aquifer Details

Name: lutAquiferDetails

Aquifers	Type	Restrictions
ID (Aquifer Ref)		
Aquifer Unit Number	Integer	
Aquifer Unit Description		3 multiline text
AquiferBGS No		

3.5.17 Logger Event Frequency

Name: lutLoggerEventFrequencies

Section	Logger Event Frequency	Type	Restrictions
Miscellaneous 2	ID		
Miscellaneous 2	Frequency	Int	

3.5.18 Construction Types

Name: lutConstructionTypes

Section	Resevoir Construction Types	Type	Restrictions
Miscellaneous 1	ID		
Miscellaneous 1	Type	Text	60

3.5.19 Backing Board Types

Name: lutBackingBoardTypes

Section	Staff Backing Board Types	Type	Restrictions
Miscellaneous 2	ID		

Miscellaneous 2	Type	Text 40	

3.5.20 Model Details

Name: lutModelDetails

Model Details	Type	Restrictions
Manufacturing Details ID	Integer	
* Asset Type	Integer	
Model Reference	Text	40 characters
Model Description	Text	50 characters
Manufacturer/Supplier	Enum	Man/Supplier
* Address Reference	LUT	

3.5.21 Staff

Name: lutStaffDetails

Staff	Type	Restrictions
ID		
Post No	Text	
Designation	Text	35 characters
Surname	Text	30 characters
Initials	Text	5 characters
Area No	Int	
Region No	Int	
Cost Centre		
Area Type		

3.5.22 Reservoir record types

lutReservoirRecordTypes

Staff	Type	Restrictions
ID		
Record type	Text	50

3.5.23 Keys

Name: lutAccessKeys

Keys	Type	Restrictions
Key ID		
Key Description		60 characters

3.5.24 Visit Reasons

Name: lutVisitReasons

Section	Visit Reasons	Type	Restrictions
Miscellaneous 1	ID		
Miscellaneous I	Station Reasons	Text	40

3.5.25 Battery Connector Terminal

Name: lutBatteryConnectorTypes

Battery Connector /Terminal	Type	Restrictions
ID	Integer	
Connector/Terminal Type	Text	20 characters

3.5.26 Telephone Usage

Name: lutTelecomUsageTypes

Telephone Usage	Type	Restrictions
Usage ID		
Usage Type	Text	30 Characters

3.5.27 Logger Types

Name: lutLoggerTypes

Logger Types	Type	Restrictions
Logger Type ID		

3.5.28 Dipper Indicator

Name: lutDipperIndicators

Dipper Indicator Types	Type	Restrictions
ID		
Indicator Type	Text	20 characters.

3.5.29 BOMB Connection Type

Name: lutBombConnectionTypes

Bomb Connection Types	Type	Restrictions
ID	LUT	
Connection Type	Text	30 characters

3.5.30 Sensor Type

Name: lutSensorTypes

Section	SensorTypes	Type	Restrictions
Miscellaneous 2	ID		
Miscellaneous 2	Type	Text	50

3.5.31 Chart float types

Name: lutChartFloatTypes

Section	Chart Float Types	Type	Restrictions
Chart Recorder	ID		
Chart Recorder	Type	Text	30

3.5.32 Chart pen types

Name: lutChartPenTypes

Section	Chart Pen Types	Type	Restrictions
Chart Recorder	ID		
Chart Recorder	Type	Text	20

3.5.33 Chart power types

Name: lutChartPowerTypes

Section	Chart Power Type	Type	Restrictions
Chart Recorder	ID		
Chart Recorder	Type	Text	30

3.5.34 Chart paper types

Name: lutChartPaperTypes

Section	Chart Paper Types	Type	Restrictions
Chart Recorder	ID		
Chart Recorder	Type	Text	30

3.5.35 Sensor Card types

Name: lutSensorCardTypes

Section	Battery Types	Type	Restrictions
	Sensor Card ID		
	Sensor Card decription	Text	

3.5.36 Logger Usage Types

Name: lutLoggerUsageTypes

Section	Battery Types	Type	Restrictions
	Logger Usage ID		
	Logger usage decription	Text	

3.5.37 Cableway power types

Name: lutCablewayPowerTypes

Section	Cableway power types	Type	Restrictions
	Cablway ID		
	Cableway description	Text	

3.5.38 Battery types

Name: lutBatteryTypes

Section	Battery Types	Type	Restrictions
	Battery ID		
	Battery decription	Text	

3.5.39 Telecom companies

Name: lutTelecomCompanies

Section	Telecom Utility Company	Type	Restrictions
Utilities	ID		
Utilities	Telecom Utility Company	Text	35

3.5.40 Electric companies

Name: lutElectricCompanies

Section	Electricity Utility Company	Type	Restrictions
Utilities	ID		
Utilities	Electricity Utility Company	Text	20

4 Migration

4.1 Mapping Old to New Database

The old to new database mapping is relatively straightforward as most tables directly relate to a form with either version of the database and most of the relationships are the same. The main changes in structure are as follows:

- Mobile assets have a parent assset number , allowing for a mobile asset to contain several mobile assets. (In the case of loggers and sensors).
- There are now more look up tables to assist in the maintenance of the database. (The existing DOS database has some form-defined look ups which are harder to modify)
- There is now a site asset to contain fixed assets (allows for grouped assets which was not previously implemented, and also for stores / unallocated assets)

4.2 Migration Software

To reliably convert from one database to the other will take a significant amount of effort to do properly. The following process needs to be followed:

- At design time - Detail the mapping from old to new tables including fields which have been added / removed.
- At design time - Check on the size of each field, ensuring that cropping of text / truncating of numbers does not occur.
- At design time - Ensure other fields such as dates are correctly implemented (including millenum compatability checks)
- At convert time - Export the database in the most convenient format depending on the format of the new database. (Preferably using a database format rather than text if possible)
- Post Conversion - Quality Assure the database integrity - Both the engeineers and the Environment Agency should be fully involved here.
- At run time of the newly constructed database - Look for sensible values in fields of tables where possible. (ie: Alpha numeric characters in text fields etc.) This could be a program option to check for database integrity
- Test the database fully using someone who is familiar with the data to increase the chances of seeing problems.
- Overlap Period - There will be a period of time when the database is re-migrated once the tool has been used for a while after the first migration and experiments have beenb performed to test out the functionality.

It is expected that the migration software would be partly a stand-alone application to do the conversion, and partly checking code within the new database program (perhaps enabled from some option or other).

4.3 Testing the migrated database

As discussed above, it is crucial that the newly constructed database is checked thoroughly by the Environment Agency and by someone who has a high level of familiarity with the data so as to pick out any problems. The database should not be used to add data until the user was confident that the database was accuracte and bug free.

5 Appendices

5.1 Existing Dataease design

The following page details the existing entity relationships for the DOS version of the database: