Appendix 6

Flood Risk Assessment

DEVELOPMENT
SERVICES

16 MAY 2008

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Veolia Waste Management Facility, Hinckley

FLOOD RISK ASSESSMENT

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1 INTRODUCTION

1.1 Background

In January 2008 Atkins Ltd (Birmingham Office) was commissioned by Veolia to carry out a Flood Risk Assessment for the proposed alterations to Veolia's Waste Management Facility at Watling Street, Hinckley, Leicestershire.

1.2 Scope of the Report

The scope of this report is to present the findings of an assessment of flood risk for the proposed redevelopment.

The objectives of this report are in accordance with the requirements of Planning Policy Statement 25 (PPS25) [Ref 1] and following guidance given in CIRIA Report *Development and Flood Risk – Guidance for the Construction Industry* [Ref 2]. This report is a Level 2 study as defined in the CIRIA report and includes the following objectives:

- Assessment of the availability and adequacy of existing information;
- Qualitative assessment of the flood risk to the site, and the impact of the site on the flood risk elsewhere; and
- Assessment of the possible scope for appropriate development design and to scope additional work required.

2 PLANNING REQUIREMENTS AND FLOOD RISK

2.1 PPS25

PPS25 'Development and Flood Risk' [Ref 1] was introduced by the Government in December 2006. It sets out the Government's policy with respect to these issues and has to be taken into account by all relevant statutory bodies from regional to local authority planning departments. The aim is to ensure that flood risk is assessed at all stages of the planning process in order to avoid inappropriate development in areas that are at risk of flooding.

2.2 CIRIA Report

The CIRIA Report 'Development and Flood Risk – Guidance for the Construction Industry' [Ref 2] recommends a tiered approach with three levels of assessment. Level 2 is defined as a Scoping Study to be undertaken if the site may lie within an area which is at risk of flooding or that the development may increase flood risk due to increased runoff, to confirm the possible sources of flooding which may affect the site.

The objectives of a Level 2 FRA are to:

- develop an understanding of the mechanisms of flooding at the site
- develop an understanding of the proposed development site within the context of the catchment or coastal cell
- identify available data
- confirm whether the site is likely to be in a "little or no risk", "low to medium" or "high" flood risk zone
- produce a preliminary qualitative assessment of the potential impact of, and constraints to, the proposed development
- develop an understanding of the potential development design that may be employed at the site
- define the additional work required to produce a Level 3 FRA (if necessary).

The proposed development of the site will increase the area of hardstanding within the site and hence runoff and for this reason a Level 2 assessment has been deemed appropriate.

2.3 Hinckley & Bosworth Borough Council SFRA

The Hinckley & Bosworth Borough Council, Strategic Flood Risk Assessment (SFRA) was issued November 2007. It states that:

The Environment Agency has highlighted Sketchley Brook as a particular area of concern due to the flashy urban nature of its catchment and the number of potential development sites within its vicinity... It is recommended that if significant redevelopment of land within the Sketchley Brook catchment is proposed, hydrological and hydraulic modelling of the catchment should be undertaken.

This has been noted in the preparation of this FRA. However the scale and nature of the proposed redevelopment of the site is not considered to be "significant". For this reason, together with the site's location in Flood Zone 1 (refer to section 4.1), we do not consider full hydrological and hydraulic modelling necessary for this FRA.

2.4 The Sequential Test

The aim of the sequential test, defined in the recently published *PPS25 - Development and Flood Risk*, is to steer new development to areas at the lowest probability and risk of flooding. Due to the nature of the proposed development, which is a modification of an existing facility, and there is no requirement for a sequential test in the case of this site.

2.5 The Exception Test

PPS25 Table D3 defines the compatibility of each vulnerability class of development for land within each of the Flood Zone designations as shown in Table 1 below.

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone see table D1 PPS 25	Flood Zone 1	YES	YES	YES	YES	YES
	Flood Zone 2	YES	YES	Exception test required	YES	YES
	Flood Zone 3a	Exception test required	YES	NO	Exception test required	YES
	Flood Zone 3b	Exception test required	YES	NO	NO	NO

Table 1- Table D3 PPS25: Flood Risk Vulnerability and Flood Zone "Compatibility"

Where this compatibility is not clearly defined, the table dictates that the proposals should be submitted to the exception test.

The Environment Agency's online floodplain mapping suggests that the site lies within Flood Zone 1. From the table above we can see that the development proposals are appropriate for the site and application of the exception test is not required.

3 PROPOSED DEVELOPMENT

3.1 Location and Topography

The site is located to the south-west of Hinckley and has an approximate area of 2.0Ha. It is bounded by agricultural land to the south, east and west and residential housing to the north. A railway embankment runs along the southern boundary and the A5 along the eastern boundary. The history of the site has not been researched as part of this study, but on site sources indicate the depot has been present for over 20 years.

Figure 1 below shows the location of the existing facility. The alterations are all to be located within the existing site boundary.

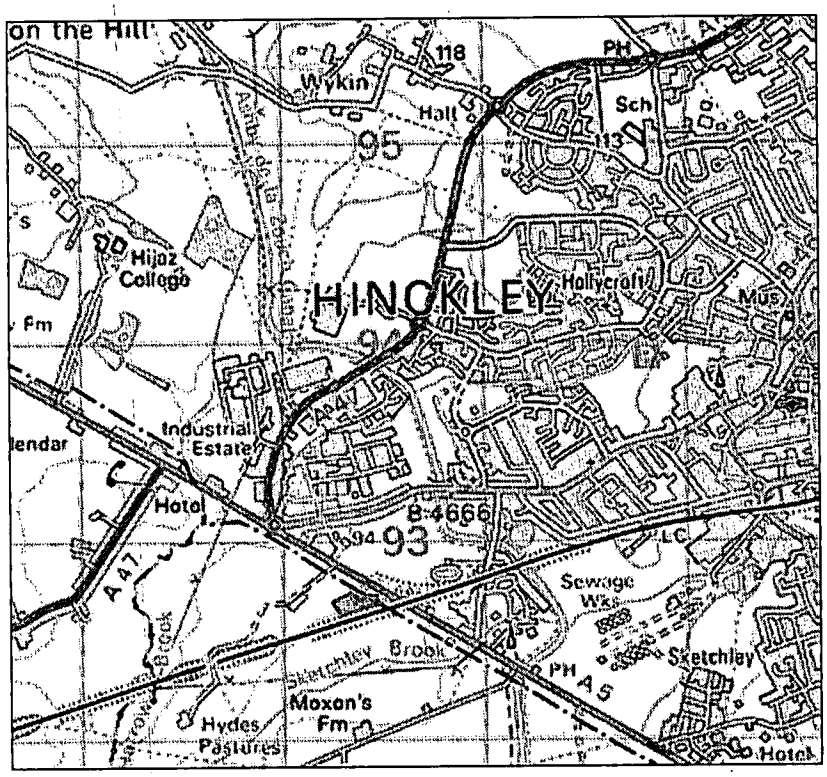


Figure 1 – Veolia Facility Site Location plan: Grid Reference SP 404 927 [Ref 4]

The existing topography of the site is generally flat with the only noticeable changes in level associated with the railway embankment, approximately 3m above the ground level within the facility, and the bunding around the western end of the site, approximately 2m higher than ground level. A topographic survey of the site is shown on drawing number H29/03 in Appendix A.

An aerial photograph of the site is shown in Photo P1 below.



Photo P1 – Aerial view of the site: [Ref 4]

3.2 Existing Flood Defences

There are no flood defences in the vicinity of the site.

3.3 Development Proposals

The proposed site layout is shown on drawing number 11944RSA030003 by Waterman, included in Appendix A.

The existing building on site is to be retained and a second new waste transfer building is to be constructed in the centre of the site. The eastern end of the site is to be used for car parking and the vehicle wash area is to be relocated to the southern boundary. The western end of the site currently enclosed by bunding is to be the new metal sorting and recovery area. This area is to become hardstanding and have a portal frame building in the corner. Drainage will be added to this area to facilitate the removal of surface water.

4 THE SOURCES OF FLOODING

4.1 Fluvial Flooding

When the quantity of water in a river exceeds the flow capacity, a river will flood. The speed at which this happens generally depends on the intensity of the rain, the size of the watercourse and catchment area.

The closest watercourse to the site is the Sketchley Brook which is 260m south of the site at its closest point. The railway embankment forms a significant barrier between the site and the Sketchley Brook as its crest is approximately 4m above the general ground level. The Harrow Brook, is also present approximately 500m to the north west of the site. Figure 2 below presents the current flood zone map from the Environment Agency (EA) website.

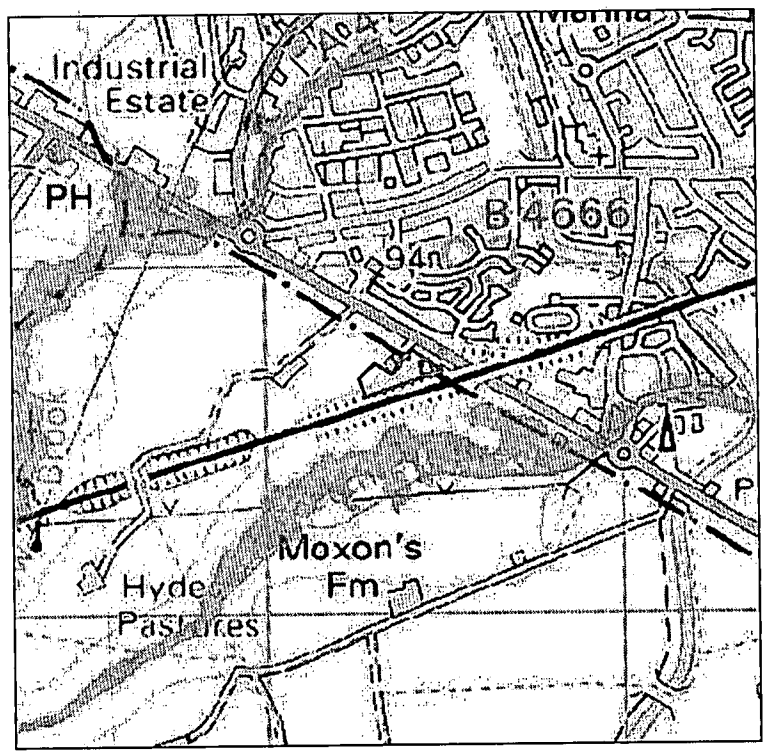


Figure 2 – Environment Agency Flood Zone Map [Ref 5]

Key
Flooding from rivers or sea without defences (Flood Zone 3)
Extent of extreme flood (Flood Zone 2)

Figure 2 confirms that the site lies entirely within Flood Zone 1 and is therefore appropriate for all uses of land from a flood risk perspective (as defined in Table D.1 of PPS25).

Flood Zone 1 classifies the site as being low risk in terms of flooding from watercourses (defined as having a less than 0.1% probability of flooding in any given year). Fluvial flooding is not considered a risk on this site.

A request for information was made to the Environment Agency and they have confirmed that Sketchley Brook is designated a 'Main River', however this should not impact upon the development as no works are planned within 8m of the top of bank. The EA also confirmed that they have no historical data of flooding at the site or modelled flood levels for the Brook. The full response from the EA is shown in Appendix C.

Any new discharges to the Sketchley Brook may require prior consent from the EA as follows: -

- Development Control section in respect of discharge rate and headwall/outfall structure construction (Form FD1).
- Discharge Consents section in respect of water quality issues.

4.2 Groundwater Flooding

Groundwater flooding occurs where the natural water level rises higher than the ground level and is most likely to occur where the strata is low-lying permeable rock.

The only underground structure on site is the basement of the existing building. The basement has vehicle access and is used as a garage. There is no history of the basement flooding.

Groundwater flooding is not considered a risk on this site.

4.3 Flooding from the Land

Flooding can occur when intense rainfall exceeds the infiltration capacity of the ground or where rainwater flowing over ground has not yet been intercepted by natural or man-made drainage.

The topography of the existing site is relatively flat and the site is bordered by the railway embankment to the south, local bunding to the north and west and the A5 which is raised slightly above the site to the east.

It is possible that some surface water from the A5 could drain onto the site; however surface water on the road should be intercepted by the existing drainage systems. The majority the site is isolated from the surrounding land so that surface water can neither drain onto or off the site.

Neither the Environment Agency nor the Local Authority has records of any flooding from the land in this area.

In view of this, the impact on the site from surface water runoff from adjacent land is considered negligible.

4.4 Flooding from Sewers

Flooding occurs when the sewer is overwhelmed and can occur due to insufficient capacity, blockages or intense rainfall.

4.4.1 Surface Water

The existing site is split into several areas in terms of drainage. The metal sorting area and waste transfer area are both isolated and drained into a captive tank via an

interceptor due to its likely level of contamination with pollutants. The vehicle wash area also drains into a captive tank but is not isolated from the surrounding areas. Both tanks are regularly emptied and the water taken off site for treatment and discharge as part of Veolia's site management regime.

