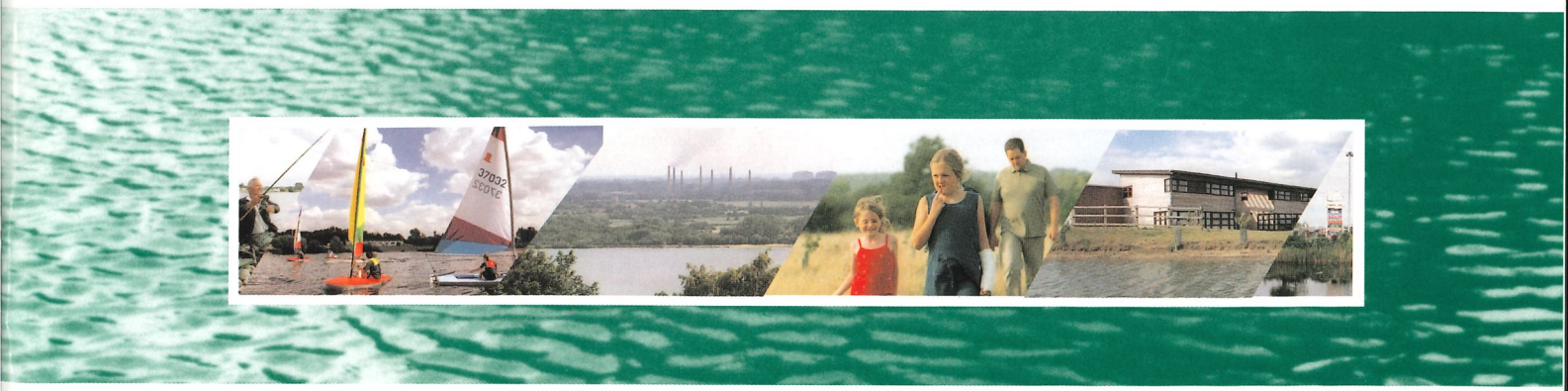
Plan for strategic management of surface waters and their local environment in the Forest of Marston Vale

The Surface Waters Plan



Bedfordshire and River Ivel Internal Drainage Board and The Forest of Marston Vale

Plan for strategic management of surface waters and their local environment in the Forest of Marston Vale

THE SURFACE WATERS PLAN

written and produced by

Hannah ■ Reed

for

THE BEDFORDSHIRE AND RIVER IVEL INTERNAL DRAINAGE BOARD

and

THE FOREST OF MARSTON VALE

on behalf of

MARSTON VALE SURFACE WATERS GROUP

JUNE 2002

Bedford Borough Council

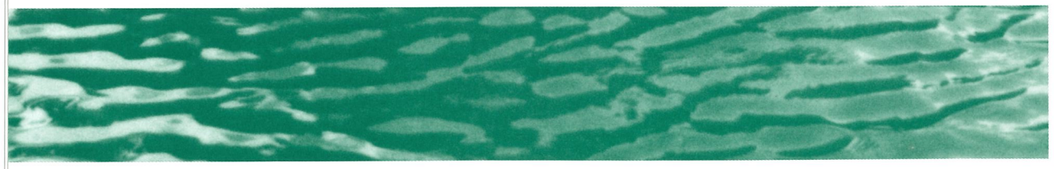
Bedfordshire county council

MID·BEDS DISTRICT COUNCIL

IDB Bedford Group

Environment Agency

Forest of Marston Vale — Forests for the Community



Foreword

Rivers and streams are a delight – for most of the time. They enliven and energise the landscape, provide habitats and sustenance for all kinds of wildlife, lift our spirits and give us pleasure. During extremes of weather, however – drought or flood – watercourses can turn into a hazard: a threat to life, rather than its source.

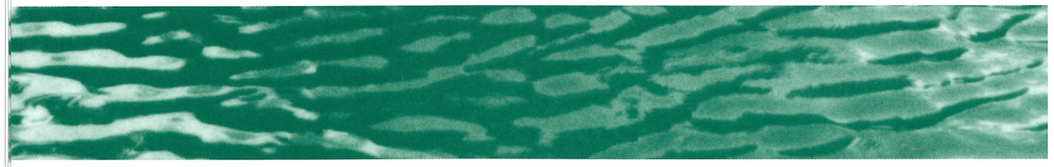
Development can exacerbate the hazards by altering natural drainage regimes and producing polluting discharges. This is not new. The need to take greater care of our water environment has been recognised for decades and much has been done to reduce and reverse the adverse impacts of development. More often than not, however, the solutions have been applied in a piecemeal fashion with too little regard for long term maintenance.

The very costly flooding of the last few years has highlighted the cumulative effects of development on river regimes and the desirability of a strategic, catchment-focused approach. This is particularly true for areas where substantial development is planned. The Forest of Marston Vale is such an area and it was for the promotion of just this kind of strategic view that the Marston Vale Surface Waters Group was established.

