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RIVER PARK LEISURE CENTRE FLOOD RISK DESIGN NOTE

RIVER PARK LEISURE CENTRE FLOOD RISK DESIGN NOTE

This report is issued to inform Winchester County Council's decision making process at an extremely early stage of the design process for the River Park Leisure Centre.

Revision History

Revision	Date	Purpose / Status	Document Ref.	Comments
-	1-11-13	Draft for comment	61032662/ENV/R01	
-	28-01-14	Final for issue	61032662/ENV/R01	Draft accepted by Client 28-01-14
A	31-01-14	Final for issue	61032662/ENV/R01	Updated to final

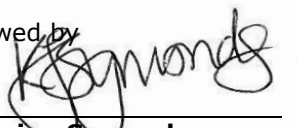
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1. INTRODUCTION

1.1 General

1.1.1 Ramboll has been asked by Winchester City Council (WCC) to provide a report offering information and advice regarding flood risk and drainage to inform WCC's decisions on plans to rebuild or refurbish the River Park Leisure Centre.

1.1.2 Key sources of information include:

- Leisure Centre Site Planning Study prepared by Savills on behalf of WCC July 2013;
- Strategic Flood Risk Assessment (SFRA) for Winchester district sub-region prepared by Halcrow on behalf of WCC September 2007;
- National Planning Policy Framework (NPPF): Flood Risk;
- Environmental Agency (EA) online database of indicative floodplain and hydrogeological maps; and
- EA "Product 4" flood data enquiry information.

1.2 Scope and Objectives

1.2.1 This document considers the risks of various sources of flooding to both potential development sites and how the development proposals might affect the risk of flooding. A comparison is made between the proposals on the basis of flood risk.

2. DEVELOPMENT PROPOSALS

2.0.1. Two schemes have been proposed for the development of the existing site: either the leisure centre could be rebuilt in its existing location or a new facility could be built on the playing field behind the current building, with the existing building demolished to make space for additional car parking at the site. Alternatively, a third scheme has been proposed in which the new leisure centre facility would replace some or all of the playing fields at Bar End.

3. RIVER PARK LEISURE CENTRE (EXISTING SITE)

3.1 Site Location and Surrounding Use

3.1.1 The site is located on the north side of Winchester city centre, and the existing River Park Leisure Centre (Gordon Road, Winchester, Hampshire, SO23 7DD and National Grid reference 448453E, 130169N) is at the southern end of the site, which also comprises a variety of playing pitches and outdoor sporting facilities.

3.2 Geological Setting

3.2.1 The British Geological Society (BGS) online mapping of the area identifies alluvium topsoils consisting of clay, silt, sand and gravel in the area, associated with the River Itchen Flood Plain, overlaying the Seaford Chalk Formation. Soils are naturally wet due to the high water table, so drainage is likely to be complex.

3.2.2 The BGS website also contains records for several boreholes which were drilled just to the East of the site in February 1963. These show layers of made ground above peaty soils and groundwater levels less than a metre below the ground surface.

3.3 Hydrological Setting

- 3.3.1 The site is located between two branches of the River Itchen, and there are numerous surface water streams and drainage ditches crossing the site, including one flowing west to east immediately to the rear of the existing leisure centre building. The main watercourses are flowing from north to south past the site.

3.4 Hydrogeological Setting

- 3.4.1 The site does not lie within a Groundwater Protection Zone, meaning that the EA does not consider activity at the site to constitute a risk to groundwater supplies taken from an abstraction point. No groundwater abstraction points lie in the vicinity of the site. However, the site does lie partially within a "major aquifer high" groundwater vulnerability zone, and partially within a "major aquifer intermediate" vulnerability zone.
- 3.4.2 The EA website also shown aquifers and provides designations which are in line with the Water Framework Directive and area based on maps produced by the BGS. The site is underlain by the Seaford Chalk Formation which is designated a "principal" aquifer and the superficial alluvium deposit at the site is designated as a Secondary Aquifer A, defined as "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers".
- 3.4.3 Groundwater is expected to flow south and east into the main river channels surrounding the site.

3.5 Existing Flood Risk

Fluvial and Tidal

- 3.5.1 The EA indicative floodplain maps identify areas in England and Wales at risk of flooding by allocating them into flood risk zones.
- 3.5.2 The flood risk zones shown on the flood maps are defined in Table 2 of the Technical Guidance to the NPPF:

Zone 1: Low Probability

According to the NPPF, land in this zone is considered to have less than 1-in-1000 annual probability of river or sea flooding in any year. This is <0.1%.

Zone 2: Medium Probability

According to the NPPF, land in this zone is considered to have between a 1-in-100 and 1-in-1000 annual probability of river flooding in any year (between 1% and 0.1%) or between a 1-in-200 and 1-in-1000 annual probability of sea flooding in any year (0.5% to 0.1%).