The remaining areas drain into the surface water system that discharges into an attenuation pond via an interceptor. This existing attenuation pond discharges into Sketchley Brook via a pipe under the railway embankment.

Consultation with Veolia confirms that there are no reported problems with the drainage system that could lead to flooding of the site.

Therefore evaluation of the proposed design must be undertaken to ensure that the new development does not increase flows and if possible reduces flows to the storm water system, see section 6.

4.4.2 Foul sewer

No details of the foul sewer system have been obtained as part of this study.

Veolia report that there is no history of foul flooding in the vicinity of the site and with maintenance regimes in place, flooding from sewers is not considered to be a significant risk.

Should blockage or collapse of any of the systems occur, normal emergency procedures should be implemented to collect and remove excess surface and foul water so as to avoid impact on the site.

4.5 Flooding from Reservoirs, Canals or other artificial sources

The Ashby-de-la-Zouch Canal is located 420m to the east of the site at the closest point, following a north-south direction. The canal is not elevated and there is no reason to suspect that it could present a flood risk to the site.

There are no reservoirs or artificial water sources in the vicinity of the site, and there is no historic flood data. Flooding from these sources is not considered to be a risk for the proposed development.

4.7 Infrastructure Flooding

There are no sources of infrastructure flooding in the vicinity of the site; therefore flooding from infrastructure is not considered a risk.

5 MECHANISMS OF FLOODING

5.1 Flood flow routes

The risk of flooding will be mitigated through the use of sustainable drainage on site which will be designed for a rainfall intensity of1 in 100 year. It is important that flood flow routes are controlled through the detailed design process to ensure that surface water generated by a rainfall intensity in excess of the design event will not flood the proposed development or properties and land adjacent to the site. This will be done by giving consideration to proposed finished levels and the location of proposed gullies or linear drain runs.

6 MITIGATION MEASURES

Surface water management and attenuation will be required for the site and the use of sustainable drainage techniques should be examined carefully to ensure that the minimum impact is transferred to the existing surface water system.

6.1 Storm water flooding

PPS25 requires an FRA to demonstrate that any additional surface water generated by a proposed development can be managed without increasing flood risk elsewhere.. It must also take account of climate change by making an appropriate allowance for increased rainfall intensity.

In the existing situation, surface water run-off drains to an existing attenuation pond. The pond drains through a 500mm diameter culvert under the railway embankment. The culvert is currently partially blocked, however despite this the pond is not known to overtop during periods of heavy rain.

The site, encompassing approximately 2 Ha, has the following surfaces:

	Impermeable (m^2)	Permeable (m^2)
Existing Site	9,540	10,922
Proposed Development	17,382	3,080
Increase	7,842	0

A set of preliminary design calculations for an attenuation scheme is included in Appendix B. The modified rational method, using point design rainfall data from the Flood Estimation Handbook (FEH) CD-ROM, has been used to calculate the flows from the post development site for given durations and return periods. A percentage runoff of 95% has been assumed as the total runoff from impermeable surfaces.

The estimated peak run-off rates for the 1, 30 and 100 year storms have been estimated. The 1 in 100 year storm greenfield run-off rate is 8.94l/s/ha. This has been calculated in accordance with R&D Technical Report w5-074/A Preliminary rainfall runoff management for developments.

Figure 1 in Appendix B indicates the storage volume required to attenuate the increased surface water run-off to the allowable run-off rate for the 1, 30 and 100 year storms. The total volume of storage required to attenuate the critical 100 year storm (including 20% allowance for climate change) for the site is approximately 781m^3. This volume should be reviewed during the detailed design stage once development proposals are finalised.

Drawing 5063387/FRA/001 shows a conceptual layout of an attenuation pond of the required volume. This should be considered preliminary only as the storage requirements and the drainage system will be reviewed as part of the detail design. The area required for the storage pond may be reduced, for example, by providing oversized pipes as part of the drainage network.

6.2 Sustainable Drainage

PPS25 requests confirmation of the feasibility of using soak-aways as part of the sustainable drainage scheme to reduce the quantity of water discharging into the storm water system.

No geotechnical information has been provided for this assessment and so it is not possible to assess whether soakaways could be used at the site. This assessment should be undertaken as part of the ground investigation and detailed design of the proposed scheme.

7 CONCLUSIONS

Atkins was commissioned to carry out a flood risk assessment for the proposed redevelopment of Veolia's Waste Management Facility, Hinckley.

The findings of this risk assessment are as follows:

- The proposed development lies within Flood Zone 1 and therefore has a low probability of flooding from water courses (less than 0.1% in any year).
- A proposed surface water drainage concept has been prepared to demonstrate that the increased risk of flooding from surface water can be mitigated.
- There is no requirement for a Level 3 FRA for the proposed development.

8 REFERENCES

1 Planning Policy Statement 25, Development and Flood Risk, Department of Communities and Local Government, 2006,

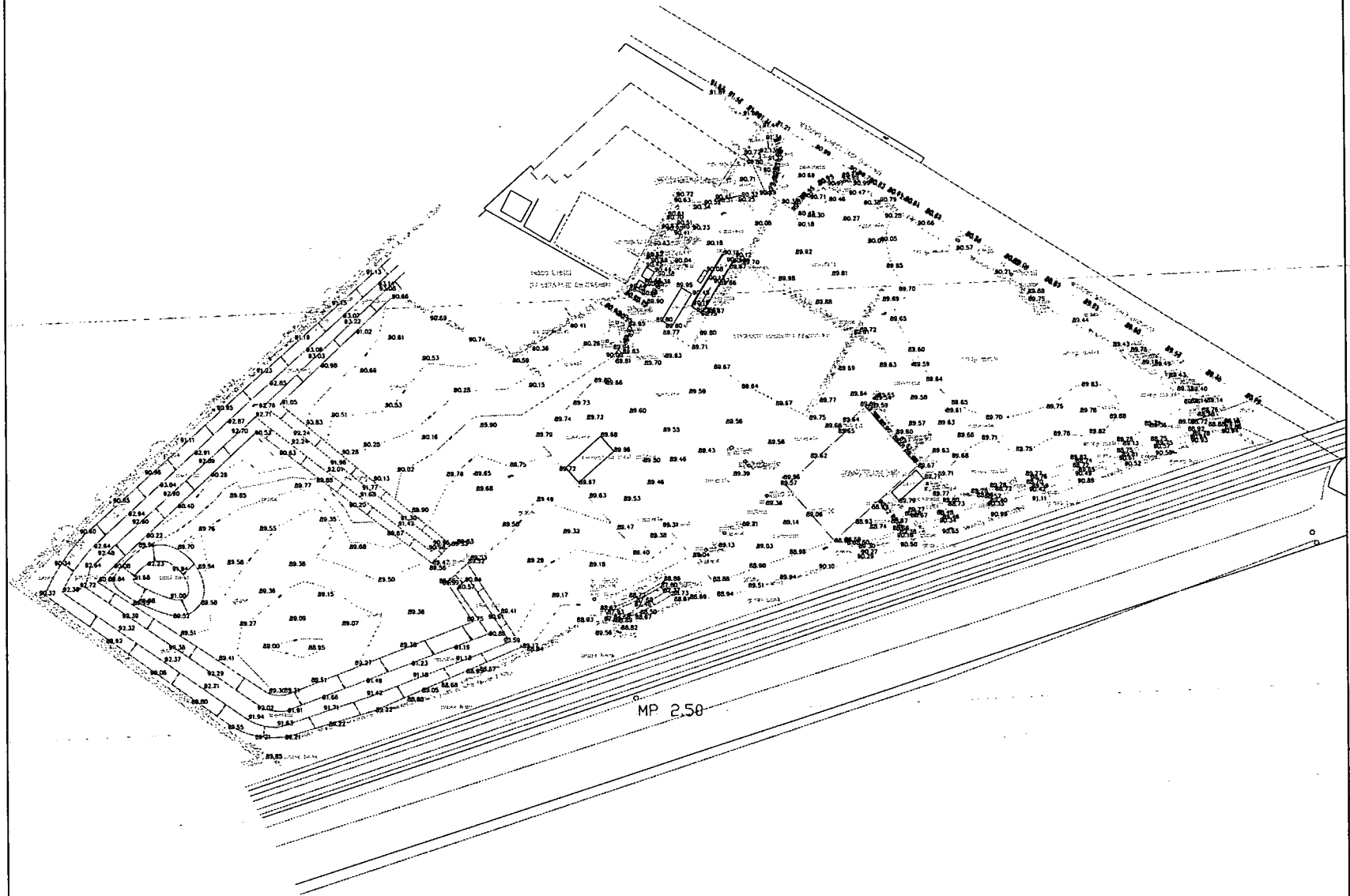
2 Development and Flood Risk – Guidance for the Construction Industry, CIRIA Publication C624, 2004

3 Hinckley and Bosworth Borough Council, Strategic Flood Risk Assessment, (pending)

4 Source: Multimap, www.multimap.com : OS and Satellite mapping, 2007

5 Environment Agency Flood Zone Map, 2006

Appendix A: DRAWINGS



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HINCKLEY MRF

Site Survey

SCALE: 1:500	DATE: June 2007	DRAWING NUMBER	
DRAWN BY: AY	BPA REF. H29	H29/03	

BOWMAN PLANTON limited
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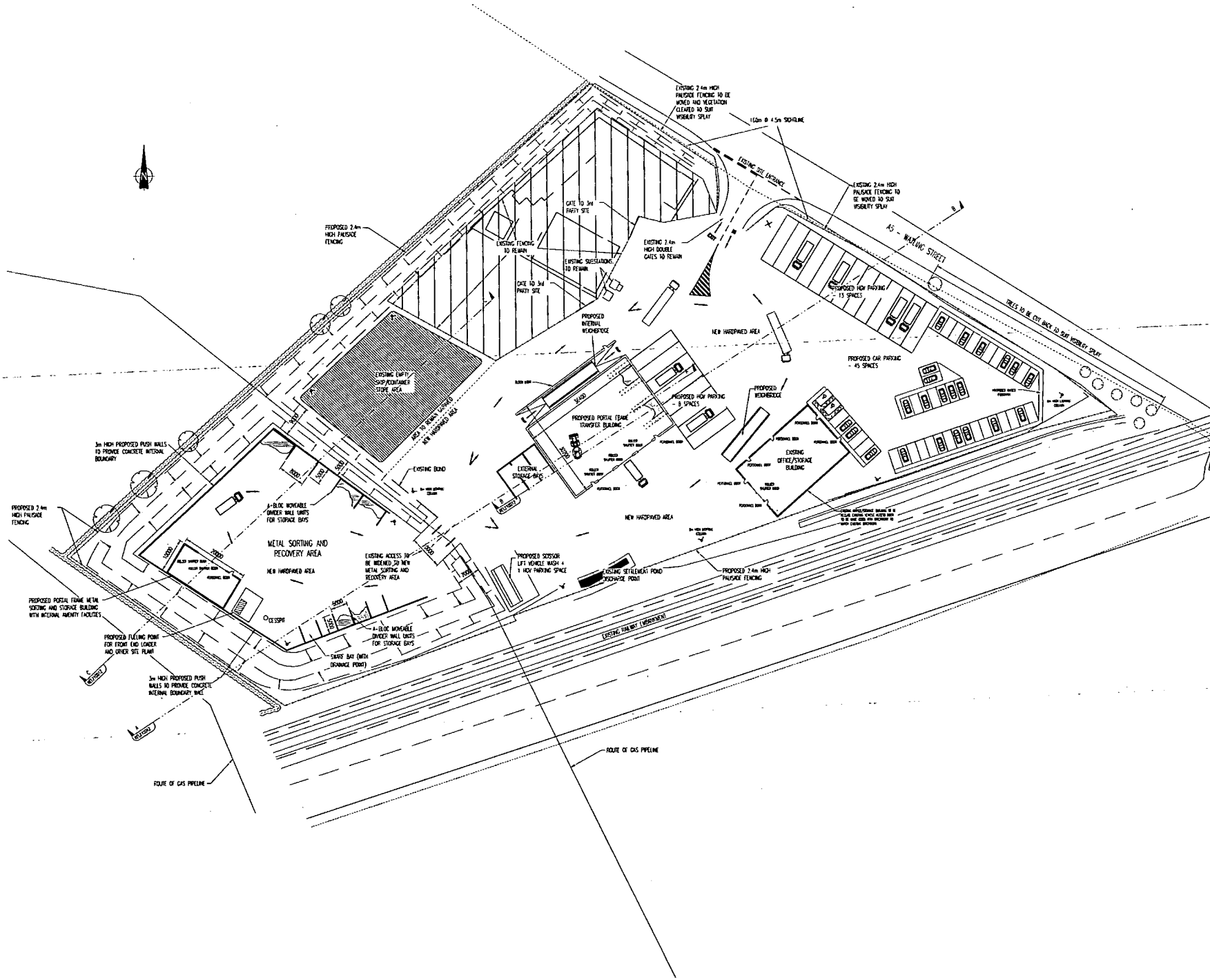
Landscape Architects | Mineral Extraction and Land Reclamation Consultants | Environmental Management and Land Use Planners