This Surface Waters Plan is the product of the efforts of the Surface Waters Group. It seeks to encourage landowners, developers and planners to work with the drainage authorities and Community Forest team to devise lasting solutions, with a broad range of benefits encompassing amenity and conservation, for the management of flood risk and surface drainage in the Marston Vale. I commend this Plan to all concerned with development in the Forest of Marston Vale; particularly to those with interests in our water environment.

Richard Payne

Chairman of the Marston Vale Surface Waters Group
County Councillor and Environment Portfolio Holder: Bedfordshire County Council
Chair of the Great Ouse Local Flood Defence Committee of the Environment Agency
Member of Bedfordshire and River Ivel Internal Drainage Board



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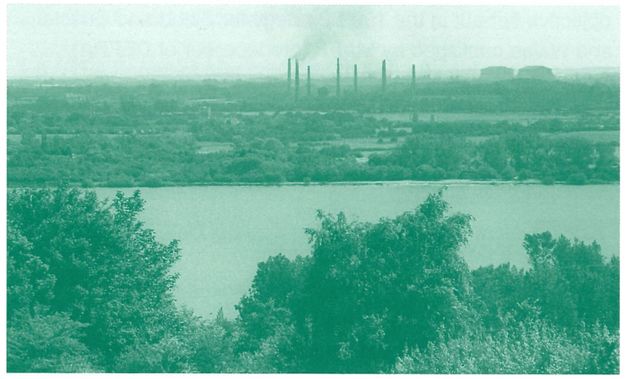
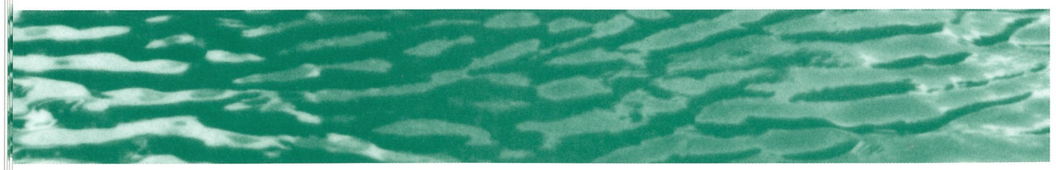




1. Introduction

Nature and purpose of The Surface Waters Plan

1.1 This Plan describes some of the key challenges and opportunities facing Planning and Land Drainage Authorities, Landowners and Developers, and other parties with interests in management of surface waters and their local environment in the area of the Forest of Marston Vale.

1.2 It seeks to face up to the challenges and see advantage taken of the opportunities by promoting a series of policies that will encourage an integrated and sustainable approach to management of surface waters in the context of major proposed development in the area.

1.3 The policies form the essence of The Surface Waters Plan and are set out in Section 5 and Appendix H of this document.

1.4 The Plan has been published on behalf of the Marston Vale Surface Waters Group whose members represent the major Planning and Drainage Authorities with responsibility for rivers, watercourses and other surface waters in the Marston Vale. Background to the Group, details of its membership, and brief descriptions of the functions of the members, are given in Appendix B.

1.5 In preparing the Plan, the Surface Waters Group has sought to support Government objectives relating to flood defence and the environment,

In particular the key objective set out in the 1993 Strategy for Flood and Coastal Defence in England and Wales published by MAFF (predecessor of DEFRA):

> "to encourage the provision of adequate, economically, technically and environmentally sound and sustainable flood and coastal defence measures"

and Target 9A of the High Level Targets for Flood and Coastal Defence, November 1999:

> "In addition to statutory obligations, when carrying out flood and coastal defence works aim to avoid damage to environmental interest and … seek opportunities for environmental enhancement".

1.6 The Plan also supports the implementation of government guidance contained in Planning Policy Guidance Note 25 (PPG25) 'Development and Flood Risk'. An outline of PPG25 is given in Appendix J but, in brief, the guidance:

- Advocates a risk-based approach taking into account sustainable locations and designs
- Describes a sequential approach which local planning authorities should follow when allocating land for development
- States that new development should not itself be at an unacceptable risk from flooding nor unacceptably exacerbate flooding elsewhere
- Requires that, where flood risk is a material consideration, those proposing development must carry out an appropriate Flood Risk Assessment

This Surface Waters Plan provides a framework for site specific Flood Risk Assessments.

1.7 The Surface Waters Plan is a non-statutory document. Its main purposes are to:

- Publicise and promote the policies of the Surface Waters Group
- Identify positive solutions for dealing with the potentially adverse impact of development pressure on the watercourses and other open water bodies in the Marston Vale
- Encourage schemes that result in a range of benefits, having regard to the variety of functions of surface waters including discharge of surface run-off, flood risk management, and environmental and recreational asset
- Support adopted and emerging local plan policies dealing with flooding and surface water drainage and to assist with the consideration of development proposals. (For information on relevant policies in Local Plans see Appendix D)
- Provide guidance to landowners and developers on approaches to surface water management that the members of the Surface Waters Group would be likely to support

The Forest of Marston Vale

1.8 The Forest of Marston Vale is a clearly defined geographical area covering the valley of Elstow Brook and low ridges to the west and east. It is this area of around 16,000 hectares, outlined in red on the Reference Plan in Appendix C, that the Surface Waters Group has made its constituency and to which the Surface Waters Plan applies. It stretches from small settlements at Salford and Brogborough close to the M1 in the south west, around and to the south of the urban conurbation of Kempston and Bedford, to the villages of Willington and Cople in the north east.

