



LAND AT HARTS FARM WAY, HAVANT

FLOOD RISK ASSESSMENT

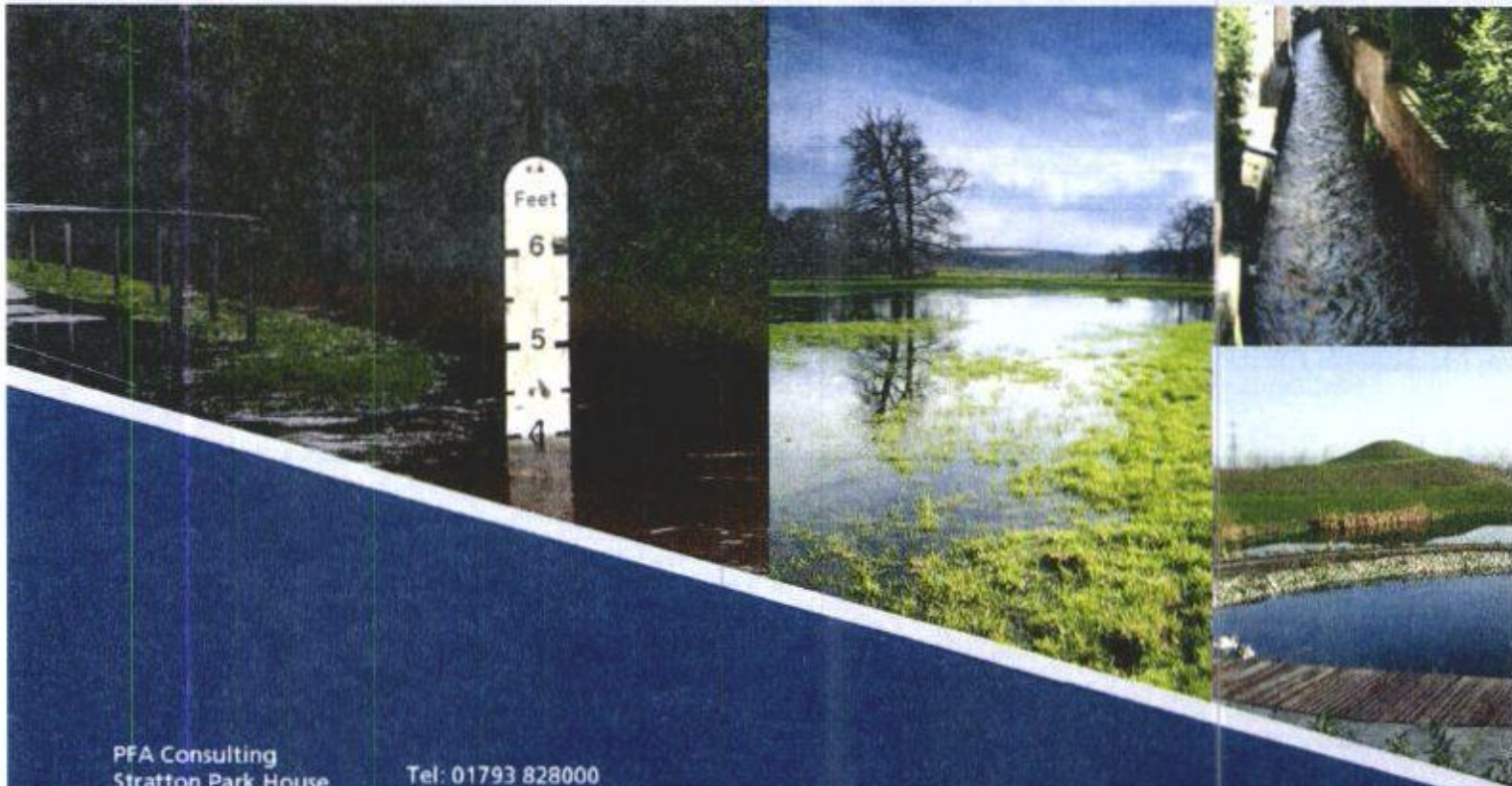
CONROY'S RECYCLING Ltd

VALID APPLICATION

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STRATEGIC PLANNING
HAMPSHIRE COUNTY COUNCIL

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PFA Consulting
Stratton Park House
Wanborough Road
Swindon
Wiltshire

Tel: 01793 828000
Fax: 01793 835500
Email: admin@pfapl.com
Web: www.pfapl.com

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	Name	Date	Initials
Prepared By	C Smith	17.02.2015	<i>CS</i>
Checked By	M Skivington	17.02.2015	<i>MWS</i>

Issue	Date	Comments	Approved
2	25.02.2015		<i>MJP</i>
			M Packer
			BSc(Hons) CEng MICE

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1. INTRODUCTION

- 1.1. This Flood Risk Assessment has been prepared on behalf of Conroy's Recycling Ltd in connection with a material recovery facility on land at Harts Farm Way in Havant.
- 1.2. The overall site comprises around 0.38 hectares, and is located between Harts Farm Way and the Brockhampton Stream in Havant. The location of the site is shown edged red on **Figure 1** below.

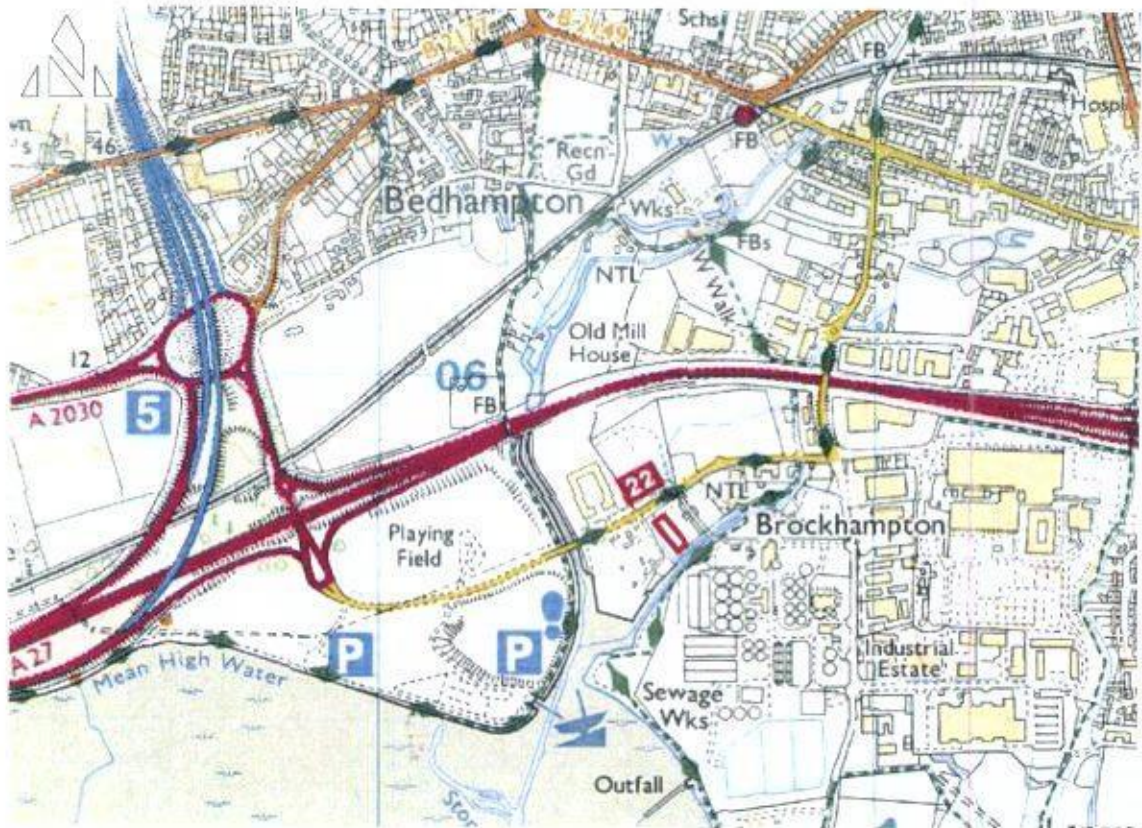


Figure 1: Site Location Plan

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- 1.3. The main purpose of this site-specific Flood Risk Assessment is to provide sufficient flood risk information to support a planning application for the development proposals in order to demonstrate that the development would be appropriately safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, would reduce flood risk overall.