Zone 3a: High Probability

According to the NPPF, land in this zone is considered to have a 1-in-100 or greater annual probability of river flooding in any year (>1%) or a 1-in-200 or greater annual probability of flooding from the sea in any year (>0.5%).

Zone 3b: The Functional Floodplain

According to the NPPF, land in this zone is used for water flow or storage in times of flood. This flood zone should be identified by a Strategic Flood Risk Assessment (SFRA). It is considered to have a 1-in-20 or greater chance of river flooding in any year which is >5%. Another probability however can also be agreed between the LPA and the EA.

- 3.5.3 The EA Indicative floodplain map shows that the existing River Park Leisure Centre lies mostly within Zone 3a, although some patches are classified as Zone 2. However, some areas of the site, including the cricket pitches to the rear of the existing building, are considered to be within Zone 1. The floodplain map is given in Figure 1.

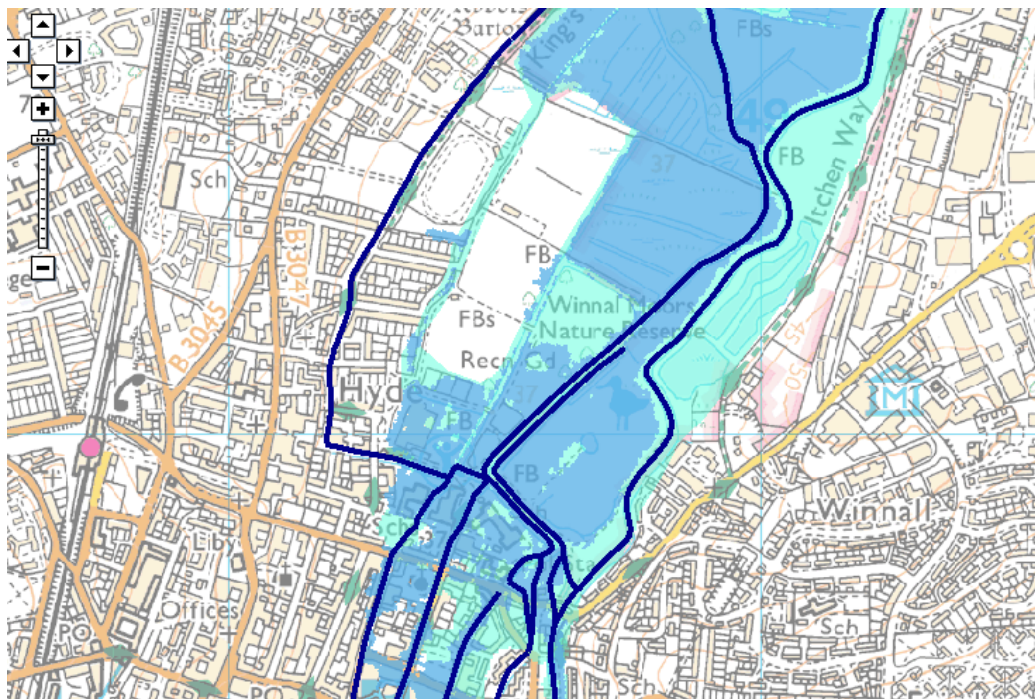


Figure 1 Flood Risk Zone map for River Park Site - Reproduced from EA 'What's in your backyard?' Website © Environment Agency 2013

- 3.5.4 According to Table 2 (Flood Risk Vulnerability Classification) in the Technical Guidance to the NPPF, leisure use is classified as "less vulnerable" to flooding and thus is appropriate in all flood risk zones.
- 3.5.5 There are historical records of severe flooding occurring at the site, most recently in December 2000 where the water levels rose sufficiently to enter the existing leisure centre building. A study commissioned by the EA into the cause of this event was published by Halcrow in August 2002, which concluded that it was caused by a combination of an unusually high flow rate in the Itchen with an unusually high groundwater level in the region caused by a sustained period of above average rainfall during the previous year. It was estimated that the rainfall events in particular had a frequency of occurrence of less than 1-in-200 years, but the effects of climate change may cause this to decrease in the future.
- 3.5.6 As a result of the serious historical flooding a detailed hydrological model of the River Itchen near Winchester was undertaken by Halcrow on behalf of the EA. Local results from this model for the River Park site were supplied to Ramboll by the EA in October 2013. Appendix A contains the information received from the EA, and this has been used to show predicted flood levels in Figures 3 to 7 at the end of this document.
- 3.5.7 A topographical survey of the land at the River Park site was undertaken on behalf of WCC in October 2013. Information from this survey is shown on Figures 3-7 at the end of this document and has been used for assessment in conjunction with the EA "Product 4" data.
- 3.5.8 The model suggests that the location of the existing River Park Leisure Centre is expected to experience a shallow flood to a level less than 0.2m deep with a frequency of occurrence of as little as 1-in-25 years, although the flood depth is not expected to exceed the finished floor level of the existing building even with a 1-in-100 year event incorporating climate change. The second proposed location on the River Park site is not expected to flood at that frequency. The

model used incorporates predictions about the effect of climate change on the region. Table 1 shows a brief summary of the flood depths at some key points around the site for various flood return periods.