1.9 The Forest has a gently undulating topography and is predominantly an open and moderately intensively farmed arable landscape. Farmland covers over 70% of the Forest and typically constitutes large arable fields bounded by open ditches or hedges. Pasture, pony paddocks and set aside land offers some contrast to arable fields. There are several areas of predominantly broadleaved woodland in the Vale and along the eastern ridges that provide contrast within the landscape.

1.10 The continuing significance of the brick making industry, that is a legacy of the Forest, is very apparent with the Stewartby works, empty and water filled pits and belts of screening poplars being the the most visible features. Restoration of pits by landfilling has provided three substantial domed landforms on the generally flat floor of the vale. Gravel extraction pits have become a significant feature on the north east of the Forest in recent years.

1.11 The nineteen villages in the Vale are typically areas of housing constructed over the last forty years spreading out from the old village centres. This is an on-going process arising from pressure for more housing. The Bedford urban fringe has changed dramatically over the last five years with the construction of the southern bypass and infill development for both housing and commercial uses.

1.12 Transport corridors are another significant landscape feature. There are a number of busy trunk roads passing around the south of Bedford and radiating out towards Milton Keynes, Luton and Stevenage. Two railways pass through the Vale from Bedford towards the south, on embankment in some locations and in cutting in others.

1.13 A network of ditches and small watercourses carries surface water to Elstow Brook, the principal watercourse that serves most of the Forest area (as indicated by the blue catchment boundary on the Reference Plan in Appendix C). The flood plain extends across low lying fields, spreading out more widely upstream of historic man-made constrictions. Elstow Brook flows eastwards to its confluence with the River Great Ouse near Willington where the flood plain of the Ouse extends into the eastern parts of the Forest.

1.14 In the context of the Surface Waters Plan, the significant land uses in the Forest include:

- Sizeable settlements at the villages at Cranfield, Marston Mortaine, Wootton, Wilstead and Shortstown.
- Brickfields at Stewartby and Kempston Hardwick, including very large active excavations and worked out, water filled pits.
- Major landfill sites at Brogborough, L-Field and Elstow North and others under consideration.
- Substantial gravel workings at the north east tip of the Forest.
- Brownfield sites at Elstow Storage Depot and Cardington airfield.
- A number of commercial sites, including the vehicle proving ground at Millbrook, Cranfield Airfield and Technology Park and developments on the south side of Bedford and Kempston.

1.15 Marston Vale Millennium Country Park, located between Marston Mortaine and Stewartby, is the hub of the Forest of Marston Vale. It encompasses Stewartby Lake and interconnected wetlands, offering a range of habitats for fauna and flora, and recreational and educational opportunities. Stewartby Lake also provides very substantial attenuation of flood flows passing to downstream reaches of the Elstow Brook.

1.16 The lake and wetlands are a prime example of a major surface water facility and it is this strategic, multi-functional and integrated approach that the Marston Vale Surface Waters Group seeks to promote throughout the area in order to address future needs.

Glossary of terms and abbreviations

1.17 A glossary of terms and abbreviations is given in Appendix A.

2 Planning Context and Time Frame for The Surface Waters Plan

2.1 The Surface Waters Plan has been prepared in the context of increasing development pressure on the Marston Vale and a variety of initiatives aimed at enhancement of the environment. The local planning and environmental context is given in the following statutory and non-statutory documents:-

- Bedfordshire County Structure Plan
- Bedford Borough Local Plan
- Mid Bedfordshire District Local Plan
- Bedfordshire Minerals and Waste Local Plan
- Forest Plan of the Forest of Marston Vale
- Local Environment Agency Plan (LEAP)
- Bedfordshire and Luton Biodiversity Action Plan (BAP)

2.2 The date of the current adopted version of these documents and the status of processes of review, at the time of preparation of the Surface Waters Plan, is given in Appendix D. Local Plan reviews for Bedford Borough and Mid Bedfordshire District were well advanced. This first Surface Waters Plan considers the proposals presented by the Councils in the deposited documents. As such this Surface Waters Plan considers potential development in the Marston Vale up to about 2006 (the period of the Local Plans), whilst keeping an eye on the longer term.

2.3 In July 2001, whilst consultation on the Surface Waters Plan was taking place, the central government Department for Transport, Local Government and the Regions, published Planning Policy Guidance Note 25: Development and Flood Risk (PPG25). PPG25 gives a higher profile to flood risk as a material consideration in the planning process with a view to avoiding new development being put at unnecessary risk of flooding or exacerbation of flood risk to existing property.