8. SITE LIGHTING SHOWN IS INDICATIVE ONLY AND WILL BE SUBJECT TO DETAILED DESIGN.

SITE ADDRESS:
HINCKLEY SERVICE CENTRE
WATLING STREET
HINCKLEY
LEICESTERSHIRE
LE10 3ED

L01	29.02.08	PLANNING ISSUE	PJ
A05	26.02.08	BUILDING AND WEIGHBRIDGE FOOTPRINT UPDATED.	PJ
A07	19.02.08	SECTION LINES AND ADDITIONAL LIGHTING COLUMNS ADDED.	RMP
A06	14.02.08	ROAD LAYOUT AND TRANSFER BUILDING DESIGN UPDATED	PJ
A05	05.02.08	ADDITIONAL CAR PARKING ADDED & OFFICE BUILDING OUTLINE UPDATED.	PJ
A04	25.01.08	SITE LAYOUT REVISED.	PJ
A03	02.01.08	ADDITIONAL EXTERNAL BAY AND GAS PIPELINE ADDED. NOTES UPDATED.	PJ
A02	19.11.07	REVISION TO LOCATIONS OF BUILDINGS AND INCREASE IN CAR PARKING SPACES.	PJ
A01	29.11.07	PRELIMINARY ISSUE	PJ

HINCKLEY MRF

PROPOSED SITE LAYOUT

VEOLIA ENVIRONMENTAL SERVICES

PLANNING

11944

R SA 03 0003 L01

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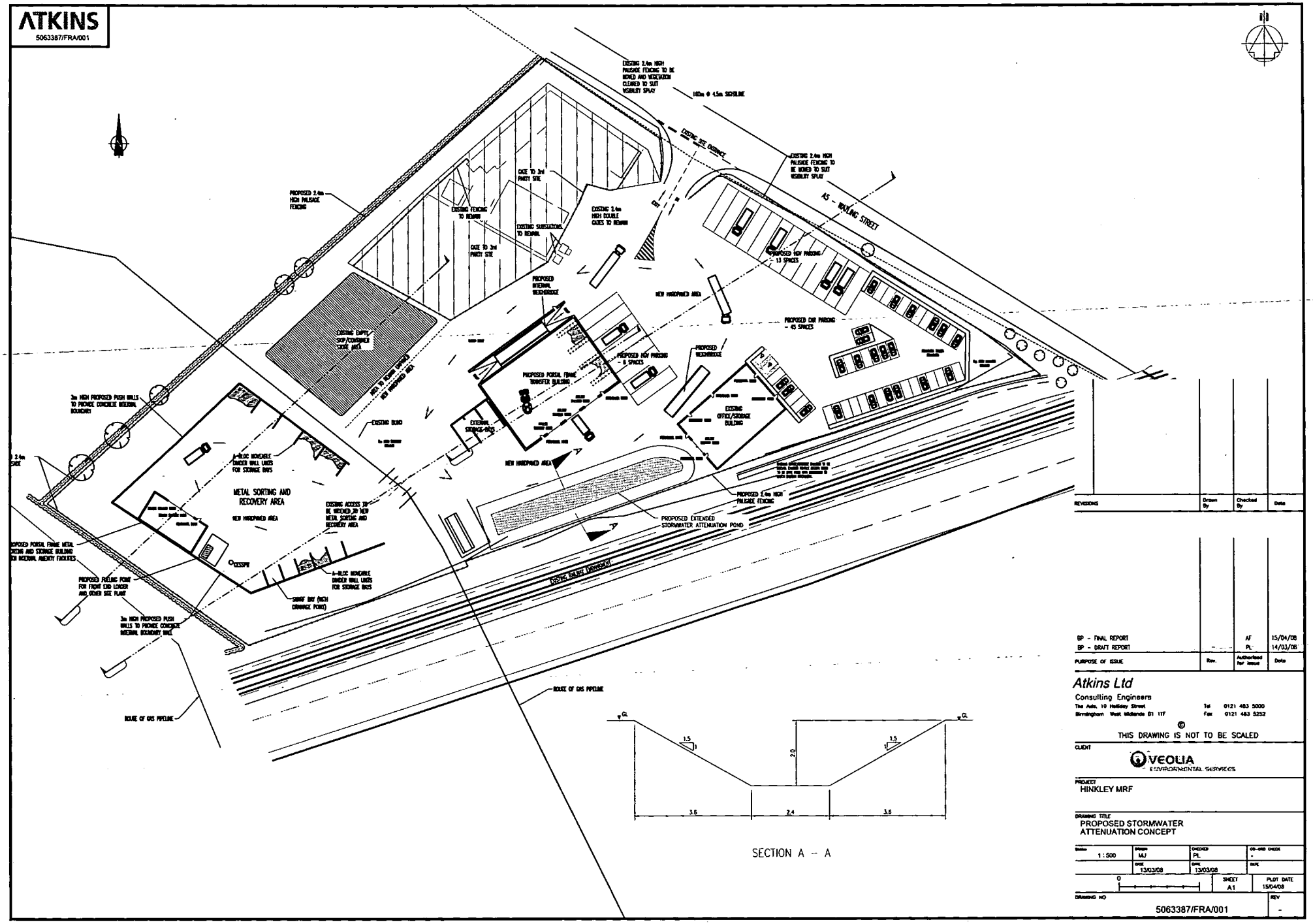
5063387/FRA/001



SECTION A – A

REVISIONS	Drawn By	Checked By	Date

PURPOSE OF ISSUE	Rev.	Authorised for Issue	Date
BP - FINAL REPORT		AF	15/04/08
BP - DRAFT REPORT	-	PL	14/03/08

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CLIENT: VEOLIA ENVIRONMENTAL SERVICES

PROJECT: HINKLEY MRF

DRAWING TITLE: PROPOSED STORMWATER ATTENUATION CONCEPT

Scales	Drawn	Checked	QA-ORB Check
1 : 500	MJ	PL	-
	Date 13/03/08	Date 13/03/08	Date

0 | SHEET A1 | PLOT DATE 15/04/08

DRAWING NO: 5063387/FRA/001 | REV -

Appendix B: CALCULATIONS

Ref: R&D Technical Report W5-074/A Preliminary Rainfall Runoff Management For Developments

Greenfield Estimation of Peak Flow Rate of Runoff (Sheet ASV1)

The peak discharge rate of the greenfield site should be determined for 1, 30 and 100 year return periods

Method of Greenfiled Analysis

Hydrological Region =	4		
Application boundary area =	20,462	m^2	
Catchment area (excluding public open space not modified by the development) =	16,182 1.62	m^2 ha	*(22% new buildings)*

Ref: FEH

Annual Rainfall (SAAR) =	648	mm	
Soil Runoff Coefficient (SPR) =	0.419		
Catchment mean annual peak flow			*(for sites 50ha or less use 50ha when applying the formula)*
$(0.00108(A/100)^{0.89}.SAAR^{1.17}.SPR^{2.17})$ =	0.17	m^3/sec	
Q_{BAR1} =	172	l/s	*(for 50ha)*
Area Ratio 50ha/ Catchment Area =	30.90	ha	
Q_{BAR2} =	5.56	l/s	
Mean annual peak flow per unit area Q_{BAR2}/A =	3.44	l/s/ha	

Ref: Regional Growth Curves Figure D2

QT1 =	*0.85*	*l/s/ha*
QT30 =	*1.9*	*l/s/ha*
QT100 =	*2.6*	*l/s/ha*

1yr, 30yr and 100yr peak discharge rate of runoff per unit area

Q_{1yr} =	2.92	l/s/ha	
Q_{30yr} =	6.53	l/s/ha	
Q_{100yr} =	8.94	l/s/ha	14.46405

Parameters

440550 292550 SP,40550,92550

AREA	0.69
FARL	1
PROPWET	0.3
ALTBAR	94
ASPBAR	236
ASPVAR	0.6
BFIHOST	0.358
DPLBAR	0.87
DPSBAR	12
LDP	2
RMED-1H	10.4
RMED-1D	30.8
RMED-2D	38.7
SAAR	648
SAAR4170	670
SPRHOST	41.9

URBCONC	0.867
URBEXT1990	0.175
URBLOC	1.438
C	-0.028
D1	0.365
D2	0.348
D3	0.256
E	0.306
F	2.355
C(1km)	-0.028
D1(1km)	0.367
D2(1km)	0.347
D3(1km)	0.255
E(1km)	0.306
F(1km)	2.348

Calculation type=	Design rainfall		
Calculation mode=	Typical point in catchment		
Catchment area=	0.685		km**2
Duration=	6	1	(hours)
Fixed duration=	0		
Return period=	1.001	1	(years)
Annual maximum=	0		

c	d1	d2	d3	e	f
-0.028	0.365	0.348	0.256	0.306	2.355

An areal reduction factor of 0.982 has been applied to a point rainfall of 12.4 mm to yield a catchment design rainfall of 12.1 mm.

No warning(s) or advisory(ies) is present for this calculation.

The data in the following table have been computed using sliding durations

Rainfall calculations - FEH

ARF = 1

Matrix of mm rainfall for given durations and return periods

		Return Period (years)					
		1	10	20	30	50	100
Duration (mins)	15	3.08	13.01	16.68	19.24	23.00	29.26
	30	4.17	16.26	20.55	23.52	27.83	34.93
	60	5.63	20.26	25.25	28.66	33.58	41.58
	120	7.59	25.17	30.94	34.84	40.41	49.37
	240	10.21	31.23	37.85	42.28	48.55	58.51
	360	12.14	35.40	42.56	47.31	54.01	64.57
	600	13.35	37.92	45.38	50.32	57.27	68.17
	1440	21.61	53.56	62.61	68.50	76.64	89.18
	2880	28.62	65.41	75.41	81.84	90.66	104.07
	3600	30.85	68.56	78.66	85.13	93.97	107.37
	4320	32.49	70.82	80.98	87.47	96.33	109.71

Matrix of average rainfall intensity (mm/s) for given durations and return periods

		Return Period (years)					
		1	10	20	30	50	100
Duration (mins)	15	0.0034	0.0145	0.0185	0.0214	0.0256	0.0325
	30	0.0023	0.0090	0.0114	0.0131	0.0155	0.0194
	60	0.0016	0.0056	0.0070	0.0080	0.0093	0.0116
	120	0.0011	0.0035	0.0043	0.0048	0.0056	0.0069
	240	0.0007	0.0022	0.0026	0.0029	0.0034	0.0041
	360	0.0006	0.0016	0.0020	0.0022	0.0025	0.0030
	600	0.0004	0.0011	0.0013	0.0014	0.0016	0.0019
	1440	0.0003	0.0006	0.0007	0.0008	0.0009	0.0010
	2880	0.0002	0.0004	0.0004	0.0005	0.0005	0.0006
	3600	0.0001	0.0003	0.0004	0.0004	0.0004	0.0005
	4320	0.0001	0.0003	0.0003	0.0003	0.0004	0.0004

Proposed Development

Area of catchment (m^2)	16182.00
Percentage Run-off (%)	95

Flow from above catchment (l/s) for given durations and return periods

		Return Period (years)					
		1	10	20	30	50	100
Duration (mins)	15	52.61	222.22	284.91	328.64	392.86	499.79
	30	35.61	138.87	175.51	200.87	237.68	298.32
	60	24.04	86.52	107.82	122.39	143.39	177.56
	120	16.21	53.74	66.06	74.39	86.28	105.41
	240	10.90	33.34	40.41	45.14	51.83	62.46
	360	8.64	25.19	30.29	33.67	38.44	45.96
	600	5.70	16.19	19.38	21.49	24.46	29.11
	1440	3.85	9.53	11.14	12.19	13.64	15.87
	2880	2.55	5.82	6.71	7.28	8.07	9.26
	3600	2.20	4.88	5.60	6.06	6.69	7.64
	4320	1.93	4.20	4.80	5.19	5.71	6.51

INFLOW

Volume accumulated (m^3) during given durations and return periods

		Return Period (years)					
		1	10	20	30	50	100
Duration (mins)	15	47.35	200.00	256.42	295.77	353.58	449.81
	30	64.10	249.96	315.91	361.57	427.83	536.98
	60	86.55	311.45	388.17	440.59	516.22	639.21
	120	116.68	386.94	475.64	535.59	621.22	758.96
	240	156.96	480.10	581.86	649.97	746.35	899.47
	360	186.63	544.20	654.27	727.29	830.29	992.63
	600	205.23	582.94	697.62	773.56	880.41	1047.97
	1440	332.21	823.37	962.50	1053.04	1178.18	1370.96
	2880	439.97	1005.54	1159.27	1258.12	1393.71	1599.86
	3600	474.25	1053.97	1209.23	1308.69	1444.59	1650.59
	4320	499.47	1088.71	1244.90	1344.67	1480.87	1686.56