Table 1 Flood Depth at River Park

Location	Frequency of Occurrence	Flood Depth (m)			
		1-in-25	1-in-50	1-in-100	1-in-100+CC
Existing Leisure Centre Internal		N/A	N/A	N/A	N/A
Existing Leisure Centre External		0.025	0.085	0.145	0.195
Tarmac courts behind existing Leisure Centre		N/A	0.040	0.110	0.160
Playing fields (potential new site)		N/A	N/A	N/A	N/A

- 3.5.9 There is an electricity sub-station adjacent to the existing leisure centre buildings which is a piece of infrastructure particularly vulnerable to flooding; modelling suggests that flood levels must have reached the outside of this building during the December 2000 flood events and is likely to do so again in the future.
- 3.5.10 The EA/Halcrow Report published in 2002 estimated a cost of around £5,000 to install flood protection measures and raise thresholds sufficiently to adequately defend the existing leisure centre building. At the time of writing this report, it is unknown if these alterations were implemented.
- 3.5.11 Flood risk could be mitigated during redevelopment by means of raising site levels. However, it is EA policy not to lose floodplain storage volume by such means as it is very likely to have an impact on downstream receptors which in this case would be the City centre itself. Therefore raising site levels has not been considered further.
- 3.5.12 The EA response to the River Park proposal indicates that a design that increases the floor plan of the existing leisure centre in the same location would be inappropriate due to the loss in floodplain storage volume. However a proposal in which the current building was demolished and its footprint became open space which could be used as managed floodplain would have a positive impact on flood risk downstream and would be highly acceptable.

Surface Water and Sewer Drainage Risk

- 3.5.13 Surface water drainage failure and backed up drainage caused by high groundwater levels has been recorded as part of a combined flood event with other drainage types.
- 3.5.14 Culverting existing watercourses and other surface water features can drastically increase the chance of debris or silt blocking channels and triggering surface water flooding, and for this reason as well as the potential loss of environmental and amenity benefits the EA strongly advises against culverting of surface water features where at all possible. A request for further comment in the specific case of the River Park site was sent to the EA and their response is given in Appendix B; it is indicated that they would be resistant to culverting any watercourse unless it was considered impossible to avoid; options like an access bridge would be considered preferable.
- 3.5.15 The EA "Product 4" maps indicate that certain "main river" watercourses are identified as being a "maintained channel" however the smaller watercourses within the River Park site are the responsibility of the Local Lead Flood Authority, Hampshire County Council. At this stage we are not aware of the maintenance plans that may be in place for the "non-main river"

watercourses. The lack of knowledge regarding maintenance may also apply to some of the culverted watercourses downstream.

Groundwater Flood Risk

- 3.5.16 According to the SFRA, there are a number of main watercourses within the sub-region, the most dominant watercourse being the River Itchen. Most of these rivers, including the Itchen, rise in the Chalk and are controlled by the behaviour of the Chalk geology which is highly susceptible to groundwater flooding, and in which periods of high river flow and high groundwater levels coincide and reinforce each other. Flood risk is therefore an important consideration for all parts of the sub-region.

Table 2 Flooding Sources at River Park

	High	Medium	Low	
Tidal/fluvial	X		X	Existing leisure centre situated within Flood Zone 3. Second proposed location at the River Park site is within Flood Zone 1 and has low fluvial flood risk
Surface water and drainage flood risk		X		High groundwater and river levels can cause drainage systems to become inadequate and back up
Groundwater		X		Pure groundwater flooding is unlikely, but high groundwater levels cause and intensify fluvial or surface water flooding events
Reservoirs, canals and other artificial sources			X	Not at risk of reservoir flooding

4. BAR END

- 4.0.1. Ramboll have not been formally appointed to undertake a flood risk appraisal of the Bar End site but for reasons of completeness of comparison we have undertaken an initial high level appraisal as set out below.

4.1 Site Location and Surrounding Use

- 4.1.1 The site is located to the south-east of Winchester, with the M3 forming the eastern boundary of the site, on playing fields surrounding the University of Winchester sports stadium on Bar End Road, near to postcodes SO23 9N- and National Grid Reference 449115E, 128653N.