2.4 PPG25 promotes a catchment-wide approach to flood risk and its management. Flood risk assessments are to be carried out before land is allocated for development or planning permission is given. The guidance advocates a precautionary approach, including consideration of the potential impacts of climate change, and looks to the planning process to be a vehicle, where possible, for reducing existing flood risk. It supports the implementation of Sustainable Drainage Systems (SuDS) within the design of developments as part of the process of minimising adverse impacts of development on the environment.

2.5 The Environment Agency, as part of its response to recent flooding and PPG25, is preparing Catchment Flood Management Plans. These plans will provide a strategic planning framework for integrated management of flood risk on a large scale. It is anticipated that there will be two plans for the River Great Ouse, one of which will address the upstream, non-tidal reaches encompassing the relatively small sub-catchment of the Elstow Brook. The Catchment Flood Management Plans are expected to identify sub-catchments for which more detailed plans should be prepared, for example to address the impacts of development.

2.6 Although the Surface Waters Plan was drafted prior to publication of PPG25, its approach is generally in line with much of the new planning guidance. Furthermore the Surface Waters Plan appears to fit comfortably into the second tier of flood management plans envisioned by the Environment Agency's proposals for Catchment Flood Management Plans. The plan represents the first steps towards a flood risk assessment, at a local strategic level, for the Elstow Brook sub-catchment of the River Great Ouse.

2.7 A more detailed consideration of the application of the Surface Waters Plan to PPG25 and Catchment Flood Management Plans is given in Appendix J.

2.8 Pressure for development within the Marston Vale is expected to remain high, particularly as the Structure Plan has identified the area as a Strategic Development Corridor. The outlook for the area is consequently subject to change and is periodically reviewed through the various planning processes. It is intended that the policies set out in this Surface Waters Plan will be updated from time to time to reflect the changing planning context. Future reviews of the Surface Waters Plan will be linked, as far as it is practicable and sensible to do so, to the time frames and reviews of the Local Plans and other relevant non-statutory plans.

2.9 Whilst the Surface Waters Plan has, of necessity, to relate to the current planning context and is limited to consideration of development allocations supported by the Local Authorities, the Surface Waters Group will continue to keep an eye on the longer term picture. This is particularly important for identification of potential strategic water bodies, as the process by which these can become available takes place over a much longer time frame than the Local Plan period.

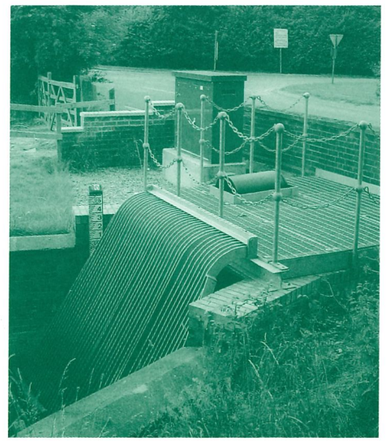
Base Date of Surface Waters Plan

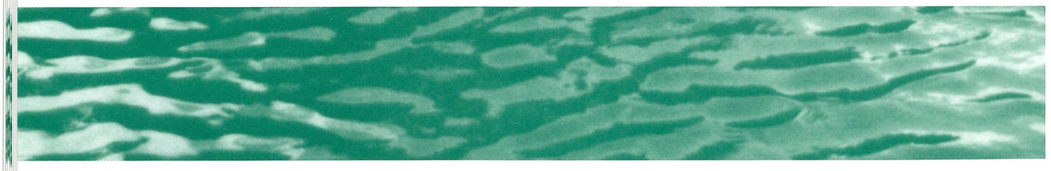
2.10 The base date of this Surface Waters Plan is 1 July 2001, this being the time at which consultation was undertaken. However, opportunity has been taken during preparation of the document for publication to update information on processes such as the Local Plan inquiries.

2.11 It is intended that the Surface Waters Plan will be reviewed periodically. The review will include an appraisal of the effectiveness of the policies of the Surface Waters Group in the light of experience. It will also consider changes in the planning context and the availability of information on flood risk including:

- The Government's planned review of PPG25 (if available at the time) and changes/additions to other relevant Planning Policy Guidance.
- Regional planning guidance.
- A new Bedfordshire County Council Structure Plan.
- Adopted Bedford Borough Council and Mid-Bedfordshire District Council Local Plans to 2006 and commencement of review processes for the next plans.
- Adopted Minerals and Waste Local Plan.
- The Environment Agency's Catchment Flood Management Plans.
- Major proposed developments currently on the horizon including the east-west rail link and British Waterways plan for a canal link from the Grand Union Canal to the River Great Ouse.
- Results of flood modelling of extreme events and the potential impact of climate change.
- Operational experience of strategic schemes.

2.12 Any substantive revision of the Surface Waters Plan as a result of the review will be subject to further consultation.