STORAGE = INFLOW - OUTFLOW

Catchment Area = *1.618200*

Outflow Q_{100yr} = 14.5 l/s

Volume accumulated (m^3) during given durations and return periods

		Return Period 100 years		
		Inflow + 10%	Outflow	Storage
Duration (mins)	15	494.79	13.02	481.77
	30	590.67	26.04	564.64
	60	703.13	52.07	651.06
	120	834.86	104.14	730.71
	240	989.42	208.28	781.13
	360	1091.89	312.42	779.47
	600	1152.77	520.71	632.06
	1440	1508.05	1249.69	258.36

Outflow Q_{1yr} = 4.7 l/s

Volume accumulated (m^3) during given durations and return periods

		Return Period 100 years		
		Inflow + 10%	Outflow	Storage
Duration (mins)	15	52.0834	4.26	47.83
	30	70.5155	8.51	62.00
	60	95.2044	17.02	78.18
	120	128.3483	34.05	94.30
	240	172.6530	68.09	104.56
	360	205.2897	102.14	103.15
	600	225.7510	170.23	55.52
	1440	365.4292	408.55	-43.12

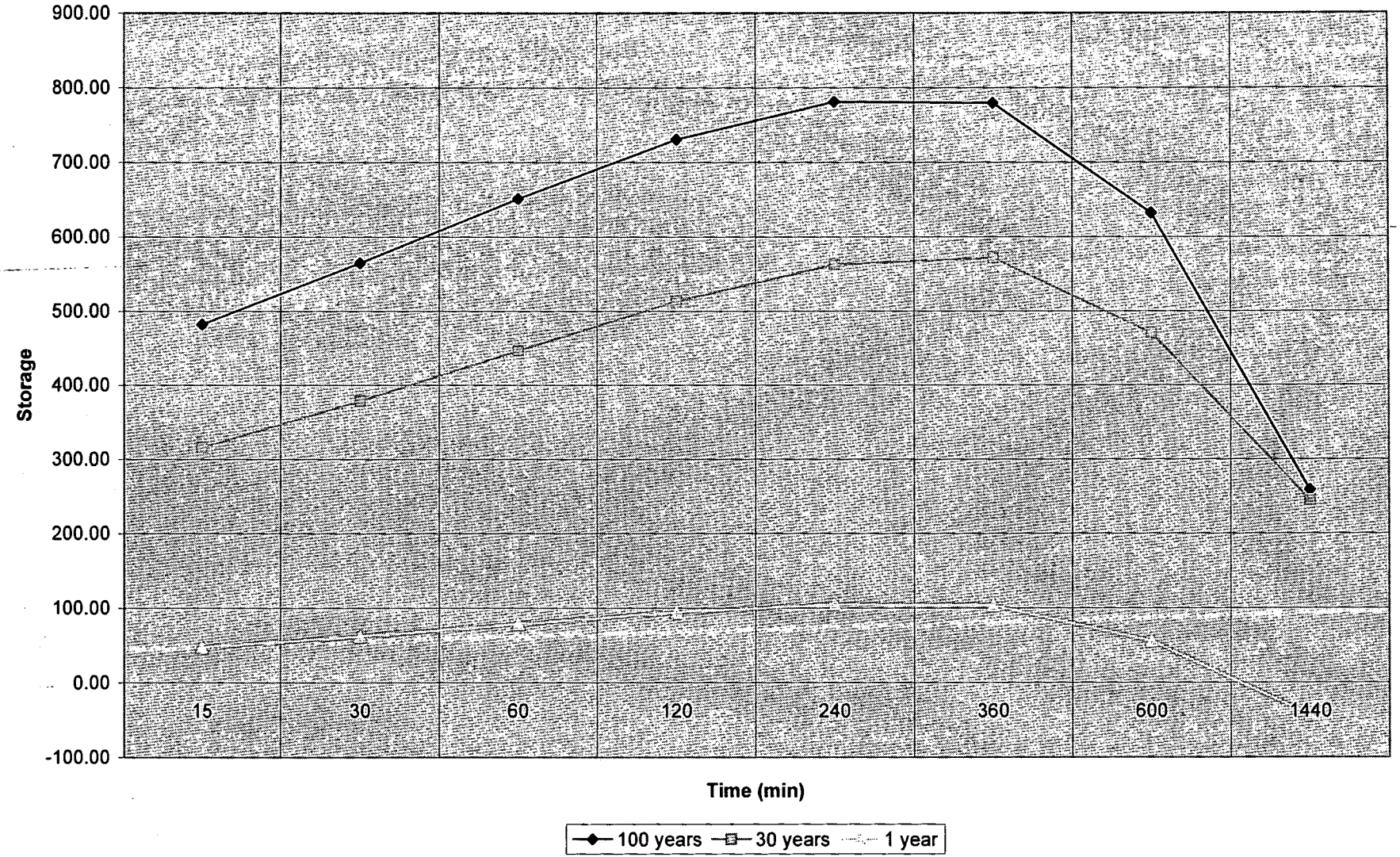
Outflow Q_{30yr} = 10.6 l/s

Volume accumulated (m^3) during given durations and return periods

		Return Period 100 years		
		Inflow + 10%	Outflow	Storage
Duration (mins)	15	325.3521	9.51	315.84
	30	397.7277	19.03	378.70
	60	484.6460	38.05	446.59
	120	589.1510	76.10	513.05
	240	714.9628	152.21	562.76
	360	800.0211	228.31	571.71
	600	850.9208	380.52	470.41
	1440	1158.3480	913.24	245.11

Critical Storm Duration

Total Storage Volume required 779 m^3


900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
-100.00
Storage
15
30
60
120
240
360
600
1440
Time (min)
100 years
30 years
1 year

Appendix C: EA RESPONSE

creating a better place

Environment Agency

Atkins
The Axis
10 Holliday Street
Birmingham
B1 1TF

Our Ref: CSC14304/NJW

Your Ref:

Date: 10 April 2008

Dear Ms Wilson

VEOLIA, WATLING STREET, HINCKLEY

Thank you for your enquiry requesting information relating to the above site.

We can confirm that: -

1, The Sketchley Brook, is a designated 'Main River' of the Environment Agency, and as such any works in, over, under or within 8m (from the top of bank) of, or within the floodplain of a watercourse may require our prior consent, under the terms of the Water Resources Act 1991 or Land Drainage Act 1991. Please see our booklet 'Living on the Edge', consent application form FD1 and notes attached for further information.

2. A combined Strategic Flood Risk Assessment has recently been produced by JBA Consulting on behalf of Hinckley & Bosworth, Blaby, Oadby & Wigston Borough Council's. Please contact the Council direct to view or obtain a copy of this SFRA.

3. Detailed Flood Zone map attached, suitable for inclusion in a Flood Risk Assessment (FRA). We do not hold any: -
a, Historical data at present of flooding at this site.
b, Modelled flood level information for this watercourse.

4. Although this site is shown to lie within Flood Zone 1, if the site is greater than 1 hectare, then in accordance with PPS25 a Flood Risk

Assessment is required on the grounds that the application may present a significant flood risk from the generation of surface water run-off.

5. Any new discharges to the Sketchley Brook may require our prior consent as follows: -
a, Development Control section in respect of discharge rate and headwall/outfall structure construction (Form FD1).
b, Discharge Consents section in respect of water quality issues.

Flood Risk Assessment

Any site specific FRA undertaken must be in accordance with Annex' s B, C, D, E, F and G of PPS25, and include a site specific topographic survey to Ordnance Datum.

The Environment Agency is charged with contributing towards the achievement of sustainable development. Sustainable Drainage Systems (SuDs) have a major role in this in this regard.

PPS25 states that 'Surface water arising from a development site should, as far as practical, be managed in a sustainable manner to mimic the surface water flows arising from the site'. The objective is to minimise impact on Quantity, Quality and Amenity of the receiving water body, in accordance with the SuDs management train set out in Ciria Document C697 – SuDs Manual. Common techniques include source controls, porous pavements, infiltration trenches and basins, attenuation filter drains, swales and filter strips, retention basins, ponds and constructed wetlands.

All on site surface water between the allowable run-off rate* and 100 year plus 30% for residential, 20% for industrial (for climate change) rainfall event above will need to be attenuated, either within a SuDs system or where ground conditions are demonstrated as unsuitable a lined or piped system.

Where allowable discharge rates* are not confirmed, the FRA should include a estimate of the worst case attenuation requirements based on the allowable Greenfield run-off rate, and the location/s for this within the site.

*The allowable discharge rate will be set by: -

1. The Environment Agency, where surface water is discharged to a watercourse (river, brook, ditch)

Run off rates should be restricted to 5l/s/ha for all rainfall return periods up to the 100 year plus 30% for residential, 20% for commercial (for climate change) rainfall event, unless it can be justified otherwise (ie due to the steepness of the catchment).

However, in the case of Brownfield sites we would look for a substantial reduction in run-off in accordance with PPS25.

Developers should design the maximum possible reduction in run-off towards the Greenfield run-off rate within the design of the redeveloped site, where possible by using the above SuDS methods, or if not possible by using on site underground attenuation tanks. These systems should be located within the open space within the proposed development layout.

2. The sewerage undertaker where surface water is discharged to a public sewerage system. We would like to see confirmation of the allowable surface water discharge to STW's public sewerage system.

Drainage design

The proposed on site surface water drainage system should be designed to the Sewers for Adoption, 30 year standard or similar, which is acceptable in principal. However, we require additional details to confirm that surface water will not leave the proposed site in the 100 year plus 30% for residential, 20% for commercial (for climate change) rainfall event.

At the detailed design stage we would like to see the plan and calculations in support of the on site surface water drainage system (ie, microdrainage output for the 30 year and 100 year plus 30% for residential, 20% for commercial (for climate change) rainfall events, including pipeline schedules, network information and results summaries), to demonstrate that no flooding occurs to the proposed development or surrounding area from the 100 year plus 30% for residential, 20% for commercial (for climate change) rainfall event.

If the system surcharges we would wish to see a detailed plan (location of any surcharging should be identified as should any resultant overland flood flow routes) and calculations for any surface flooding, including flood flow routes, expected depths, and confirmation that this would not cause flooding to nearby properties. Any excess surface water should be routed away from any proposed or existing properties.

In addition we would like to see any calculations (ie, microdrainage output for the 30 year and 100 year plus 30% for residential, 20% for

commercial (for climate change) rainfall events) in support of any on site surface water attenuation system including sizing and any hydrobrake details and design.

The information provided above is based on records and files from various sources and of varying reliability. We cannot accept any liability for any loss or damage arising from the interpretation or use of the information.

A site inspection has not been carried out in relation to your request for information. This information is provided under the conditions for use of data or information attached.

Yours sincerely

Norma Wilford

NORMA WILFORD
External Relations Assistant
Direct dial 01543 404881

Notice for the supply of Environment Agency information
(Standard Notice – Commercial)

1. Nothing in this notice will in any way restrict your statutory or any other rights of access to the Information. If you wish to do anything in excess of those rights you may do so in accordance with the following paragraphs only if you agree to all the terms.
2. All intellectual property rights in the documents, data or information supplied to you (referred to as "the Information") whether owned by the Environment Agency (referred to as "Agency information") or third parties (referred to as "Third Party information") will continue to be owned by them.
3. The information has not been prepared to meet your or anyone else's individual requirements. It is your responsibility to ensure that the Information meets your needs.
4. The Environment Agency cannot ensure and therefore gives no promise that the Information in its possession will always be accurate, complete, up to date or valid.
5. The Environment Agency will take reasonable precautions to ensure that we provide you with an accurate copy of the Information from our records.
6. If we have specified that you must pay us for supply of the Information you must pay us before we respond to your request. You will only be able to cancel and request your fee back up to the point when we start work on providing the requested information.
7. If you have asked for the Information to be supplied in an electronic format we cannot guarantee that either the disk or the data file is free of any defects and you should check it for viruses and other items that may affect your computer.
8. Use of Third Party information, including copying, must be limited to statutory rights. This generally means that you will need to seek permission to copy. Third Party information may include information from our public registers, which has been supplied to us by a third party, for example the Information provided in an application form.