4.2 Geological Setting

- 4.2.1 The BGS online mapping of the area identifies chalk bedrocks at the Bar End site, with the Zig-Zag Chalk Formation across most of the Bar End site and Holywell Nodular Chalk Formation in the north-west corner. Superficial deposits of clay, silt, sand and gravel, associated with the River Itchen, are present across some areas of the site.
- 4.2.2 Several nearby borehole records are available from the BGS, dated 1968, 1973 and 1984 and mostly associated with the M3 construction. All record silt or clay topsoils with traces of chalk to a depth of less than 2m, and chalk below that level.

4.3 Hydrogeological Setting

- 4.3.1 The site does not lie within a Groundwater Protection Zone, meaning that the EA does not consider activity at the site to constitute a risk to groundwater supplies taken from an abstraction point. No groundwater abstraction points lie in the vicinity of the site. However, the site does lie within a "major aquifer high" groundwater vulnerability zone.

- 4.3.2 The EA website also identifies aquifers and provides designations which are in line with the Water Framework Directive and area based on maps produced by the BGS. The site is underlain by the Zig-Zag and Holywell Nodular Chalk Formations which are designated “principal” aquifers. Superficial deposits at the Bar End site are not considered to have any significant value as aquifers.

4.4 Existing Flood Risk

Fluvial and Tidal

- 4.4.1 The EA indicative floodplain maps identify areas in England and Wales at risk of flooding by allocating them into flood risk zones. The flood risk zones shown on the flood maps are defined in Table 2 of the Technical Guidance to the NPPF and in Section 3.5.2 of this report.
- 4.4.2 The EA Indicative floodplain map shows that the site at Bar End is largely situated in Flood Zone 1; however, there is an area of Flood Zone 3a stretching across the site which may indicate the presence of a culverted watercourse or seasonally dry ditch. The floodplain map is given in Figure 2.

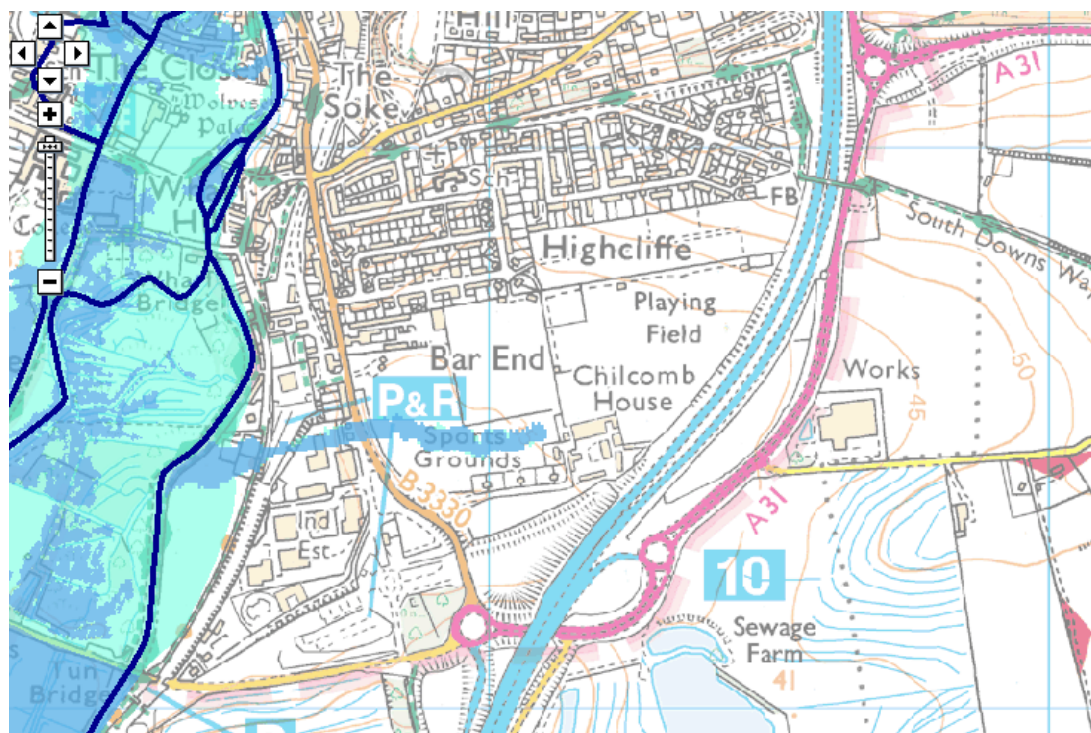


Figure 2 Flood Risk Zone Map for Bar End Site - Reproduced from Environment Agency 'What's in your Backyard?' website © Environment Agency 2013

- 4.4.3 The presence of a sub-surface watercourse or culvert should be investigated if design for a development at Bar End is to be progressed.

Surface Water and Sewer Drainage Risk

- 4.4.4 Since there are no surface water features on the site, surface water flooding is unlikely.