3. Potential Development in the Forest of Marston Vale

3.1 Most development has the potential to have some impact on surface waters by affecting the flow regime of watercourses or the water environment. Proposed development of particular significance considered in this Surface Water Plan includes:

- Housing and employment allocations
- Landfill sites
- Related infrastructure works

3.2 Potential housing and employment development areas within the time frame of this Surface Waters Plan have been identified by reference to the deposited Local Plans of Bedford Borough Council and Mid Beds District Council. The significant sites are at the following locations (see Appendix E for Local Plan reference numbers and other details):

Housing in Bedford Borough

Land at and near Elstow Storage Depot	Shortstown
Stewartby	West of Kempston
Wilstead	Wootton

Employment in Bedford Borough

Former Coronation brickworks	Former Elstow brickworks
Land at and near Elstow Storage Depot	Land east of B530
Land west of Elstow Bypass	Land west of B530
Land west of Kempston	Marsh Leys Farm
South of Cambridge Road	Stewartby
Wilstead	Wootton

Housing in Mid-Beds District

Land at and near Elstow Storage Depot	Lidlington
Marston Moretaine	Stewartby

Employment in Mid-Beds District

Brogborough	Cranfield

The combined areas of the potential allocations contained in the plans for both Councils amounts to a total for housing and employment in the order of 430 hectares.

3.3 Brief details of the individual allocations are given in Appendix E. The sites are shown on the Reference Plan in Appendix C.

3.4 Whilst the allocations may be subject to change through the Local Plan process, this information gives a reasonable indication of the probable extent of housing, employment and related development in the Marston Vale until 2006.

3.5 Landfill can also result in a substantial increase in the rate of run-off due to the impermeable capping placed over the fill when compared with original conditions. Historically these sites were agricultural land, generating natural run-off to the watercourse system. However following extraction of clay, the sites have acted as sumps relieving the watercourses of flow, usually for a period of decades. Compared with the latter situation, landfill has the potential to have particularly adverse impacts on the flood regime in watercourses.

3.6 Existing and potential landfill sites in the Forest of Marston Vale include:

Landfill sites in the Marston Vale

Brogborough	L-Field
Elstow North	Elstow South
Rookery South	

3.7 The sites are identified on the Reference Plan in Appendix C. Their size, in terms of the additional impermeable area created, is equivalent to large housing or employment allocations.

3.8 Taken as a whole these developments represent very substantial increases in impermeable surface within the catchment of the Elstow Brook with the potential to increase flood flows. All of the developments will require some form of surface water runoff control to avoid increasing flood risk to other properties.

3.9 Looking to the future, the Forest encompasses the South West of Bedford Strategic Corridor that has been identified by Bedfordshire County Council as a particular area for development within the Structure Plan. It is evident that the Forest will continue to be an area of development pressure.

4. Strategic Surface Water Facilities

4.1 Elstow Brook is the central strategic surface water facility of the Forest of Marston Vale. It is the principal carrier of surface water runoff for both the rural catchment and the spreading urban areas around the southern fringe of Bedford and Kempston. The Brook also has a number of important tributaries that serve areas to the east and west of the catchment.

4.2 It is essential to protect and desirable to enhance the existing functions and environmental features of the Elstow Brook and its tributaries. Many of the developments envisaged described above could have an adverse impact on the existing drainage arrangements, increasing run-off and flood risk if appropriate mitigation measures were not taken.

4.3 Mitigation can be achieved in a number of ways, including (generally in order of preference):

- Source control methods such as soakaways and swales that allow surface run-off to percolate into the ground in the immediate locality of the development.
- Strategic watercourse improvements and/or balancing ponds/lakes designed to serve large development or collections of smaller developments and that are adopted by a body which is publicly accountable.
- Balancing tanks or similar flow attenuation facilities forming part of the adopted piped sewerage system.
- Private, unadopted balancing tanks or ponds serving individual developments. (These are undesirable, for the reasons given on Pages 17 and 18, 5.1 to 5.5, and should generally be avoided).

4.4 Over much of the Marston Vale, clayey soils persist and these provide limited scope for source control methods such as soakaways. These methods are generally only suitable where free draining soils with a low ground water table

underlie the site, and where there is no risk to water resources. They are best not utilised unless ground conditions are clearly favourable as they are usually left in private ownership and receive little if any maintenance.

4.5 Hence for most of the Marston Vale, strategic facilities represent the best option for managing surface water run-off for all developments or groups of developments of any significant size. In general, strategic facilities also afford a better prospect for enhancement of the water environment and ecology, for example by providing a variety of habitats, increased opportunities for land and water based recreation, and improved management of all flow conditions.