2. SCOPE OF THE ASSESSMENT

- 2.1. The Government's National Planning Policy Framework (NPPF), published in March 2012, sets out the Government's policy on development and flood risk. On 6 March 2014 the Department for Communities and Local Government (DCLG) launched the Government's planning practice guidance to the NPPF as a web-based resource. The category dealing with flooding is contained in Flood Risk and Coastal Change (Reference ID: 7 Updated: 06 03 2014).
- 2.2. The NPPF states in paragraph 100 that Local Plans should be supported by a Strategic Flood Risk Assessment, and should apply a sequential, risk-based approach to the location of development. As set out in the NPPF, inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.
- 2.3. A Strategic Flood Risk Assessment (SFRA) was prepared by Atkins on behalf of Partnership for Urban South Hampshire (PUSH) in December 2007. The SFRA summarises the background and policy for the development of SFRA's, the guiding principles for undertaking a SFRA, the outputs of the SFRA and strategic flood risk management guidance for the LPA.
- 2.4. As set out in paragraph 101 of the NPPF, the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Paragraph 19 in Section 5 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-019-20140306) states that the flood zones, as refined in the SFRA for the area, provide the basis for applying the Sequential Test.
- 2.5. A copy of the Environment Agency's Flood Map for Planning, obtained from its website, which shows the Flood Zones in the vicinity of the site, is reproduced as **Figure 2** below.

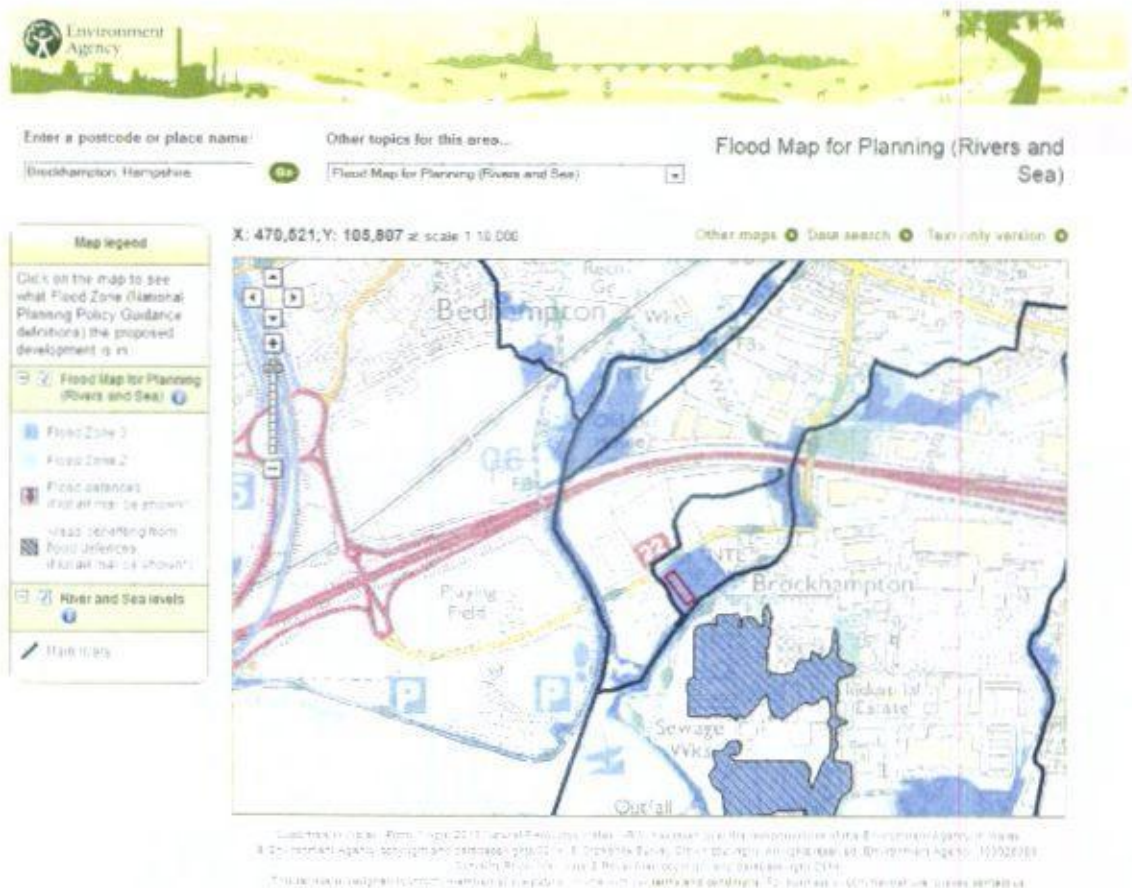


Figure 2: EA Flood Map for Planning

- 2.6. The Environment Agency's Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences, and show the extent of the natural floodplain and the additional extent of an extreme flood. The Environment Agency's Flood Map for Planning shows the area that could be affected by flooding, either from rivers or the sea, coloured dark blue corresponding to Flood Zone 3. The light blue area is Flood Zone 2 and shows the additional extent of an extreme flood from rivers or the sea. These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Where there is no blue shading, this shows the area where flooding from rivers and the sea is very unlikely corresponding to Flood Zone 1.
- 2.7. The red line site boundary has been added to the EA's Flood Map for Planning in Figure 2. From an inspection of the Flood Map it can be seen that the site falls within Flood Zone 3.
- 2.8. As set out in paragraph 103 of the NPPF, local planning authorities should only consider development in flood risk areas appropriate where informed by a site-specific flood risk assessment. Footnote 20 in the NPPF states that a site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems; and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.
- 2.9. Paragraph 30 in Section 10 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-030-20140306) advises that a site-specific flood risk assessment is carried

out to assess the flood risk to and from a development site. The assessment should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users.