Groundwater Flood Risk

- 4.4.5 According to the SFRA, there are a number of main watercourses within the sub-region, the most dominant watercourse being the River Itchen. Most of these rivers, including the Itchen, rise in the Chalk and are controlled by the behaviour of the Chalk geology which is highly susceptible to groundwater flooding, and in which periods of high baseflow and high

groundwater levels coincide and reinforce each other. Flood risk is therefore an important consideration for all parts of the sub-region.

Table 3 Flooding Sources at Bar End

	High	Medium	Low	
Tidal/fluvial		X		Small area of Flood Risk Zone 3 may experience flooding, but remainder of site should be dry
Surface water and drainage flood risk			X	No historical flood records
Groundwater		X		Pure groundwater flooding is unlikely, but high groundwater levels cause and intensify fluvial or surface water flooding events
Reservoirs, canals and other artificial sources			X	Not at risk of reservoir flooding

5. CONCLUSIONS

- 5.0.1. At the existing leisure centre location at the River Park site, the dominant flood risk is fluvial flooding from the River Itchen and its associated sub-channels, and this risk is such that flooding is expected to occur on this site, possibly multiple times during the lifetime of the facility. If design was to be progressed for a facility at this location, it would have to consider management and/or mitigation of flood events and flood defences such as raised thresholds or floor levels as well as access and egress from car parking areas during what may be prolonged although shallow (<0.2m water depth) groundwater flooding event. The EA have indicated that a new design that increased the existing building footprint or the impermeable area within the floodplain would not be appropriate in this location.
- 5.0.2. On the playing fields at the River Park site, the dominant flood risk is surface water flooding aggravated by high groundwater levels. This risk is not severe – although it would be slightly increased by culverting the surface watercourse between the existing site and the new location and may be able to be mitigated by careful drainage design and acceptance by the EA. The EA have indicated that diverting or culverting the watercourse should be avoided if possible, but that replacing the existing leisure centre buildings with open space might have a beneficial effect on downstream flood risk
- 5.0.3. At Bar End, the dominant flood risk is fluvial flooding from what is likely to be a small culverted watercourse. However it is geographically quite localised on the site and could be minimised or eliminated by intelligent facility design. Further investigation into the cause of the high flood risk across part of the site could supply useful information if a design at this site was to be progressed.

FIGURES

- FIGURE 1 FLOOD RISK ZONE MAP FOR RIVER PARK SITE (included in main report)
- FIGURE 2 FLOOD RISK ZONE MAP FOR BAR END SITE (included in main report)
- FIGURE 3 FLOOD LEVELS DRAWING

FIGURE 3 FLOOD LEVELS DRAWING



1. Topographic survey provided by "Seaman Smith surveyors" in 2D only & converted into 3D for the purposes of this exercise. It is indicative only & not to be used for detailed design.
2. Flood levels provided by the TuFlow model 2008 (SSD/2262/VH).
3. Section shown scale 1:2500 HOR 1:500 VER.
4. Site flood levels digitally interpolated from flood model outputs.

Rev.					
Drawn	NJ				
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Appvd.					
Date	04.11.13				
Description	FOR INFORMATION				

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WINCHESTER
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Project

RIVER PARK LEISURE CENTRE REDEVELOPMENT

Drawing Title

FLOOD LEVELS
TUFLOW MODEL 2008
SECTION LOCATIONS



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Figure 3

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1. Topographic survey provided by "Seaman Smith surveyors" in 2D only & converted into 3D for the purposes of this exercise. It is indicative only & not to be used for detailed design.
2. Flood levels provided by the TuFlow model 2008 (SSD/2262/VH).
3. Section shown scale 1:2500 HOR 1:500 VER.

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1 IN 50 YEAR
FLOOD LEVELS
TUFLOW MODEL 2008
SECTIONS

Figure 5

1. Topographic survey provided by "Seaman Smith surveyors" in 2D only & converted into 3D for the purposes of this exercise. It is indicative only & not to be used for detailed design.
2. Flood levels provided by the TuFlow model 2008 (SSD/2262/VH).
3. Section shown scale 1:2500 HOR 1:500 VER.