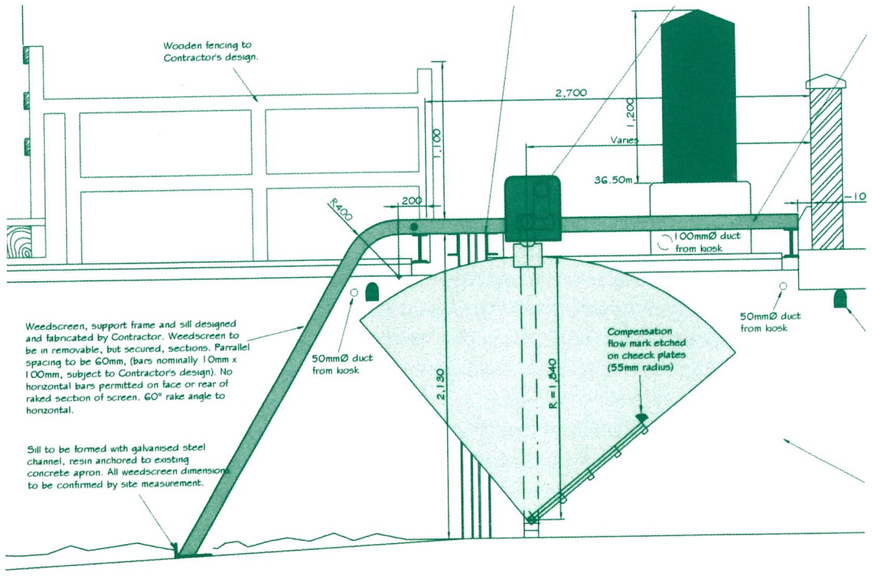
4.6 These potential benefits are not necessarily complementary under all conditions but the scale of strategic facilities makes it more likely that management arrangements will be put in place that will seek to maximise benefits for all in a balanced manner.

4.7 Possibilities for creation of strategic facilities include the following:

- New excavations
- Enlargement of existing watercourses
- Use of existing excavations and lakes

Considering these briefly in turn:

4.8 Many large developments can be served by entirely new excavations designed to provide surface water balancing and flood-risk reduction facilities. In theory this can take place anywhere, subject to land availability, topographical constraints and acceptable discharge arrangements. However it is obviously more sustainable and economical to make use of existing features.



4.9 Increased attenuation of surface water runoff and flood flows can be achieved by on-line enlargement of existing watercourses, combined as necessary with flow controls to limit peak discharges, as has already taken place along parts of the Elstow Brook. Limited enlargement of the watercourses to increase on-line attenuation can be combined with introduction of a wider variety of water conditions and habitats. However application of this approach is often limited by practical considerations and would not suffice for the development scenarios outlined above.

4.10 Fortuitously located, existing large excavations can have great potential to provide effective surface water attenuation associated with environmental and recreational facilities, albeit that ecological variety is generally limited to the fringes. The Forest of Marston Vale is 'blessed' with several such existing water bodies and others in the making. These appear to present the most promising opportunities for creation of large-scale surface water facilities to serve future generations in the area.

4.11 Many such sites are covered by the Minerals and Wastes Local Plan as they are the subject of planning applications or permissions for extraction of aggregate or clay for brick making. Extraction of clay and subsequent restoration is currently covered by 2 planning permissions, the first covering the sites north of Rookery, the second covering the southern sites including Brogborough. The main sites of interest are listed below, with general comments on their potential for strategic surface water management:

Northern Clay Extraction Sites

Elstow South	High potential in good location
Kempston Hardwick	High potential in very good location
Quest	Possible potential in the longer term
Camel Field	Possible potential in the very long term
Rookery North and South	High potential but location is limiting
Stewartby Lake	Already serves as major strategic facility
Broadmead	Possible potential in the very long term
Coronation	High potential but location is limiting

Southern Clay Extraction Sites

Brogborough Lake	Potential primarily for low flow management

Aggregates Site

Land West of Willington	Potential primarily for ecology and recreation

4.12 A more detailed review of the minerals and wastes sites is given in Appendix F and their locations are identified on the Reference Plan in Appendix C.

4.13 It must be emphasised that the comments made on the potential of the sites for strategic surface water purposes relates primarily to their location in the catchment. Any scheme to use the pits for such purposes would of course be

subject to the agreement of landowners and Planning Authorities, and to further technical and economic evaluation.

4.14 Other solutions for addressing flood risk and surface water management for proposed developments may be feasible and viable. Nevertheless the existence of the sites identified above presents unique potential for enhancement of the water environment and flood risk management in the Forest of Marston Vale.

Flood Plains and Flood Protection

4.15 Whilst the emphasis of the above is focussed on mitigation of the effects of increased surface water run-off from developments, it is also essential to protect and, if possible, enhance existing flood management systems including flood plains. In general this will mean avoidance of development within flood plains.

4.16 New development should be protected against fluvial flooding. In considering the appropriate standard of flood protection, developers should take into account government guidance (including Planning Policy Guidance Note 25: Development and Flood Risk) and the views of insurers.

4.17 Data on existing fluvial flood risk, including the extent of the flood plain and flood levels, is available from the Environment Agency and the Bedfordshire and River Ivel Internal Drainage Board but this will need to be supplemented by flood risk assessments carried out by developers. In some instances, developers may need to prepare their own watercourse models to assess existing flood risk.

4.18 Further information on flood risk assessment is given in PPG25 (see Appendix J) and in supplementary guidance available from the Agency and the Internal Drainage Board. Information on the availability of recorded data and model outputs is provided in Appendix K.