- 2.10. For the purposes of applying the NPPF, paragraph 2 in Section 1 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-002-20140306) advises that "flood risk" is a combination of the probability of flooding from all sources - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.
- 2.11. Paragraph 31 in Section 10 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-031-20140306) advises that the information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a SFRA for the area, and the interactive flood risk maps. A flood risk assessment should also be appropriate to the scale, nature and location of development.
- 2.12. Section 26 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-068-20140306) provides a Checklist for the preparation of a site-specific flood risk assessment.
- 2.13. With regard to what further advice is available on the preparation of a site-specific flood risk assessment, paragraph 32 in Section 10 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-032-20140306) refers to the Environment Agency Standing Advice on flood risk.
- 2.14. The Standing Advice contains a Consultation Matrix which sets out when the Environment Agency needs to be consulted by local planning authorities, and gives guidance on what information is required, for different development scenarios. The development falls into the category 'Operational Development less than 1 hectare'. For this category of development falling within Flood Zone 3, the Consultation Matrix indicates that for 'other vulnerabilities' the EA should be consulted with a FRA and Sequential Test evidence and where required confirm the Exception Test has been applied.
- 2.15. The scope of this Flood Risk Assessment is to provide sufficient information to satisfy the relevant requirements of the NPPF, the planning practice Site-Specific Flood Risk Assessment Checklist, and Local Plan Policies.

3. FLOOD RISK ASSESSMENT

Site Location and Local Watercourses

- 3.1. The Site Location Plan and the Environment Agency's Flood Map for Planning are based on the Ordnance Survey map of the area, and show geographical features and identify watercourses and other bodies of water in the vicinity of the site. A site location plan is reproduced in **Appendix 1**.
- 3.2. The site is located to the south Harts Farm Way, south of the A27 in Havant Borough. The site was formerly used as an electricity storage site and is currently being used for the material recovery facility.
- 3.3. The nearest watercourse is Brockhampton Stream, which runs to the south of the site, and a tributary runs further to the west of the site. These watercourses flow into Langstone Harbour which is an inlet of the English Channel.

Development Plan Policy

- 3.4. Havant Borough Local Plan (Core Strategy), March 2011, sets out the broad detail and direction of development in the borough. The document contains strategic policies and some detailed development management policies against which individual planning applications should be assessed.
- 3.5. Relevant policies from the local plan include: Policy CS15 – Flood and erosion risk. Policy CS15 states:-

"Development in areas at risk of flooding now and in the future as identified on the latest Environment Agency flood risk maps and Strategic Flood Risk Assessment climate change maps will only be permitted where:

- 1. It meets the sequential and exception test (where required) in relation to PPS25.*
- 2. The site is located in a low hazard area as defined in the Strategic Flood Risk Assessment.*
- 3. A site-specific flood risk assessment demonstrates that the development will be safe, including the access, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.*
- 4. The scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site.*
- 5. Appropriate flood warning and evacuation plans are in place.*
- 6. New site drainage systems are designed taking account of events which exceed the normal design standard.*

All development will be required to ensure that there is no net increase in surface water run off. Priority should be given to incorporating Sustainable Drainage Systems (SuDS) to manage surface water drainage, unless it is proven that SuDS are not appropriate. Where SuDS are provided arrangements must be put in place for their whole life management and maintenance.

The council will work with partners to implement the Coastal Policy Zones in the North Solent Shoreline Management Plan to ensure that development avoids areas at risk from coastal erosion and coastal flooding and that areas required to offset coastal squeeze and prevent habitat fragmentation, to allow species to adapt to climate change, are identified and protected from development."

The Sequential Test

- 3.6. The site is currently being used for the material recovery facility, which includes the cleaning, sorting and binding of inert arisings from the trenches that are being dug in the area as part of the Southern Gas Mains replacement programme. As no change in use of the site is proposed it is considered that the sequential test is satisfied.

The Development Proposals

- 3.7. A Topographical Survey has been undertaken and a copy of the site survey showing the layout of the site, Digital Terrain Surveys' drawing reference number DTS200814-0M5B, is reproduced in **Appendix 2**. The lifetime of the material recovery facility on the site is for a further 15 years.

Site Levels

- 3.8. The site survey reproduced in **Appendix 2** contains relative site levels and indicates that the site is generally flat, with a gentle slope from north to south. The levels shown on the survey relate to a temporary benchmark and are not based on Ordnance Datum. LiDar data for the site has therefore been obtained in order to relate site levels to Ordnance Datum.
- 3.9. The LiDar data indicates that the northern boundary of the site is at a level of around 3.60m AOD and the southern boundary is at a level of around 3.00m AOD. The lowest level on the site is around 3.00m AOD in the south and south western parts of the site. A contour plan has been produced based on the LiDar data, and a copy of Drawing number C731/2 is contained in **Appendix 3**.

Probability

- 3.10. Enquiries have been made to the Environment Agency to obtain: the detailed Flood Map of the area; the latest available modelled flood levels for the watercourses and tidal flooding in the vicinity of the site; the modelled flood extents; flood defence locations; details of historic flood events; and local flood history data from all sources of flooding. A copy of the Environment Agency's response, including copies of the detailed Flood Map, Model Nodes Maps, and a Map showing Modelled 1 in 100 year and 1 in 1000 year Flood Levels, is reproduced in **Appendix 4**.
- 3.11. The site falls within Flood Zone 3. Table 1: Flood Zones, in Section 25 of ID: 7 of the planning practice guidance to the NPPF (Reference ID: 7-065-20140306), provides a definition of each Flood Zone.
- 3.12. Table 1 divides Flood Zone 3 into Zone 3a High Probability and Zone 3b The Functional Floodplain. In relation to the identification of the functional floodplain, paragraph 15 in Section 3 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-015-20140306) advises that land which would naturally flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood (such as a flood attenuation scheme) in an extreme (0.1% annual probability) flood, should provide a starting point for consideration and discussions to identify the functional floodplain.
- 3.13. Based on the Environment Agency's modelled flood levels provided in **Appendix 4**, the site is not affected by the 1 in 100 year flood, but is affected when climate change is taken into account. As the site does not naturally flood during the 1 in 20 year event it does not fall in the functional floodplain. The site therefore falls within Flood Zone 3a, which is defined as a 'high probability' zone assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%).

Flood Risk Vulnerability and Flood Zone 'Compatibility'

- 3.14. Table 2: Flood Risk Vulnerability Classification, in Section 25 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-066-20140306), categorises different types of development according to their vulnerability to flood risk. Table 3: Flood risk vulnerability and flood zone 'compatibility', in Section 25 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-067-20140306), maps these vulnerability classes against the flood zones to indicate where development is appropriate and where development should not be permitted.
- 3.15. With reference to Table 2, the current material recovery facility falls into the 'Less Vulnerable' flood risk vulnerability classification, which includes waste treatment (except landfill and hazardous waste facilities); and minerals working and processing (except for sand and gravel working).
- 3.16. With reference to Table 3, development for less vulnerable uses, which includes the material recovery facility, is appropriate in Flood Zone 3a.

Climate Change

- 3.17. The NPPF requires development to take account of the impacts of climate change. The allowances to be made for climate change effects when assessing flood risk are related to the lifetime of the development.
- 3.18. Guidance on the lifetime of development is provided in paragraph 26 in Section 7 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-026-20140306). The lifetime of a non-residential development depends on the characteristics of that development. The lifetime of the material recovery facility on the site is for a further 15 years.
- 3.19. Under heading 4 in the Site-Specific Flood Risk Assessment Checklist in Section 26 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-068-20140306), it states that further information on climate change and development and flood risk is available on the Environment Agency's web site. The web site link goes to the Environment Agency's 'Climate change allowances for planners', dated September 2013. Table 1 in this guidance provides recommended contingency allowances for net sea level rises. For south-east England the recommended allowance is 4.0mm per year from 1990 to 2025, 8.5mm per year from 2025 to 2055, 12.0mm from 2055 to 2085, and 15mm from 2085 to 2115.
- 3.20. Table 2 in 'Climate change allowances for planners' provides recommended precautionary sensitivity ranges for peak rainfall intensity, peak river flow, offshore wind speed and wave height. With reference to Table 2 the appropriate allowance for climate change is to increase the peak river flow by 20% and, when designing flood risk management measures, to increase the peak rainfall intensity for the 1 in 100 year storm event by 30%, as a worst case scenario.