Permitted use of Agency information

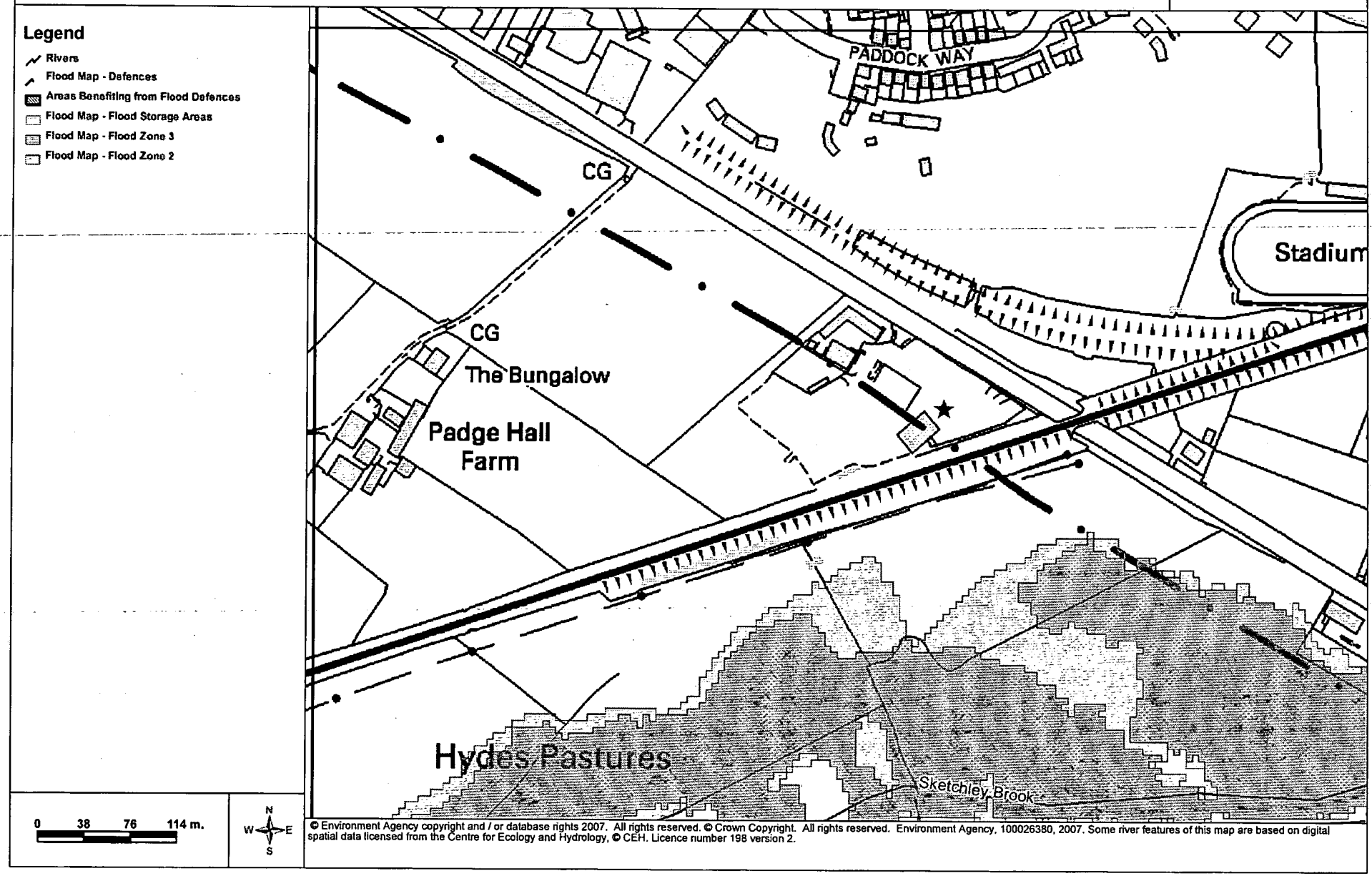
9. As you have paid us our internal commercial usage charge (currently £10) you may take unlimited copies of Agency information (exactly as it is) for the internal purposes of your business (commercial internal limited use), provided that:
   a) you ensure that all copies are attributed to the Environment Agency;
   b) you do not amend or alter the Information, or merge it with other information;
   c) you do not supply the Information (or any information derived from, or based on the use of it) to others.
10. If you are a professional advisor and you have paid us our internal commercial usage charge (currently £10) you may in addition to the rights in paragraph 9, give copies of Agency information (exactly as it is) to your client and any other person who reasonably requires a copy (limited professional use), provided that:
    a) any copies you send are in connection with the specific transaction or matter for which you obtained the Information from the Environment Agency;
    b) you make no charge for supplying the Information other than for your actual costs and time incurred;
    c) you attach a copy of this notice and require all recipients to comply with it.

    Recipients of information under this paragraph do not need to pay any additional fee as long as they use the Information exactly as it is, internally and only for the same specific transaction or matter.
11. Please contact us if you need permission for any other use.

It is important that you also read any additional information or warning we give you about specific information.

CSC 14304

Environment Agency



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Environment Act 1995
Land Drainage Act 1991 – Sections 17 or 23
Water Resources Act 1991 – Section 109
Flood Defence (Land Drainage) Byelaws/Sea Defence Byelaws
Highways Act 1980

ENVIRONMENT AGENCY

APPLICATION FOR CONSENT FOR WORKS AFFECTING WATERCOURSES AND/OR FLOOD DEFENCES

IMPORTANT NOTE. We ask you to read this form and the attached notes before you fill it in. Please take care in answering the questions. If the form is fully and accurately completed, it will ensure as little delay as possible in processing your application. If you have any queries, ask us. **Please complete the form in block letters.**

1 DETAILS OF APPLICANT

NAME:

CONTACT PERSON:

POSTAL ADDRESS:

POSTCODE:

TELEPHONE NO. (Office hours):
TELEPHONE NO. (Out of hours):

FAX NO:

2 AGENTS DETAILS (eg, Consultant/land agent – if applicable)

NAME:

PROFESSION:

POSTAL ADDRESS:

CONTACT:
(PERSON DEALING WITH APPLICATION)

TELEPHONE NO:

POSTCODE:

FAX NO:

OFFICIAL USE ONLY

	YES/NO	
MAIN RIVER		
FEE APPLICABLE		
FEE RECEIVED		

DATE/FEE APPLICATION RECEIVED:
WRA91/LDA91/BYELAW/HA80:
FILE/OFFICE REFERENCE:

3 APPLICANTS INTEREST IN LAND

4 LOCATION

LOCATION OF PROPOSED WORKS:

NAME OF RIVER/WATERCOURSE (if known):

DISTRICT COUNCIL/UNITARY AUTHORITY:

PARISH/COMMUNITY COUNCIL: OS GRID REFERENCE:

5 DESCRIPTION AND PURPOSE OF PROPOSED WORKS

NUMBER OF STRUCTURES

6 DESCRIPTION AND REFERENCE NUMBERS OF ALL PLANS AND SECTIONS SUBMITTED

7 CONSTRUCTION DETAILS

STATE WHETHER WORKS ARE TO BE PERMANENT OR TEMPORARY:

IF TEMPORARY, STATE DURATION REQUIRED:

FOR ALL WORKS STATE ANTICIPATED CONSTRUCTION START DATE:

8 OTHER ENVIRONMENT AGENCY INTERESTS

YES/NO

DO THE PROPOSED WORKS INVOLVE OR AFFECT:-

a) DISCHARGE OF TRADE EFFLUENT ☐ ☐

b) DISCHARGE OF SURFACE WATER ☐ ☐

c) AN IMPOUNDMENT OF A WATERCOURSE ☐ ☐

d) ABSTRACTION OF WATER ☐ ☐

e) FISH OR FISHERIES ☐ ☐

f) THE DISPOSAL OF WASTE MATERIAL ☐ ☐

PLEASE TICK APPROPRIATE BOXES

9 IF PLANNING APPROVAL HAS BEEN GRANTED STATE:

PLANNING AUTHORITY:

APPLICATION NO: APPROVAL DATE:

10 NAME OF PERSON OR ORGANISATION RESPONSIBLE FOR MAINTAINING THE STRUCTURE ON COMPLETION

11 BRIEF DETAILS OF ENVIRONMENTAL IMPACT OF WORKS TOGETHER WITH ANY PROPOSALS FOR AMELIORATION AND/OR COMPENSATORY ENHANCEMENT

12 DECLARATION

I/We:

1 Apply for consent to carry out works as described in this application form and on the attached plan(s).

2 Enclose a cheque for £..... to cover the cost of this application.
(Cheques should be made payable to "Environment Agency").

3 Enclose four copies of suitable plans sufficient to show clearly the location of the proposed works together with four copies of plans and sections showing details of the proposed works to a scale appropriate to the nature of the works and any relevant calculations.

Name: .....

Signed: .....

On behalf of: .....

Date: .....

Please return this form to:

ENVIRONMENT AGENCY
MIDLANDS REGION
CENTRAL AREA
PO BOX 4
LICHFIELD
WS13 8YU

Further information may be obtained from the above office:

Telephone No: 01543 404989
Fax No: 01543 444161

ENVIRONMENT AGENCY

APPLICATION FOR CONSENT FOR WORKS AFFECTING WATERCOURSES AND/OR FLOOD DEFENCES EXPLANATORY NOTES

1. INTRODUCTION

Responsibility for flood defence matters now rests with the Environment Agency. In order to carry out our role successfully, it is essential that anyone who intends carrying out works affecting a watercourse which may obstruct or impede the flow or wishes to carry out any works affecting flood defences obtains our consent before starting the work. The reason for this is to ensure that any works do not endanger life or property by increasing the risk of flooding or cause harm to the water environment.

Please note when making an application it is essential to fill in the application form accurately and for any accompanying information, including drawings, maps and calculations submitted to be clear. Further details of the information required by the Agency are given in these notes. In order to ensure that proper details are submitted you may wish to discuss the information required with our officers before you make your formal application.

2. HOW TO MAKE AN APPLICATION FOR CONSENT

The following notes should assist you in the completion of the application form and the submission of supporting documentation:-

☐ **Details of Applicant**
The name of the individual, organisation or company applying for consent should be given along with the name, address and telephone number of a person who can be contacted to discuss the proposal.

☐ **Agents Details**
Agents acting on behalf of an applicant should enter details.

☐ **Applicants Interest in Land**
Please state the applicants interest in the land, ie. owner, tenant etc.

☐ **Location**
The name of the watercourse as shown on the Ordnance Survey map should be given if known, (many minor watercourses are unnamed). The location of the proposed works should indicate the nearest town/village, the address of the site or sufficient description to enable the site to be identified easily. The OS grid reference should include two prefix letters, (indicated in the corner of OS maps) followed by eastings and northings eg: SK 123 456.

☐ **Description of Proposed Works**
It is important to accurately describe the proposal(s) for which application is being made on the application form. If you include a drawing which has been prepared for some other purpose it is requested that those items for which consent is being sought should be highlighted in colour.
Indicate in the box the number of structures for which consent is being sought.

☐ **Description and Numbers of Plans and Sections Submitted**
Four copies of all relevant drawings are required. The drawings should not be larger than A1 size and should include:

a) **Location Plan**
This should be based on an Ordnance Survey map if possible and should show clearly the general geographic location of the site where the works are to be constructed.

b) **Site Plan**
This should be drawn to scale which must be clearly stated. Ordnance Survey maps or engineering drawings to a scale of 1:1250 or larger are recommended.

c) **Detailed Drawings** (Plans and Sections)
Provision of the following details will assist determination of your application:-

- Plan(s) showing details of existing and proposed features.
- Cross section(s) of proposed works or structures drawn looking downstream on the watercourse where appropriate.
- Details of existing and proposed water levels, shown on cross sections or a longitudinal section of the relevant length of watercourse where appropriate.
- Calculations to demonstrate the hydraulic capacity of any channel works, culverting or bridge works.
- Land surface contours, where appropriate.
- The materials to be used for any structures.
- The location of any proposed service pipes or cables.
- Details of any tree, shrub, hedgerow, pond or wetland area which may be affected by the proposed work.
- Details of any planting or seeding within the river channel or adjacent to the watercourse within the flood plain.
- **Bridges and Culverts** - Additional cross sections upstream and downstream of the proposed works or a longitudinal section along the centre line of the watercourse are required sufficient for the average channel bed gradient to be determined.
- **Dams and Weirs** - A plan showing the extent of the impoundment under normal and flood conditions is required in order to assess the possible impact on riparian owners.
- **Mineral Extraction/Land Filling** - Contour surveys of the existing site are required in addition to details of the proposed filled site. Details of interim levels including temporary stock pile works are required where such works are in flood plain areas.

d) **Sketches**
Legible sketches clearly illustrating the proposed works and adequately dimensioned will be acceptable.

☐ **Construction Details**
Please state whether the works are to be permanent or temporary and the anticipated construction start date. If works are to be temporary state duration required.

☐ **Environment Agency Interests**
Tick appropriate box(es).

☐ **Planning Approval**
Some works may also require local authority planning approval. If appropriate, please indicate the local authority, application number and date approval obtained.