5. Policies Proposed by the Surface Waters Group

The problem of piecemeal provision

5.1 If treated on a piecemeal basis the many potential development areas identified in section 3 above would be provided with very many individual surface water balancing facilities, each installed with the objective of avoiding increased flood risk to downstream riparian owners.

5.2 Experience indicates that the larger sites could end up with several balancing ponds, detention basins or other attenuation facilities due to local topography or phasing of individual parcels of development. This could lead to a plethora of balancing facilities, several times more than the number of development sites.

5.3 For some of the small sites, underground storage tanks or oversized sewers might prove adequate for normal surface water attenuation. But in many cases the sites are very substantial and open balancing ponds are likely to be the most economic solution.

5.4 Individual site-based facilities of this type are a maintenance liability and developers often have difficulty with identification of an appropriate responsible party to take on this duty. Whilst Water Companies are usually willing to adopt surface water attenuation facilities that comprise part of the local piped drainage system, they do not usually take on open balancing ponds. Financial pressure and restrictions of commuted sums chargeable to developers means that Local Authorities are also reluctant to adopt such facilities, even when balancing ponds could form part of open space provision. Drainage Authorities are likely to object to proposed development if developers are unable to identify an appropriate body to take on long term responsibility for their surface water management arrangements.

5.5 Local site based facilities also afford limited opportunity for environmental or recreational facilities. For example, with small balancing facilities there is little or no potential for storage to assist with the management of low flows such as might be the case with larger strategic facilities.

Strategic facilities – opportunities and constraints

5.6 The alternative to individual site based balancing ponds is to promote strategic balancing facilities. These are generally larger scale, facilitate a broader based approach to surface water management and control of flood risk, and afford more significant opportunities for recreation and enhancement of the environment.

5.7 Clearly implementation of such schemes depends heavily on the willingness of developers to contribute to a strategic solution and whether it makes economic sense. In some cases the co-operation of neighbouring landowners is required and this may jeopardise a developer's ability to act independently.

5.8 Town and Country Planning and Land Drainage legislation and bylaws provide mechanisms for Planning and Drainage Authorities to put in place agreements with developers and landowners to secure infrastructure for development (for example, Section 106 agreements). The Surface Waters Group will seek to encourage this approach where appropriate.

5.9 The Bedfordshire and River Ivel Drainage Board is generally willing to consider taking over long term maintenance and operational responsibility for flow and water level control elements of strategic surface water facilities within the Drainage District, subject to written agreement and financial terms. The Forest of Marston Vale may in some instances be able to take over land management aspects of such sites. Where these arrangements can be made, the developer rids himself of the long term liability or of the problem of finding some other acceptable body to adopt his facilities. There is also potential for long term ecological gains through the statutory conservation duties placed on the Drainage Board. An outline of the funding arrangements and mechanisms available to the Drainage Board for entering into these agreements is given in Appendix I.

5.10 The Surface Waters Group is firmly of the view that the present mechanisms for addressing surface water issues arising from new development are unsatisfactory and are insufficient to discourage the spread of piecemeal solutions that are of minimal environmental benefit and doubtful sustainability. It is very difficult for planning and drainage authorities to ensure that strategic-scale infrastructure is provided in advance of development taking place as they have no satisfactory funding mechanisms for carrying out works and then recharging the costs. Improvements to current regulation and funding mechanisms are needed to ensure that surface water facilities are adopted by appropriate bodies and to facilitate funding and implementation of strategic schemes. In the meantime, the Surface Waters Group will use the present means at its disposal to encourage developers in this direction.

Table of Potential Strategic Water Facilities.

Water Body	Development that could be served
Brogborough Lake	Lidlington housing (HO8(1))
Stewartby Lake	Marston Mortaine housing (HO8(3))
Coronation Pit	Stewartby housing and employment (H13, E17, HO8(2))
Pits at Elstow South	Elstow Depot housing and employment. (H14, E10, HO8(4))
Pits at Kempston Hardwick	Kempston Hardwick employment (E9)
Possible new strategic water body west of Kempston	Various developments at Wootton and south and west of Kempston (H7, H11, H12, H23(xi), E7, E17)
Strategic watercourse improvements	Developments south of Cambridge Road (E2)

5.11 Based on proximity alone, opportunities appear to exist for strategic facilities in the areas identified in the Table above and on the plan in Appendix C. Reference numbers given in the table refer to Local Plan policies – see Appendix E for details. It should not be inferred from this table that agreement to use the water bodies listed for these purposes has been obtained. This would be a matter for developers to seek to negotiate with landowners and the Planning Authorities, as stated in 4.13 above.

5.12 More detailed notes on these and options for other developments are given in Appendix G.

Landscape and ecology

5.13 All of the locations listed in the table above lie in or immediately adjacent to the zone for wetland and woodland matrix identified within the 'preferred habitat creation strategy' in the Forest Plan: January 1995. Brogborough Lake, Coronation Pit, Kempston Hardwick Pits and Elstow South (just north of Elstow Depot) are included in the sites proposed for increasing shallow water margins in the Forest Plan. Although

the new Forest Plan 2000 is less specific about sites, it continues to promote the creation of additional wetlands and woodland.