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RIVER PARK
LEISURE CENTRE
REDEVELOPMENT

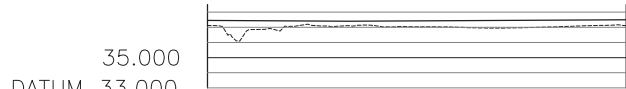
1% ANNUAL
FLOOD LEVELS
TUFLOW MODEL 2008
SECTIONS



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Figure 6	-



CHAINAGE	0.000		
TOPO LEVELS	37.011	37.460	20.000
			40.000
			60.000
			80.000
			100.000
1IN 100 + CLIMATE CHANGE FLOOD LEVELS	37.180	37.180	37.180
			120.000
			124.410

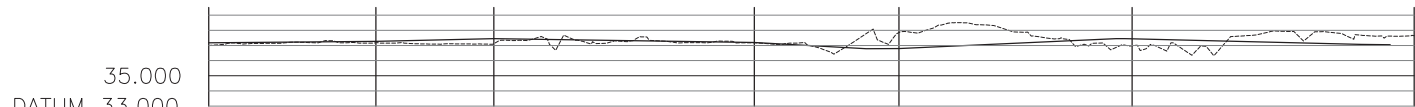
SECTION A-A

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SECTION B-B

CHAINAGE	0.000	20.000	40.000	60.000	80.000	100.000	120.000	138.204
TOPO LEVELS	37.117	36.905	37.080	37.024	37.023	36.959	37.070	37.101
11N 100 + CLIMATE CHANGE FLOOD LEVELS	37.450	37.428	37.406	37.414	37.436	37.458	37.480	37.500

SECTION C-C

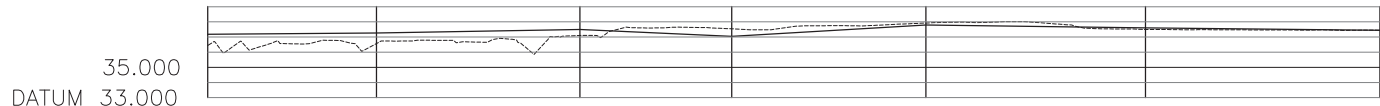


CHAINAGE	0.000	
TOPO LEVELS	37.170	
1IN 100 + CLIMATE CHANGE FLOOD LEVELS	37.200	37.146
	37.146	38.150
	37.092	38.419
	37.111	38.349
	37.244	38.194
	37.377	38.038
	37.488	37.998
	37.275	37.838
	37.060	37.595
	37.060	160.000

SECTION D-D

1IN 100 + CLIMATE CHANGE FLOOD LEVELS	TOPO LEVELS	CHAINAGE
37.180	37.011	0.000
37.213	37.142	20.000
37.245	37.311	40.000
37.292	37.156	60.000
37.385	37.107	80.000
37.433	37.325	100.000
37.375	37.428	120.000
37.317	37.317	140.000
37.258	37.189	160.000
37.200	37.170	180.000
36.978	36.915	200.000
36.790	37.717	220.000
36.907	38.249	240.000
37.091	38.259	260.000
37.275	37.441	280.000
37.453	36.912	300.000
37.361	36.948	320.000
37.263	37.615	340.000
37.165	37.554	360.000
37.067	37.681	380.000
37.044		389.957
		397.857

SECTION E-E



1IN 100 + CLIMATE CHANGE FLOOD LEVELS	TOPO LEVELS	CHAINAGE
37.180	36.440	0.000
37.212	36.528	20.000
37.245	36.783	40.000
37.285	36.738	60.000
37.353	36.777	80.000
37.422	36.859	100.000
37.490	37.079	120.000
37.342	37.613	140.000
37.159	37.636	160.000
37.123	37.477	180.000
37.357	37.740	200.000
37.591	37.767	220.000
37.782	37.948	240.000
37.730	37.986	260.000
37.677	37.862	280.000
37.625	37.533	300.000
37.578	37.486	320.000
37.537	37.474	340.000
37.496	37.460	360.000
37.454	37.449	380.000
37.440	37.442	386.883

SECTION F-F

1. Topographic survey provided by "Seaman Smith surveyors" in 2D only & converted into 3D for the purposes of this exercise. It is indicative only & not to be used for detailed design.
2. Flood levels provided by the TuFlow model 2008 (SSD/2262/VH).
3. Section shown scale 1:2500 HOR 1:500 VER.

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RIVER PARK LEISURE CENTRE REDEVELOPMENT