Standard of Protection

- 3.21. In terms of providing an acceptable standard of protection against flooding for new development, the Environment Agency's Standing Advice on surface water management good practice principles and standards, published in April 2012, states that no flooding of property should occur as a result of a 1 in 100 year storm event (including an appropriate allowance for climate change), or a 1 in 200 year tidal event (including an appropriate allowance for climate change).

Definition of the Flood Hazard

- 3.22. In addition to flooding from rivers and the sea, it is also necessary to consider all other potential sources of flooding, which include directly from rainfall on the ground surface and rising

groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

- 3.23. The Environment Agency's interactive Flood Hazard Maps, on its website, include maps showing risk of flooding from rivers and sea, from reservoirs, and from surface water, and indicate the extent, depth and velocity of water for a number of scenarios. These Maps are known as Risk of Flooding from Rivers and Sea Map, Risk of flooding from Surface Water Map, and Risk of flooding from Reservoirs Map. The Maps show the chance of flooding in one of four categories: High (>1 in 30), Medium (<1 in 30), Low (1 in 100-1000), and Very Low (<1 in 1000).
- 3.24. The Environment Agency advises that the information provided by the Flood Hazard Maps is not suitable for land-use planning and the Flood Map for Planning needs to be used for this purpose. Nonetheless these Flood Hazard Maps contain information which needs to be taken into account as part of a flood risk assessment.

Flooding from Watercourses and the Sea

- 3.25. The nearest watercourse is Brockhampton Stream to the south and a tributary runs further to the west of the site. These watercourses flow into Langstone Harbour and which is an inlet of the English Channel.
- 3.26. The Environment Agency's Flood Map for Planning shows the extent of the natural floodplain and the additional extent of an extreme flood. Based on the Environment Agency's modelled flood levels provided in Appendix 4, the site does not lie within the functional floodplain but falls within Flood Zone 3a.
- 3.27. The modelled flood levels in Appendix 4 indicate that the flood level for the 1 in 100 year flood event is the same as the modelled level for the 1 in 1000 year event at 2.8m AOD. Applying the climate change allowances over the 15 year lifetime of the development, as set out in Paragraph 3.19 above, adds 82.5mm ($10 \times 4 + 5 \times 8.5$) to the 1 in 100 year flood level. Therefore the 1 in 100 year fluvial flood level, including an appropriate allowance for climate change is 2.8825m AOD. Over the lifetime of the development the 1 in 100 year flood level, including climate change, is therefore less than the lowest ground level on the site of 3.0m AOD. Based on a lifetime of 100 years the corresponding design flood level is 3.9m AOD ($2.8 + [10 \times 4 + 5 \times 8.5 + 30 \times 12 + 30 \times 15]$), as shown on the 1 in 100 year + climate change flood outline map in Appendix 4.
- 3.28. The extreme still water tide levels relevant to the site have been provided by the Environment Agency and are reproduced in the email contained in Appendix 4. These extreme sea level values are based on the JBA Extreme Sea Levels Report December 2004 and relate to Langstone Harbour as shown in Tables 7 and 8 of the SFRA. They include the effect of storm surge and climate change sea level rises. From Tables 7 and 8 the 1 in 200 year tidal levels are 3.3m AOD in 2025 and 3.6m AOD in 2055. By interpolation, the 1 in 200 year tidal level in 2030, corresponding to a 15 year lifetime, is 3.35m AOD. During this extreme tidal event the flood depth at the site would be around 0.35m.

Flooding from Surface Water

- 3.29. The Environment Agency's Risk of Flooding from Surface Water Map indicates where surface water may be expected to flood or pond. Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. A copy of the Environment Agency's Risk of Flooding from Surface Water Map is reproduced in Figure 3 below.

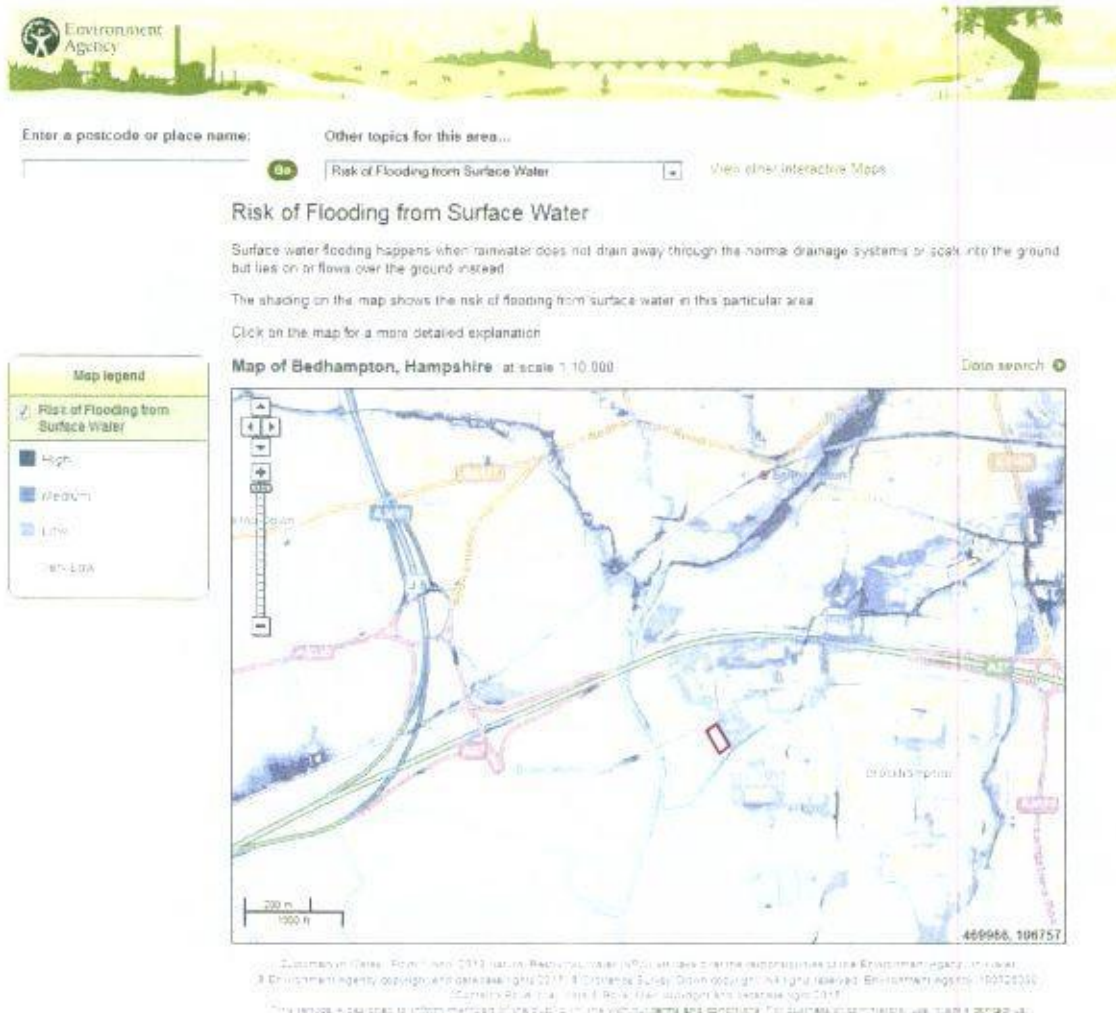


Figure 3: EA Risk of Flooding from Surface Water Map

- 3.30. The Risk of Flooding from Surface Water Map shows the site contains a small area with a Low (between 1 in 1000 and 1 in 100) chance of surface water flooding, but this assumes the existing drainage system is blocked. The associated Surface Water Depth and Surface Water Velocity Maps indicate that for a Low chance of occurring the area would only have surface water flooding to a depth of up to 300mm with a velocity of over 0.25 m/s.