☐ **Name of Person/Organisation Responsible for Maintaining the Structure on Completion**
This will normally be the applicant. Please indicate if responsibility is to pass to others.

☐ **Brief Details of Environmental Impact of Works etc.**
The Environment Agency has a duty to conserve and enhance the natural environment, and must therefore consider the environmental implications of any proposal.

☐ **Declaration**
Enter the value of the cheque you are enclosing with your application, and sign and date the form.

3. APPLICATION CHARGE

We are authorised by Section 23(2) of the Land Drainage Act 1991 and Section 111(1) of the Water Resources Act 1991 to charge an application fee in relation to the consents required. These fees are payable to cover our costs for examining the proposals and **the amount of the fee is £50 for each application for consent for each structure.** Value Added Tax is not applicable. Cheques should be made payable to "Environment Agency".

You should note that this charge is payable in respect of each structure and the box on the application form should be completed as appropriate. Some types of work are exempt from fees and you will be advised as to whether a fee is appropriate when you request an application form.

Please consult your local Environment Agency office if you are in doubt about the fee applicable.

4. HOW TO OBTAIN CONSENT

When you have fully completed your application form please send it with the fee and supporting documents to the appropriate Environment Agency office as listed on page 4 of the application form.

5. DETERMINATION

Upon receipt of an application we have two months in which to grant or refuse consent. Such consent shall not be unreasonably withheld.

You should be aware that in accordance with the Agency's conservation duties, consent may be refused if the works proposed might prove detrimental to the environment. Under the terms of the Land Drainage Act 1991 we also have to have due regard for the interests of fisheries.

The Agency's consent is given solely on river shape, flow, environmental and flood defence criteria. The granting of consent should not be regarded by the applicant as in any way approving the design

and soundness of the proposed structure other than in relation to its impact on flows and its effects in the watercourse and its floodplain.

6. RIGHT OF APPEAL

If you believe that consent has been unreasonably withheld or conditions unreasonably imposed then you have a right to appeal.

7. OTHER CONSENTS

You may also require further consents from us under the Water Resources Act 1991 (eg for impounding, water abstraction etc.), under the Salmon and Freshwater Fisheries Act 1975 in respect of fish passes or under the Environmental Protection/Waste Regulation legislation.

8. FURTHER INFORMATION

If you are in any doubt about whether you need to apply for a consent, how to complete the application forms or any other aspect of your application please contact The Flood Defence Consents Officer at the appropriate Environment Agency Office as listed on page four of the application form.

LEGAL PROVISIONS

For your information the legal provisions are as follows:

Section 23 Consents
Section 23 of the Land Drainage Act 1991 provides:-

"No person shall:

a) *erect any mill dam, weir or other like obstruction to the flow of any ordinary watercourse or raise or otherwise alter any such obstruction, or*

b) *erect any culvert that would be likely to affect the flow of any ordinary watercourse or alter any culvert in a manner that would be likely to affect any such flow.*

without the consent in writing of the drainage board concerned".

Section 109 Consents
Section 109 of the Water Resources Act 1991 provides:-

(i) *"No person shall erect any structure in, over or under a watercourse which is part of the main river except with the consent of and in accordance with plans and sections approved by the Authority.*

(ii) *No person shall, without the consent of the Authority, carry out any work of alteration or repair on any structure in, over or under a watercourse which is part of main river if the work is likely to affect the flow in the watercourse or impede any drainage works.*

(iii) *No person shall erect or alter any structure designed to contain or divert the floodwaters of the main river except with the consent of and in accordance with plans and sections approved by the Authority".*

Environment Agency (NRA) Byelaws
Schedule 25, Section 5(1) of the Water Resources Act 1991 provides:-

"The Authority may make such Byelaws in relation to any particular locality or localities as it considers necessary for securing the efficient working of any drainage system including the proper defence of any land against sea or tidal water".

Section 23 relates to an ordinary watercourse (other than main river) whilst Section 109 is restricted to main rivers. Information on the main river status of a watercourse and copies of the Agency Byelaws can be obtained from the appropriate Environment Agency office.

FAILURE TO APPLY FOR A CONSENT

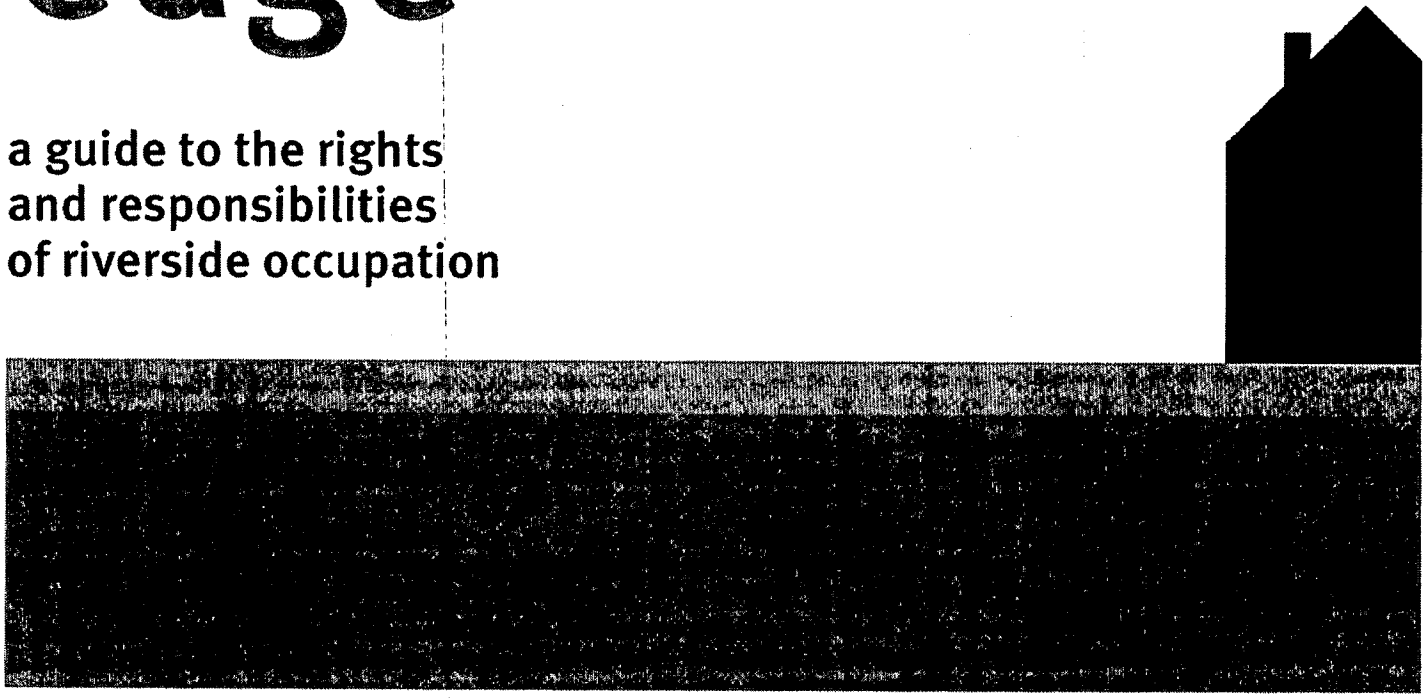
Under Section 23 if works are executed without first obtaining a formal written consent from us we have the power to serve a notice under Section 24 requiring you to abate the nuisance within a specified time. Should you fail to comply with the notice then we can take the matter to Court. Whether or not you are taken to Court, we may take steps ourselves to abate the nuisance and recover from you the expenses so incurred.

Under Section 109 we may remove, alter or pull down any unauthorised work and recover from you the expenses incurred in the process.

Environment Agency

living on the edge

a guide to the rights and responsibilities of riverside occupation



We are the Environment Agency. It's our job to look after your environment and make it a better place – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. Working with business, Government and society as a whole, we are making your environment cleaner and healthier.

The Environment Agency. Out there, making your environment a better place.

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3rd edition April 2007

Contents

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2 Your rights and responsibilities
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6 Mills and weirs
7 The role of the Environment Agency
14 The role of other organisations
15 Explanation of terms

If you own land or property alongside a river or other watercourse, this guide is for you.

➔ It explains your rights and responsibilities as an owner. It also explains our role and that of other organisations with which you may need to work.

➔ It explains who is responsible for flood defences and what that means in practice.

➔ It shows how we can work together to protect and enhance the natural environment of our rivers and streams.

We are publishing this guide because we have powers and responsibilities relating to rivers and watercourses throughout England and Wales. Our work often affects people who live nearby. A watercourse is any natural or artificial channel through which water flows, such as a river, brook, beck, or mill stream.

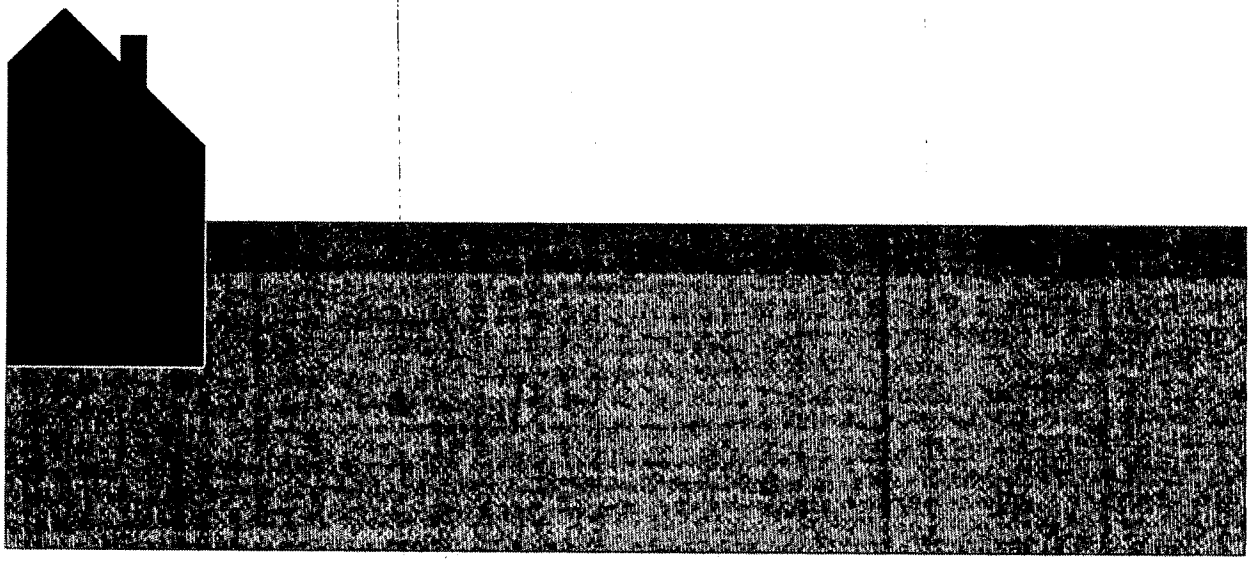
Our job is to protect and manage the environment – land, air and water. Our day-to-day activities include pollution prevention and control, waste regulation, water resources and flood risk management. We also have duties relating to fisheries, recreation and conservation.

your rights and responsibilities

If you own land adjoining a watercourse, you have certain rights and responsibilities. In legal terms you are a **'riparian owner'**.

Your rights have been established in common law for many years. However there are some circumstances in which these rights may be affected by other law. There will also be activities for which you will need permission from a third party – such as your local authority or the Environment Agency. There is more information on this later on.

If you only rent the land, you should check with the owner who is to manage these rights and responsibilities. You will need to agree on this between you.



Your rights

➔ You are presumed to own the land up to the centre of the watercourse – unless it is known to be owned by someone else.

➔ Water should flow onto your land in its natural quantity and quality.

➔ You have the right to protect your property from flooding, and your land from erosion. However, in most cases we must agree your plans before you start work. See pages 9 and 10 for more details.

➔ You usually have the right to fish in your watercourse. However, you must use a legal method. You must also have a valid Environment Agency rod licence – unless you're less than 12 years old. Sometimes your rights will have been sold or leased. Check your facts.

➔ You will almost certainly need an abstraction licence if you want to:
– remove or abstract water from a surface source such as a river, stream or canal; and
– take more than 20 cubic metres (approximately 4,400 gallons) a day.

If you are proposing to abstract water, contact your local Environment Agency office as soon as possible. A guide is available on request: *Abstracting water – a guide to getting your licence.*

These rights will be affected by your duty to other riverside landowners, to the rest of the community and to the environment.

Before you start work on or near a watercourse, you should submit your plans both to us and to your local authority. We will need to decide if you require consent from us. Your local authority will decide whether you need planning permission. Some sites are important for conservation or are of archaeological value. If your work would affect one of these sites, you may need further permissions from the relevant English or Welsh authorities. Many environmental factors are taken into account in decisions to authorise work. These factors include flood risk, wildlife conservation, fisheries, and the reshaping of the river and landscape.