Drawing Title

100 YEAR AND CLIMATE CHANGE SECTIONS



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scale (at A3) AS SHOWN	date NOV 13	drawn NJ
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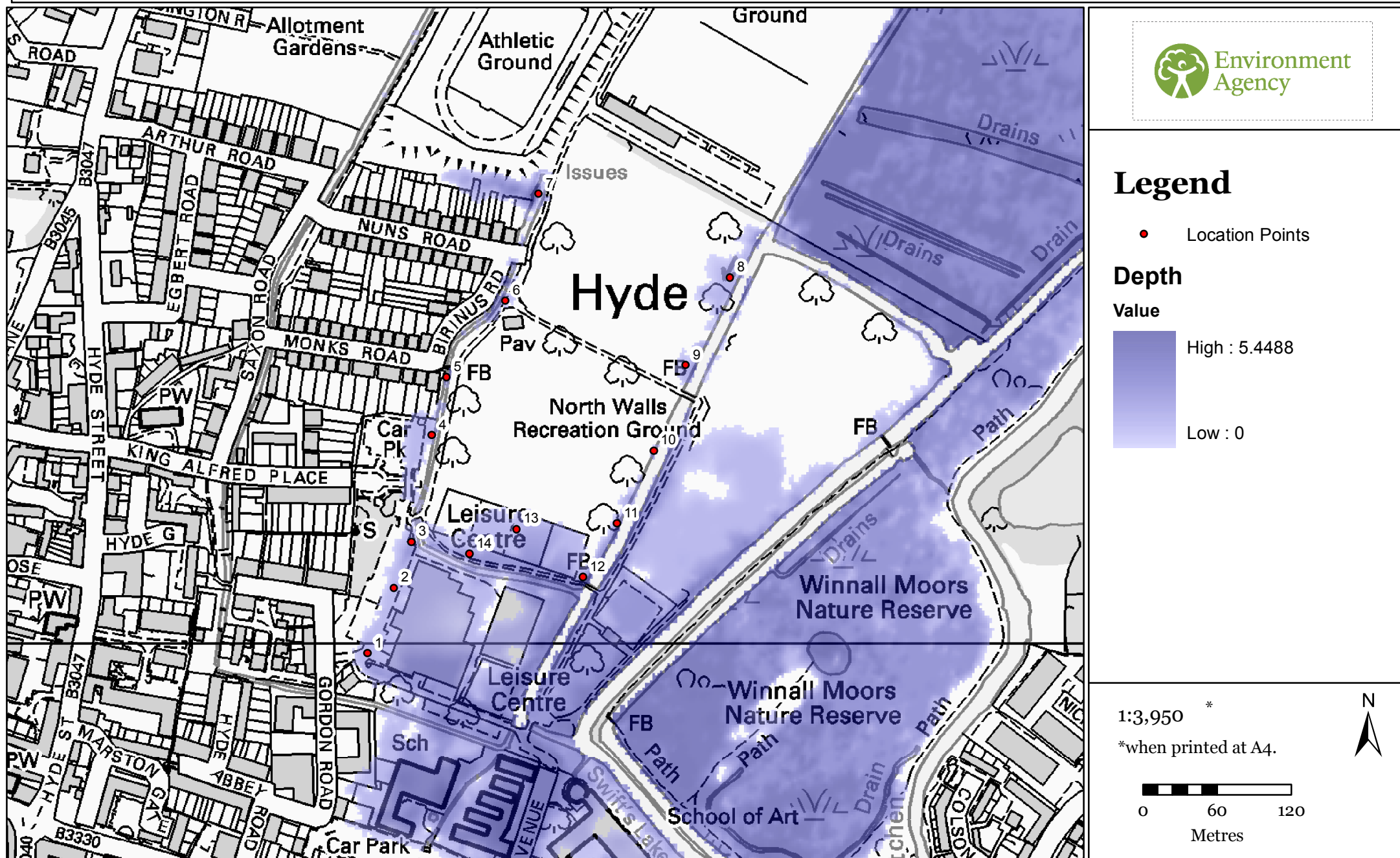
APPENDICES

APPENDIX A ENVIRONMENT AGENCY PRODUCT 4 FLOOD LEVEL INFORMATION

APPENDIX B ENVIRONMENT AGENCY PLANNING RESPONSE

APPENDIX A ENVIRONMENT AGENCY PRODUCT 4 FLOOD LEVEL INFORMATION

Modelled Flood Levels Centered on River Park Leisure Centre - Created 23 October 2013 (Ref: SSD/2262/VH)



Water Depths & Levels for River Park Leisure Centre - Winchester TuFlow Model 2008 (SSD/2262/VH)

Point	Water Depth (Metres)				Water Surface Level (mAOD*)				Ground Level
	25 Year	50 Year	1% Annual Probability/1 in 100 Year (Flood Zone 3)	100 Year + Climate Change	25 Year	50 Year	1% Annual Probability/1 in 100 Year (Flood Zone 3)	100 Year + Climate Change	
1	0.01	0.07	0.13	0.18	37.01	37.07	37.13	37.18	37.00
2	No Data	0.07	0.15	0.20	37.07	37.14	37.22	37.27	37.07
3	No Data	0.14	0.23	0.28	37.17	37.31	37.40	37.45	37.17
4	No Data	No Data	0.13	0.18	37.02	37.02	37.15	37.20	37.02
5	No Data	0.15	0.20	0.25	36.47	36.62	36.67	36.72	36.47
6	No Data	0.09	0.15	0.21	37.23	37.32	37.38	37.44	37.23
7	0.29	0.31	0.34	0.37	36.91	36.93	36.96	36.99	36.62
8	0.01	0.07	0.13	0.19	37.26	37.32	37.38	37.44	37.25
9	No Data	0.06	0.12	0.17	37.43	37.49	37.55	37.60	37.43
10	0.02	0.05	0.11	0.16	37.65	37.68	37.74	37.79	37.63
11	0.14	0.20	0.26	0.31	36.87	36.93	36.99	37.04	36.73
12	0.24	0.30	0.36	0.42	37.32	37.38	37.44	37.50	37.08
13	No Data	0.04	0.11	0.16	37.17	37.21	37.28	37.33	37.17
14	0.21	0.27	0.33	0.38	37.23	37.29	37.35	37.40	37.02