Flooding from Groundwater

- 3.31. Groundwater flooding is most likely to occur in low-lying areas underlain by water-bearing permeable rocks termed aquifers. These may be extensive regional aquifers in chalk or sandstone, or localised sands or river gravels in valley bottoms underlain by less permeable rock. Groundwater flooding occurs as a result of water rising from the underlying rocks or from water flowing from abnormal springs. This tends to occur after long periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. In low-lying areas the water table is usually at shallower depths, so during very wet periods, all the additional groundwater flowing towards these areas can cause the water table to rise to the surface causing groundwater flooding.
- 3.32. In relation to groundwater flooding, the SFRA indicates the site falls within a 'major' groundwater vulnerability zone.

Flooding from Overwhelmed Sewers and Drainage Systems

- 3.33. Flooding from sewers and drainage systems occurs when the sewer or drainage system is overwhelmed as a result of a blockage or excessive flow exceeding its capacity. There is no foul sewer network crossing the site.
- 3.34. The SFRA does not identify any incident of sewer flooding affecting the site.

Flooding from Artificial Sources

- 3.35. The Environment Agency's Risk of Flooding from Reservoirs Map indicates the site is unaffected by flooding from any reservoirs.
- 3.36. A summary of the potential risk from all sources of flooding associated with the use on the site is shown in **Table A** below.

Table A: Potential Flood Risk from All Sources of Flooding

Flood Source	Potential Risk				Description
	Very Low	Low	Medium	High	
Watercourses	X				The site is located in Flood Zone 3a. Over the lifetime of the development (15 years) the design flood level, including climate change, is 2.8825m which is lower than the site ground level.
Tidal		X			During the extreme 1 in 200 year tidal event the flood depth at the site would be around 0.35m
Surface Water		X			The site contains a very small area which is at low risk of flooding from surface water.
Groundwater		X			The Environment Agency does not have any record of groundwater flooding in the area.
Overwhelmed Sewers	X				There is no foul sewer network crossing the site. The SFRA does not identify any incident of sewer flooding affecting the site.
Artificial Sources	X				The site is not affected.

- 3.37. The SFRA, and historic flood information provided by the Environment Agency, provides an assessment of the impact of other sources of potential flooding. Based on the SFRA there are no historic flood incidents recorded on the site from all sources of potential flooding. The Environment Agency has confirmed it has no record of flooding to this area.
- 3.38. The potential flood risk to the site from all sources of flooding is considered to be low.

Sustainable Drainage Systems

- 3.39. Government policy set out in paragraph 103 of the NPPF expects local planning authorities to give priority to the use of sustainable drainage systems (SuDS) in determining planning applications.
- 3.40. Paragraph 51 in Section 21 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-051-20140306) advises that sustainable drainage systems are designed to control surface water runoff close to where it falls and mimic natural drainage as closely as

possible. Sustainable drainage systems also provide opportunities (in line with other policies in the NPPF) to:

- reduce the causes and impacts of flooding;
- remove pollutants from urban runoff at source;
- combine water management with green space with benefits for amenity, recreation and wildlife.

- 3.41. Guidance on the design and construction of SuDS is provided in the 'Interim Code of Practice for Sustainable Drainage Systems', published by the National SUDS Working Group in July 2004, in other Ciria documents including Ciria C697 'The SUDS Manual' published in 2007, as well as in the Environment Agency's document entitled 'Sustainable Drainage Systems (SUDS) An introduction'.
- 3.42. There are a number of potential SUDS techniques that might be used on any particular site. These include rainwater harvesting systems, pervious pavements, infiltration devices such as soakaways and infiltration trenches, as well as flow balancing methods including swales, ponds/detention basins, and underground storage facilities.
- 3.43. Approved Document H of the Building Regulations states at Section 3.2 that surface water drainage should discharge to a soakaway or other infiltration system where practicable; discharge to a watercourse may require consent from the Environment Agency; and where other forms of outlet are not practicable, discharge should be made to a sewer.
- 3.44. The use of soakaways, pervious pavements and infiltration devices to discharge surface water runoff to ground depends upon the underlying strata having a suitable permeability. In addition, the Environment Agency will seek to control discharges into underground strata from areas subject to contamination or where groundwater is judged to be at risk from pollution caused by possible contamination.
- 3.45. The SUDS Manual, and CIRIA C687 'Planning for SuDs - making it happen', promote the use of a SUDS 'management train', which seeks to address the quality and quantity of runoff at all stages of a drainage system. It uses a hierarchy of techniques, namely: i) prevention, ii) source control, iii) site control and iv) regional control. The drainage strategy for the development seeks to follow the concept of a SUDS management train.

Ground Conditions

- 3.46. The British Geological Survey (BGS) geological mapping of the area shows the majority of the site is underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, and Culver Chalk Formation. Superficial deposits of 'Alluvium' (Clay, Silt, Sand and Gravel); and 'Beach and Tidal Flat Deposits' are present across parts of the site.
- 3.47. Based on the Flood Studies Report Winter Rainfall Acceptance Potential (WRAP) Map, as shown reproduced on Drawing Number C731/1 in **Appendix 5**, the site is located in a 'Soil Index Class 3' area. Soil Index Class 3 affords some permeability to allow surface water runoff to discharge to ground by infiltration.

Groundwater Source Protection

- 3.48. From an inspection of the Environment Agency's Aquifer Designation Map on its website the site is underlain by a 'principal aquifer'. A copy of the Environment Agency's Aquifer Designation Map is reproduced in **Figure 4** below.