Rivers can be dangerous

Water may look harmless, but it can hide strong flows. Water can be deep and powerful, especially near weirs and sluices.

Your responsibilities

You have the responsibility to pass on flow without obstruction, pollution or diversion affecting the rights of others. Others also have the right to receive water in its natural quantity and quality.

You must accept flood flows through your land, even if these are caused by inadequate capacity downstream. There is no duty in common law for a landowner to improve the drainage capacity of a watercourse.

You must maintain the bed and banks of the watercourse, and also the trees and shrubs growing on the banks. You must also clear any debris, even if it did not originate from your land. This debris may be natural or man-made, and includes litter and animal carcasses. See pages 9 and 10 for information on consent for these works. Your local authority can advise you on the removal of animal carcasses.

You must not cause any obstructions – either temporary or permanent – that would prevent the free passage of fish.

You must keep the bed and banks clear of any matter that could cause an obstruction, either on your land or downstream if it is washed away. Please help us to protect water quality – do not use riverbanks for the disposal of any form of garden or other waste where there is any danger that it will be washed into the river. This includes grass clippings, which are highly polluting.

You must keep any structures that you own clear of debris. These structures include culverts, trash screens, weirs and mill gates.

On your property you may have flood defences such as walls and embankments. These are vital for your protection and that of others. You should discuss their maintenance with us.

You are responsible for protecting your property from water that seeps through natural or man-made banks. Where such seepage threatens the structural integrity of a flood defence, we may wish to see that it is repaired.

You must control any invasive alien species such as Japanese knotweed. If you suspect such a species is present, please get in touch. We can advise you on how to manage and control these species.

If you do not carry out your responsibilities, you could face legal action.

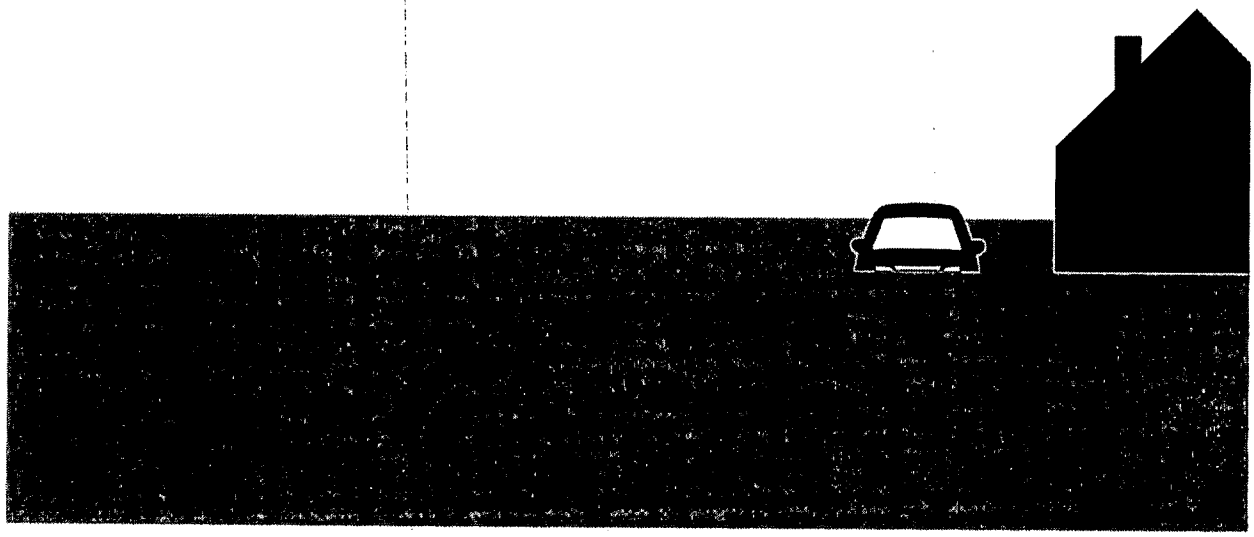
flood risk

- Land and property near rivers could be at risk from flooding. We can tell you what that risk is, how flood warnings will be issued, and what to do when a flood occurs.

- Information on local flood warnings is available from our local offices.

- There are maps available which show the general extent of flooding. These are available from our local offices or on our website: **www.environment-agency.gov.uk/maps.** The website's *What's in your backyard?* section also gives local environmental information. Our Flood Map is multi-layered and has information on flooding from rivers and the sea for England and Wales. The Flood Map also shows flood defences and the areas they protect.

- Telephone our **Floodline** service on **0845 988 1188** for information about flood risk in your area.



mills and weirs

A river control structure is a structure that affects river levels and flow. Examples include mills, dams and weirs.

If you own a river control structure, you are legally obliged to maintain and operate the structure properly. You must also fulfil any obligations you have under land drainage byelaws. You may be sued in the civil courts by anyone who suffers as a result of your actions or neglect.

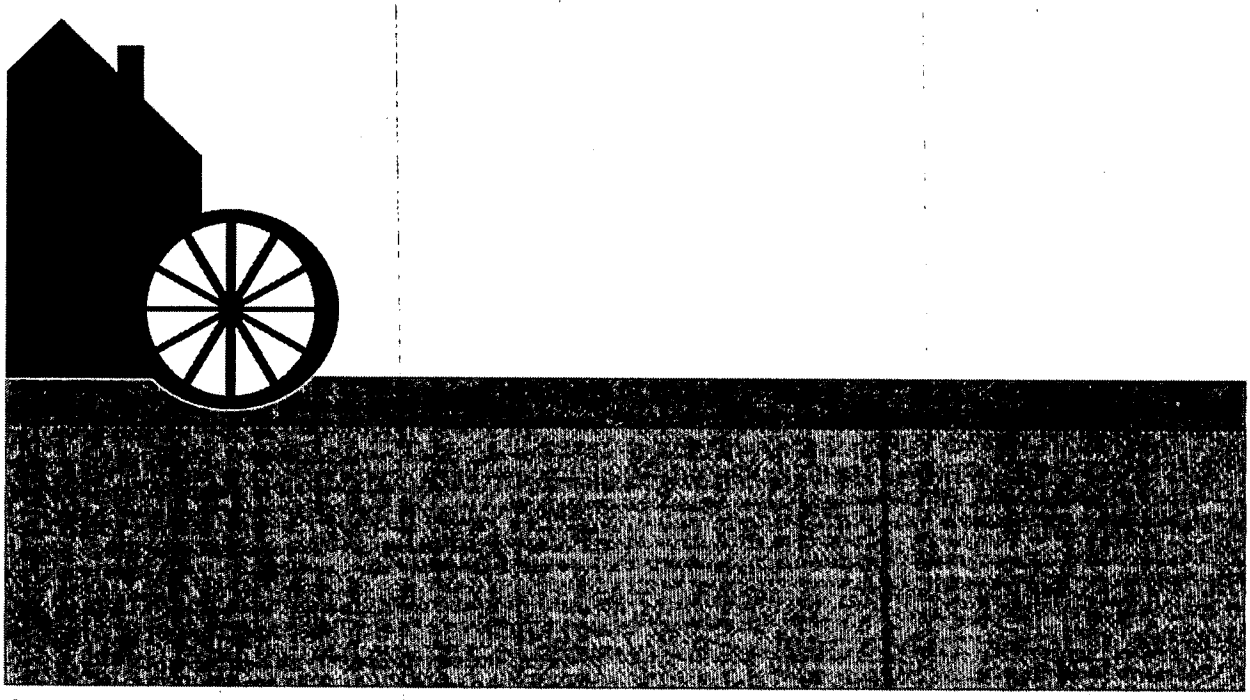
➔ Keep gates and screens clear of obstructions, so that they work properly.

➔ Our engineers are always willing to discuss maintenance and operation with the owners of river control structures.

➔ If you are buying a property with a river control structure, contact our local office to introduce yourself. You can find out how you can work with us and learn about what problems may arise.

➔ You may need an abstraction licence if you intend to take water from the river. For more details see page 12.

➔ You must contact us first if you wish to construct a weir, sluice gate or other control structure – or if you would like to modify an existing structure. You may need our formal consent, and possibly an impounding licence. We generally discourage obstructions to watercourses because of their environmental impacts.



the role of the Environment Agency

Protecting the river environment and managing flood risk are part of our job. This means that some of our duties and powers affect riparian owners.

New European legislation is changing the way we manage rivers. The Water Framework Directive is already being implemented in England and Wales with the purpose, amongst other things, of mitigating the effects of floods, and it also promotes the use of river basin planning. For more information, see **www.environment-agency.gov.uk/wfd**.
A Floods Directive should also come into force in due course, which promotes the large scale planning of flood risk management.

Powers

Under the Water Resources Act 1991, we have powers to maintain and improve main rivers (for explanation of terms, see page 15), in order to ensure the efficient passage of flood flow and to manage water levels. These powers allow us to do work; they do not oblige us to carry out either maintenance or construction of new works on main rivers.

- We can construct and maintain defences against flooding, issue flood warnings, and manage water levels.

- We can dispose of dredgings by depositing them on land within the reach of the dredging machine's boom.

- We are unlikely to carry out maintenance on a watercourse just for amenity reasons, or to stop erosion where this does not increase overall flood risk.

- We also have powers to make byelaws. There are 10 sets of byelaws covering England and Wales; our local office can provide you with the correct set for your area.

Duties

Our principal duty is to contribute to sustainable development. This is 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. It includes protecting the environment and the prudent use of natural resources.

Under the Environment Act 1995, we have a duty to supervise all matters relating to flood defence.

In our work managing water, we also have a duty to promote conservation of the aquatic environment. This applies to the wildlife, landscape, and archaeology of rivers, watercourses, wetlands and associated land. We also have powers for estuaries and coasts. When we consider proposals, we assess the likely impact on the environment.

The Water Framework Directive will bring greater consistency to the management of water across Europe. The Directive aims:

- to protect and enhance our water environment;
- to promote sustainable water consumption;
- to reduce water pollution;
- to lessen the effects of floods and droughts.

The Directive is being implemented in England and Wales through the River Basin Management Planning process. There are local liaison panels for each river basin district. For further information see **www.environment-agency.gov.uk/wfd**.

Flood defence consents

The Water Resources Act 1991 and associated byelaws require you to apply for formal consent for works in, over, under or adjacent to main rivers. This is to ensure that such activities do not cause or make worse an existing flooding problem, interfere with our work, and do not adversely affect the local environment, fisheries, wildlife, and flood defences. These consents are referred to as 'flood defence consents'; in the past they were sometimes called 'land drainage consents', after the old legislation that applied.

Under the Land Drainage Act 1991, you also need our consent if you want to construct a culvert or flow control structure (such as a weir) on any ordinary watercourse. There is a definition of an ordinary watercourse on page 15.

We generally oppose culverts and in-channel structures because of their environmental impacts. Our publication *Environment Agency Policy Regarding Culverts* is available from our offices.

Contact us as soon as possible to discuss your plans. We will want to see full details of the work you propose at least two months before you intend to start. Talking to us early on helps everyone and avoids delays and wasted effort. Once preliminary details have been agreed, we will ask you to fill in an application form. This must be returned with the appropriate fee. You can obtain details of the charges from our local offices.

We will not approve works that we believe would harm the environment or would increase flood risk – even if the works appear to be sound from an engineering or structural point of view. As noted above, we discourage the culverting of watercourses, and we also promote 'soft engineering' methods to control erosion. For example, we prefer using natural materials such as woven willow spiling or natural planting to limit erosion where practical, rather than steel sheet piles, unless conditions at the location require that piles are used.

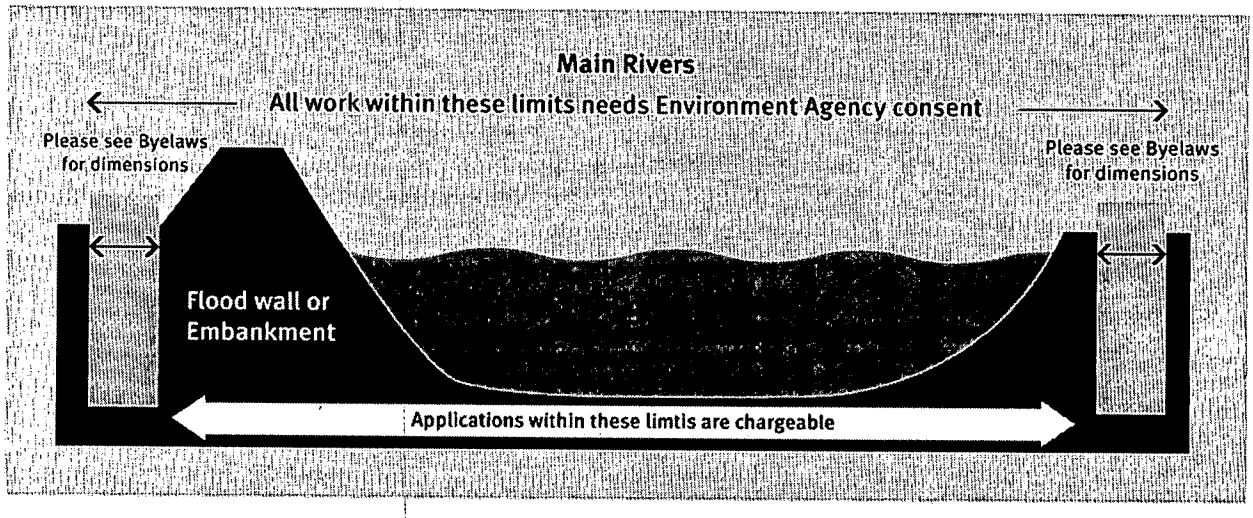
If consent is refused, and you think it has been withheld unreasonably, you may appeal. There is a procedure for such appeals, which are heard by an agreed independent arbitrator. We will tell you more about how this works at the time we decide whether to grant consent or not.