* Levels in metres above Ordnance Datum Newlyn

APPENDIX B ENVIRONMENT AGENCY PLANNING RESPONSE

Ms Lucy McGregor
Ramboll UK Ltd
Carlton House Ringwood Road
Woodlands
Southampton
SO40 7HT

Our ref: HA/2013/114935/01-L01
Your ref: pre-app
Date: 31 October 2013

Dear Ms McGregor

PROPOSED WORKS

RIVER PARK LEISURE CENTRE, WINCHESTER

Thank you for your enquiry regarding the above proposal, we have the following comments.

The existing River Park site is located within an area shown as fluvial flood zone 3, on the Environment Agency's indicative flood zone map. This area of Winchester is known to have experienced significant and prolonged flooding during the winter of 2000/01. This event resulted from a combination of high rainfall totals and very high groundwater levels.

If the existing leisure centre building is to be renovated the Environment Agency would advise that flood resilience/resistance measures are incorporated into the building to reduce the impact of any potential flooding. If possible finished floor levels should be above the modelled 1 in 100 climate change fluvial level for this site.

If a planning application is submitted for the renovation of the existing building it will need to be accompanied by a full Flood Risk Assessment. The FRA will need to identify all sources of flood risk, in particular the fluvial and groundwater derived risks. It will also need to put forward suitable mitigation for these risks which are likely to include flood resilience/resistance measures and flood warning and evacuation procedures.

Additional guidance on resilience measures can be found in our Flood line Publication 'Damage Limitation'. A free copy of this is available by telephoning 0845 988 1188 or can be found on our website www.environment-agency.gov.uk click on 'flood' in subjects to find out about, and then 'floodline'.

Reference should also be made to the Department for communities and local

Environment Agency
Canal Walk, ROMSEY, Hampshire, SO51 7LP.
Customer services line: 03708 506 506
www.environment-agency.gov.uk

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Government publication 'Preparing for Floods' please email: communities@twoten.com for a copy or alternatively go to: <http://www.planningportal.gov.uk/uploads/odpm/4000000009282.pdf> as well as the communities and local Government publication 'Improving the flood performance of new buildings' which can be viewed at: <http://www.communities.gov.uk/publications/planningandbuilding/improvingflood>.

The FRA should also demonstrate that any works to the existing building won't increase flood risk to other areas. The renovation works should not increase the building footprint within FZ3, without compensatory storage, as this could lead to a reduction in flood plain storage volume and increase risk to nearby areas which are known to have flooded in the recent past.

The FRA should assess surface water runoff from the site and demonstrate that the proposed works will not increase runoff rates or volumes from the site.

The alternative site identified for a new build is mostly located within flood zone 1 (low probability). If the application site is greater than 1 hectare in size a full FRA will still need to be submitted for any planning application within FZ1. The FRA will need to identify and assess the risk from all potential flood sources and demonstrate how the development would remain safe from the risks identified.

The FRA will need to provide a surface water drainage strategy which shows how runoff rates and volumes can be managed to greenfield rates.

From a flood risk point of view the alternative site is likely to provide clear benefits as it is located above the 1 in 100 year fluvial flood level. Also, if moving the development to the alternative site results in the removal of the existing buildings, this could potentially increase the amount of flood storage area available which would provide a benefit to the surrounding community.

If moving the leisure centre to a new site will result in any culverting or diversion of the existing ordinary watercourse, this will need the prior approval of the Lead Local Flood Authority (Hampshire County Council). Works to the watercourse may also require planning permission. The Environment Agency is likely to resist the culverting of an open watercourse, unless it is for access purposes and there are no alternatives available, such as a single span bridge. If culverting is required it's length must be kept as short as possible. Ideally, the Environment Agency would wish to see biodiversity and stream improvements incorporated within the development scheme.

In summary both proposals, to either renovate the existing building or provide a new build on the alternative site are feasible. Both proposals will require all sources of flood risk to be identified and assessed within a FRA and suitable mitigation for the risks put forward.

If you have any further flood risk queries relating to this proposal please contact Rob Waite, in the Partnership and Strategic Overview team, on telephone number 01794 834594.

Yours sincerely

Cont/d..

Miss Suzanne Greenwood
Planning Advisor, Environment Agency

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Direct fax

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