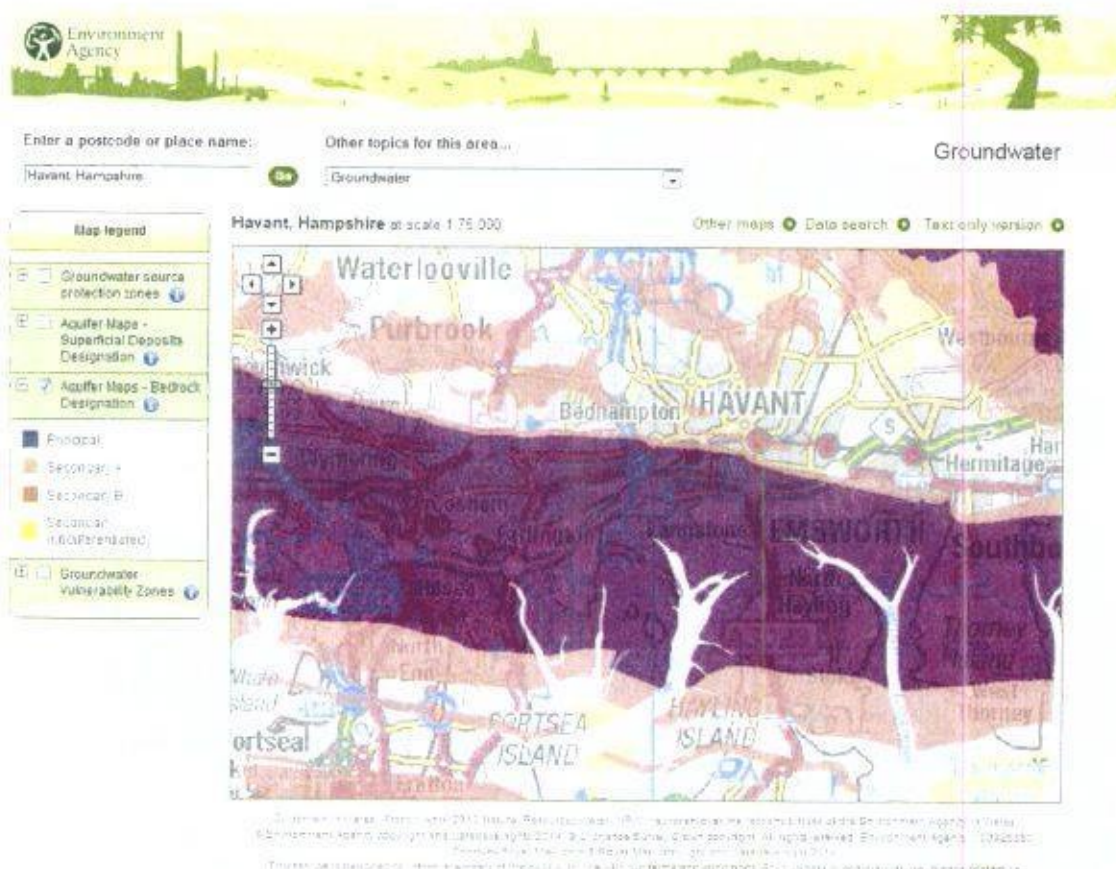


Figure 4: EA Aquifer Designation Map

- 3.49. From an inspection of the Environment Agency's Groundwater Source Protection Zone Map the site does not lie in a Groundwater Source Protection Zone.

Surface Water Drainage Strategy

- 3.50. A sustainable drainage strategy, involving the implementation of SuDS, is currently in use for managing the disposal of surface water runoff from the development on the site. The drainage strategy involves draining surface water runoff to gravel areas where infiltration to ground takes place.
- 3.51. The drainage strategy ensures that surface water arising from the developed site is managed in a sustainable manner to mimic the surface water flows arising from the site prior to the development, while reducing the flood risk to the site itself and elsewhere. No increase in runoff rates from the site would occur, as no change in the existing use is proposed.

Safe Access and Egress

- 3.52. Safe access and egress to and from the development is a route that is safe for use without the intervention of the emergency services or others.
- 3.53. Paragraph 39 in Section 14 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-039-20140306) advises that access routes should allow occupants to safely access and exit their dwellings in design flood conditions. Wherever possible, safe access routes should be provided that are located above design flood levels and avoiding flow paths. Where this is not possible, limited depths of flooding may be acceptable.

- 3.54. Safe access and egress to and from the site is available from Harts Farm Way.

Residual Risk

- 3.55. Paragraph 41 in Section 14 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-041-20140306) advises that residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions.
- 3.56. The site lies within Flood Zone 3a and, in accordance with the NPPF, development for less vulnerable uses, which includes the material recovery facility, is appropriate in Flood Zone 3a.
- 3.57. The current drainage measures would ensure that there is little or no residual risk of property flooding occurring.
- 3.58. For extreme tidal events appropriate flood warning and evacuation arrangements would be put in place, and suitable warning notices would be displayed on the site to inform site personnel of the degree of flood risk and the action to be taken in the event of a flood including routes for safe access and egress.

Overland Flood Flow Paths

- 3.59. Overland flood flow paths would follow the natural topography of the land towards the south western corner, towards the watercourse. The existing infiltration device would reduce uncontrolled overland flows.

Foul Water Drainage Arrangements

- 3.60. There is no foul sewer network crossing the site. The Portacabins on site have waste tanks which are periodically emptied, and it is proposed that these arrangements would continue.

Maintenance Strategy

- 3.61. Paragraph 52 in Section 14 of the Flood Risk and Coastal Change planning practice guidance to the NPPF (Reference ID: 7-052-20140306) advises that when planning a sustainable drainage system, developers need to ensure their design allows for maintenance of the system, so that it continues to provide effective drainage for properties.
- 3.62. Guidance on the operation and maintenance requirements of sustainable drainage systems is contained in The SUDS Manual (CIRIA C697). There are three categories of maintenance: regular, occasional and remedial. The Occupier of the site would be responsible for putting in place a suitable maintenance plan.