You must not carry out work without consent. If you do, the consequences can be expensive. We can reclaim from you the cost of whatever action we decide is necessary to remove or alter your work. Or, we can require you to put things right. Carrying out works without prior consent or failing to rectify problems may be a criminal offence.

Our consent only covers the impact of the structure on flood risk and the environment:

- We do not confirm that a proposed structure is of sound design.
- We do not check whether your plan complies with other legislation, such as health and safety.
- Our consent does not allow you to carry out works on land or rivers that you do not own. You must have the landowner's permission as well as ours.

If you are a landowner affected by flooding, you may wish to consider some of the coastal or flood plain options within Environmental Stewardship schemes operating in England and Wales. Our local office or our website can give more advice. You may also be able to apply to a conservation scheme for the restoration or creation of features either on a watercourse or within the floodplain. However, you will still require our consent for works and possibly other permissions like those mentioned elsewhere in this booklet. You may have to show this consent before you receive any funding payment from a conservation scheme. Contact our local office before you make a funding application: this will avoid unnecessary delays.



Planning

We are a statutory consultee, and have to be consulted in the town and country planning process. Our representations to local planning authorities relate to the environmental matters that we are responsible for reviewing, including flooding. We only comment on planning policies or applications – we do not decide them.

Our advice is aimed at protecting flood plains from inappropriate development. Our local offices can provide advice on development issues. For details of government policy on development and flood risk, see:

- *Planning Policy Statement 25*, published by the Department for Communities and Local Government in England
- *Technical Advice Note 15*, published by the Welsh Assembly Government in Wales.

These publications are available on the Internet or from the relevant organisations.

Flood risk management

More than two million properties in England and Wales are at risk from flooding. Changes in our climate, resulting in fiercer storms and wetter winters, will increase this risk. t will never be possible to prevent flooding entirely – what we can do is manage flood risks. This reduces the likelihood of flooding and its impact.

We now use the term flood risk management to describe our work. We aim to reduce the likelihood of flooding by:

- managing river and coastal systems;
- constructing and managing defences, where appropriate.

We work to reduce the impact of floods through:

- influencing land use planning;
- better flood warning;
- faster emergency responses.

Floodwater can come from land, rivers and the sea. For rivers, we draw up Catchment Flood Management Plans (CFMPs). For sea flooding and coastal erosion there are Shoreline Management Plans (SMPs). We prepare these with the other coastal authorities. These management plans look at flood risk on a large scale. This allows us to see how reducing risk in one area might change, or even increase, the risk elsewhere.

Other consents and licences

You may also need our permission for other activities. Contact our local office for more details.

Water resources

You will need a licence from us to abstract or impound water from or on a watercourse. We have to ensure that:

- your proposals will not harm the environment;
- existing abstraction rights are protected;
- water resources are managed in the best interests of the environment and other lawful users.

Discharge consents

You will need our consent to discharge any trade or sewage effluent to 'controlled waters'. Controlled waters include main rivers, ordinary watercourses, some lakes and ponds, canals, reservoirs and underground sources. You may also need a separate flood defence consent if you are building a physical structure for discharges. We use the consents system to protect the quality of water and its environmental value. We set water quality objectives and ensure compliance with standards laid down in European Directives.

Fisheries

We have a duty to maintain, improve and develop fisheries. We do this through stock assessment, habitat improvements and restocking. We grant and regulate licences for the introduction and removal of fish, as well as issuing rod licences and commercial eel and salmon licences. The Salmon and Freshwater Fisheries Act 1975, the Salmon Act 1986, and various byelaws cover this work. We also enforce regulatory constraints on structures, sluices and dams that have been built to catch and/or retain freshwater fish, salmon, trout and eels.

You must have an Environment Agency rod licence if you are fishing for salmon, trout, freshwater fish or eels in:

- England (except the River Tweed);
- Wales;
- the Border Esk and its tributaries in Scotland.

Money from the sale of licences helps to fund our management of fisheries. If you are caught fishing without a licence, you are cheating other anglers and could be fined up to £2,500. You do not need a rod licence if you are less than 12 years of age.

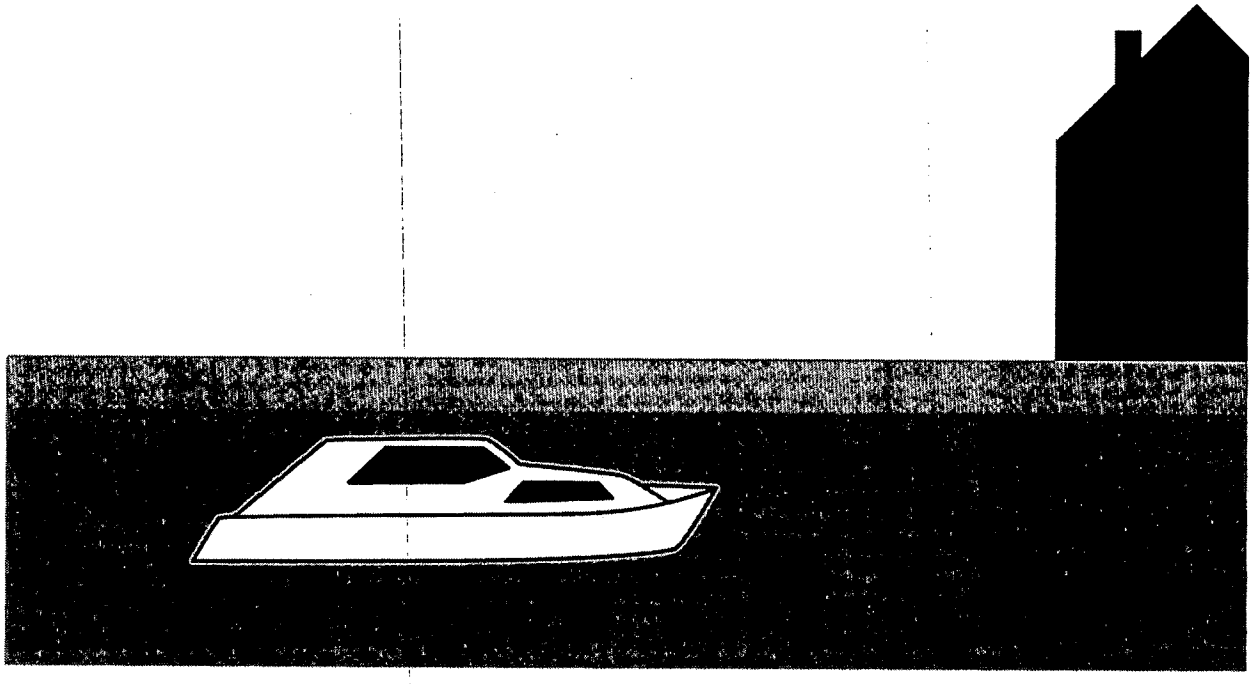
Recreation and navigation

We have a duty to encourage the appropriate recreational use of watercourses. On some rivers we are also responsible for navigation. In this role we provide details of special licensing or restrictions that we may place on plans for the bed or banks of the river. These could affect proposals for mooring and landing facilities. You may also require a licence for any boat that you wish to use on the river.

Right of entry

We may need to come onto your land to carry out our work, for example to manage flood defences. We have statutory powers of entry in order that we can do our job properly and without delay. Whenever possible, we try to co-operate with landowners and others. However, we can obtain a warrant from the courts if entry is refused. All our staff carry identity cards.

We try to make sure that we always have access to riverbanks, so that we can carry out maintenance and other work safely.



the role of other organisations

Internal Drainage Boards

In some places, Internal Drainage Boards (IDBs) have operational and regulatory powers on ordinary watercourses. See page 15 for a definition of an ordinary watercourse. These powers are similar to ours for main rivers. IDBs also have a similar duty regarding conservation.

Local authorities

Under the Land Drainage Act 1991, the local authority is the operating authority for ordinary watercourses where there is no IDB. Local authorities have powers to carry out works on ordinary watercourses for certain purposes. They sometimes have their own regulations and byelaws. These affect what you can and cannot do on an ordinary watercourse. Local authorities may also take enforcement action against you if you fail to maintain the flow of the watercourse alongside your property.

During a flood, the local authority provides emergency aid to householders. This may extend to supplying sandbags.

Works on any watercourse may require planning permission from the local authority, as well as our consent.

Navigation authorities

The tidal reaches of many rivers have public rights of navigation. Where applicable, harbour authorities may have a degree of control. There is no public right of navigation on most non-tidal watercourses. Some specific larger rivers and canals are administered by navigation authorities, such as British Waterways, private companies or the Environment Agency.

Nature conservation

Sometimes you will need permission from the relevant conservation body, as well as from us. You may, for example, intend to carry out works or change the flow characteristics of a watercourse that is within or near a site protected by law (for example a site of special scientific interest or Habitat site). Or you may wish to trap, release, kill or manage a species or habitat associated with the river or wetlands.

If you are planning this type of activity or work, you must contact the relevant conservation body. These are:

- Natural England (formally English Nature). Their website is **www.naturalengland.org.uk**
- Countryside Council for Wales. Their website is **www.ccw.gov.uk**

If you're unsure which organisation you should be talking to, please ask us for advice.

explanation of terms

Main rivers

Main rivers are usually larger streams and rivers. However, they do include smaller watercourses of local significance. A main river is a watercourse marked as such on a main river map. This is an official document. A main river can include any structure or appliance that controls or regulates the flow of water in, into, or out of, the main river. Our powers to carry out flood defence works apply to main rivers only, but our other duties and functions extend to all watercourses. In England, Defra decides which are the main rivers. The Welsh Assembly Government does this in Wales. Our local offices have copies of main river maps.

Ordinary watercourse

An ordinary watercourse is every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a main river. The local authority, or IDB where relevant, has powers for ordinary watercourses that are similar to those we can use on main rivers. Our powers to carry out flood defence works apply to main rivers only, but our other duties and functions extend to all watercourses.

Erosion

Moving water wears away riverbanks – causing erosion. It is a natural process that can be made worse by channel narrowing, by inappropriate reinforcement, and by the overgrazing of sheep and cattle. Generally, you the landowner are responsible for any work to reduce bank erosion. You will probably need our consent before carrying out any protection work. We do not usually get more involved unless natural erosion either threatens a flood defence, or may create a significant change to the nature of the river and the land alongside it.

Farmland should be managed in ways that prevent rainwater from carrying off topsoil into the watercourse. This run-off damages the land and the ecology, quality and carrying capacity of the receiving water. For guidance, please see our booklet, *Best farming practice: profiting from a good environment* (2003).

In certain circumstances, allowing such run-off may constitute a criminal offence. If you are a farmer, this could threaten your single farm payment. For guidance on preventing soil erosion, please see the Defra booklet *Single Payment Scheme. Cross Compliance. Guidance for Soil Management* (2006), or Welsh Assembly Government *Farmer's Guide to Cross Compliance*. Under the Environmental Stewardship scheme, you could even be paid for improving your management practices. For more information go to our website. For construction sites, please see our pollution prevention guidance advice, also on our website or available from our local office.

Flood defence

Some legislation, such as the Acts mentioned earlier, still use the terms 'flood defence' or 'land drainage'. We now refer to the activities that these cover as 'flood risk management' overall, but may use the other terms when referring to legal matters.

In law the term flood defence also refers to irrigation (other than spray irrigation) and the management of water levels. The term flood defence can also refer to a structure built for the purpose of managing the flow and storage of floodwater, such as an embankment for example.

Flood plain

A flood plain is an area of land over which river or seawater flows, or is stored in times of flood. Flood plains usually extend beyond the land immediately next to a watercourse. There is often pressure to build on them. However, if buildings or other man-made objects obstruct flood plains, water cannot flow away efficiently and the effects of flooding are made worse.

Flooding can also occur from other sources such as water mains or sewers. These are the responsibilities of other organisations.