5.14 However, the parameters for wetland creation are notnecessarily complementary to those for surface water attenuation. Hydrological control is desirable for wetlands and this may not be consistent with unpredictable influxes of flood water. The parameters for the two functions therefore need to be considered with care on a site by site basis. The Surface Waters Group considers that the general aim should be to strike a sensible balance aimed at maximising benefits across the range of interests, as described in 4.6 above.

5.15 The long-term future of Stewartby Lake as a drainage and environmental feature appears to have been secured by the creation of Marston Vale Millennium Country Park. Operational responsibility for the outlet from the lake has been transferred to the Drainage Board under an agreement with the previous owners and the Forest of Marston Vale. This will facilitate flood management. The Drainage Board intends to implement a water management plan through a process of consultation, having regard to the environmental and recreational interests. This will set the parameters for operation of the outlet control.

5.16 Woodland creation is an obvious priority for the Forest, but it is proving difficult to secure significant and meaningful tracts of land for tree planting. Whilst the Surface Waters Plan is essentially concerned with the water environment, the Surface Waters Group supports the aims of the Forest of Marston Vale. It therefore encourages all parties involved in planning major developments such as those identified in this plan to consider opportunities for tree planting on a large scale.

5.17 Obviously planting of this nature is not proposed as an alternative to provision of essential surface water management facilities. Indeed in some instances it may be possible to provide woodland and strategic water facilities in an integrated landscape scheme, including establishment of flood resistant woodlands (Carr woodlands) within flood attenuation facilities.

Policies

5.18 In the context of the above, the Surface Waters Group has determined on the following general policies for management of surface waters and the environment in the Marston Vale.

General policy statements

5.19 The Surface Waters Group will promote an integrated approach to flood risk management, surface water drainage and the water environment in response to development pressure in the Marston Vale.

5.20 The Surface Waters Group will promote government guidance contained in PPG25 'Development and Flood Risk'. This Surface Waters Plan provides a strategic framework for the site specific Flood Risk Assessments which must be produced in support of planning applications where flood risk is a material consideration, in accordance with PPG25.

5.21 The Surface Waters Group will seek support from the Planning Authorities in its efforts to encourage developers to consider and, where appropriate and practicable, implement strategic solutions to surface water drainage and flood risk that are sustainable and offer opportunities for environmental and recreational gains.

5.22 The Surface Waters Group will seek to assist developers with co-ordinating negotiations and studies where appropriate, primarily through the offices of the Drainage Board and Environment Agency, particularly where several landowners and developers are involved.

Watercourse corridors

5.23 The Surface Waters Group will seek to encourage Planning Authorities and developers to protect watercourse corridors from development that would have an adverse impact on the drainage regime, flood risk and the river environment.

5.24 The Surface Waters Group will support measures to enhance the river system and environment by appropriate channel improvements, planting and other works.

The long-term

5.25 The Surface Waters Group will seek to take a long-term view of development potential in the Marston Vale and opportunities that may arise to lay down early strategies for serving such development. Such opportunities may arise from continuing extraction of minerals in the area and subsequent restoration of pits and may have the potential to reduce flood risk for existing property in the face of adverse climate change.

Powers and funding

5.26 In light of the deficiencies in present mechanisms for encouraging a strategic approach to surface water issues, particularly those arising from new development, the Surface Waters Group will lobby central government to address funding, adoption and related issues. In the view of the Surface Waters Group, it is essential that improved regulatory and financial mechanisms be introduced to deal with increasing development pressures and ensure that sustainable and environmentally acceptable solutions are implemented.

Proposals relating to specific developments and water bodies

5.27 The Surface Waters Group will from time to time identify potential opportunities for creation of specific strategic surface water facilities that might serve particular developments, or provide enhanced management of the system. The first set of such outline proposals is given in Appendix H. Proposals of this nature will of necessity require review from time to time to accord with the changing planning and development context and will be subject of future reports by the Surface Waters Group.

Technical Justification

5.28 In promoting this approach, the Surface Waters Group recognises that any solution requires technical and economic evaluation and justification. It is generally the responsibility of developers to provide this but the member organisations of the Surface Waters Group will endeavour to provide appropriate guidance and may, in some instances, be able to contribute to preparation of technical justification on behalf of developers.

5.29 Again, in some instances member organisations may assist with technical analysis to further refine the proposals embodied in the Surface Waters Plan and to support the preparation of supplementary planning guidance, for example development briefs for specific major developments. In this respect it is envisaged that the information and policies in the Surface Waters Plan will provide an holistic and consistent approach to surface water and drainage issues across the Forest.

5.30 Sources of data and flood risk models to assist with technical analysis of proposals are described in Appendix K.

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Bedford Borough Council

Bedfordshire county council

MID·BEDS DISTRICT COUNCIL

IDB Bedford Group

Environment Agency

Forest of Marston Vale — Forests for the Community