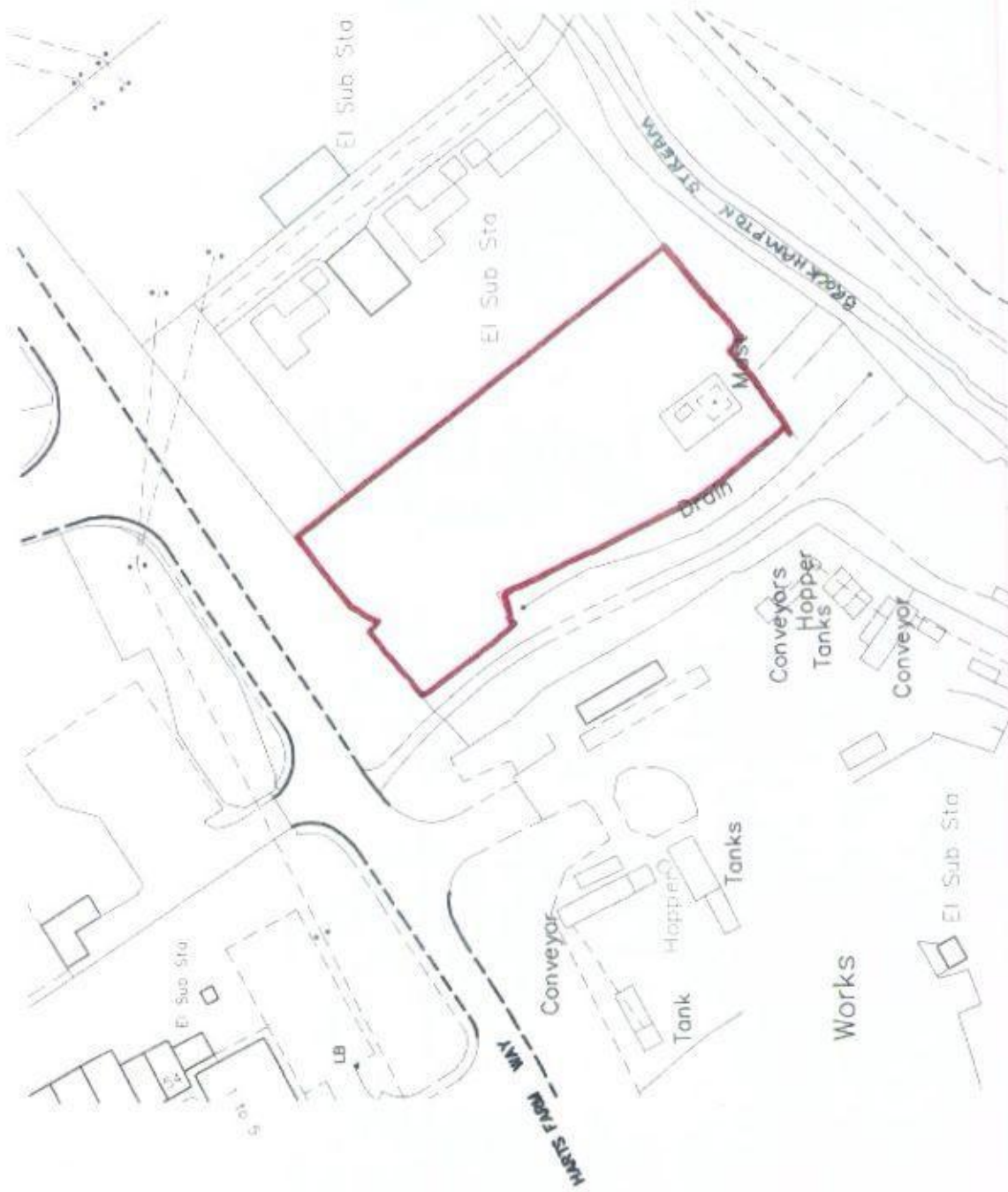
4. CONCLUSIONS

- 4.1. This Flood Risk Assessment has been prepared in connection with a material recovery facility on land at Harts Farm Way in Havant.
- 4.2. The overall site comprises 0.38 hectares. It was formerly used as an electricity storage site and is currently being used for the material recovery facility.
- 4.3. The development proposals are for the continuation of the existing use on the site. The lifetime of the material recovery facility on the site is for a further 15 years.
- 4.4. The nearest watercourse is Brockhampton Stream which runs to the south of the site and a tributary runs further to the west of the site. These watercourses flow into Langstone Harbour which is an inlet of the English Channel.
- 4.5. Enquiries have been made to the Environment Agency to obtain relevant flood risk information for the site. With reference to the Environment Agency's Flood Map for Planning, the site falls within Flood Zone 3a.
- 4.6. The site is currently being used for the material recovery facility, which includes the cleaning, sorting and binding of inert arisings from the trenches that are being dug in the area as part of the Southern Gas Mains replacement programme. As no change in use of the site is proposed it is considered that the sequential test is satisfied.
- 4.7. In relation to Flood Risk Vulnerability and Flood Zone 'Compatibility', with reference to the planning practice guidance to the NPPF, development for less vulnerable uses, which includes the material recovery facility, is appropriate in Flood Zone 3a.
- 4.8. In terms of providing an acceptable standard of protection against flooding for new development, the Environment Agency's Standing Advice on surface water management good practice principles and standards states that no flooding of property should occur as a result of a 1 in 100 year storm event (including an appropriate allowance for climate change) or a 1 in 200 year tidal event (including an appropriate allowance for climate change).
- 4.9. Based on the Environment Agency's modelled flood levels, the site is not affected by the 1 in 100 year flood, but is affected when climate change is taken into account. Over the lifetime of the development the 1 in 100 year flood level, including climate change, is 2.8825m AOD which is less than the lowest ground level on the site of 3.0m AOD.
- 4.10. The extreme still water tide levels relevant to the site have been provided by the Environment Agency. The 1 in 200 year tidal level in 2030, corresponding to a 15 year lifetime, is 3.35m AOD. During this extreme tidal event the flood depth at the site would be around 0.35m. There is no residential property on the site and so the flood risk to the site from rivers and the sea is considered to be low.
- 4.11. For extreme tidal events appropriate flood warning and evacuation arrangements would be put in place, and suitable warning notices would be displayed on the site to inform site personnel of the degree of flood risk and the action to be taken in the event of a flood including routes for safe access and egress.

- 4.12. In addition to flooding from rivers and the sea, this Flood Risk Assessment has considered all other potential sources of flooding, which include directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources.
- 4.13. An assessment has been made of the potential risk from all sources of flooding to and from the development site, with reference to available flood risk information, and the potential flood risk to the site from all sources of flooding is considered to be low.
- 4.14. The Strategic Flood Risk Assessment, and historic flood information provided by the Environment Agency, provides an assessment of the impact of other sources of potential flooding. Based on the SFRA there are no historic flood incidents recorded on the site from all sources of potential flooding. The Environment Agency has confirmed it has no record of flooding to this area.
- 4.15. The British Geological Survey (BGS) geological mapping of the area shows the majority of the site is underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, and Culver Chalk Formation. Superficial deposits of 'Alluvium' (Clay, Silt, Sand and Gravel); and 'Beach and Tidal Flat Deposits' are present across parts of the site.
- 4.16. A sustainable drainage strategy, involving the implementation of SuDS, is currently in use for managing the disposal of surface water runoff from the development on the site. The drainage strategy involves draining surface water runoff to gravel areas where infiltration to ground takes place.
- 4.17. The drainage strategy ensures that surface water arising from the developed site is managed in a sustainable manner to mimic the surface water flows arising from the site prior to the development, while reducing the flood risk to the site itself and elsewhere. No increase in runoff rates from the site would occur, as no change in the existing use is proposed.
- 4.18. The overall conclusions drawn from this Flood Risk Assessment are that the development would be appropriately safe for its lifetime taking account of the vulnerability of its users, and the development would not increase flood risk elsewhere.

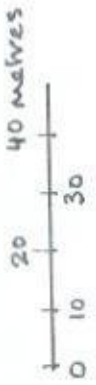
Appendices

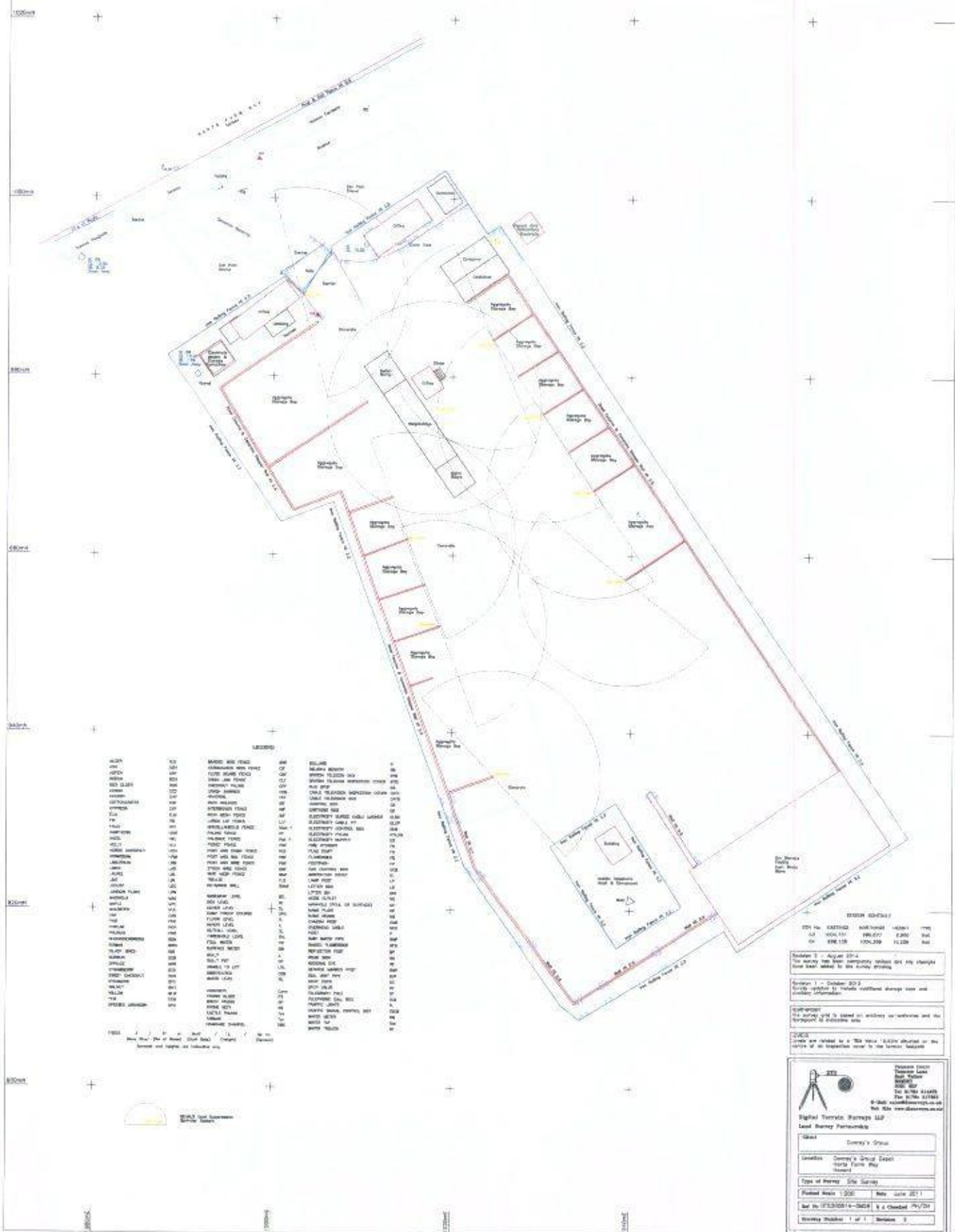
Appendix 1



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SCALE	DATE
1/1250 @ A4	JUNE 10
MATERIAL RECOVERY FACILITY	







Stratton Park House, Wolverhampton Road
Sutton, Walsley, Walsley, Walsley
Telephone
01925 838000
Facsimile
01925 841500
Email
info@pfa.co.uk
Website
www.pfa.co.uk

Notes

Contours based on LiDAR data supplied by
Landmark Engineering

No.	Date	Description	By	Check
1	10/01/2011	Initial site inspection		
2	10/01/2011	Revised		

Conroy's Recycling Ltd

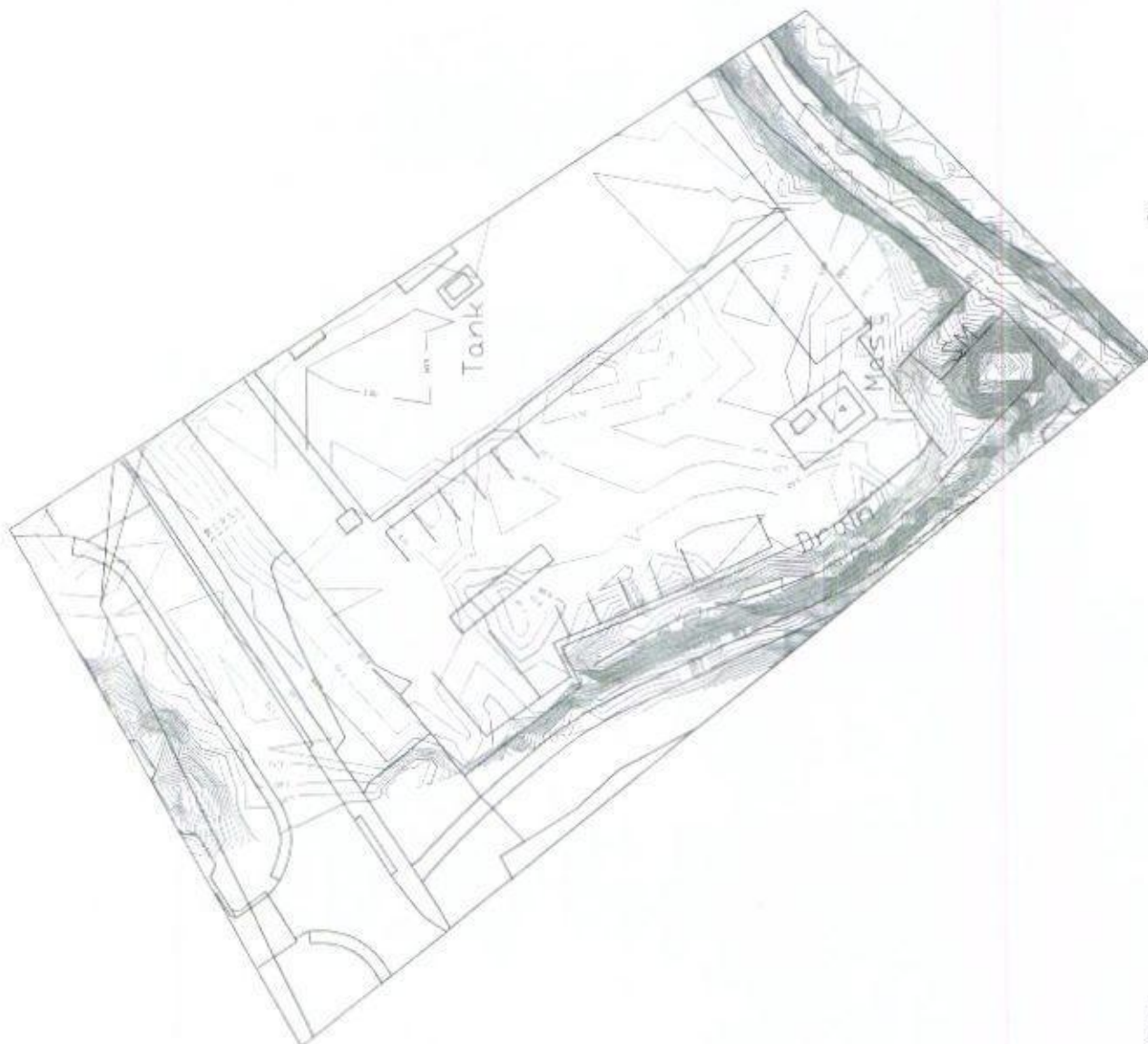
Project

Land at Harts Farm Way,
Havant

Drawing Title

Site Levels Based on LiDAR
Data

Drawing No.	C731/2	Rev A
Date	February 2011	
Scale	1:500 @ A4	
Drawn By	WMS	
Checked By	WMS	
E-Mail	WMS@pfa.co.uk	
File Ref	C731-01.dwg	



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