



Flood Risk Assessment & Drainage Strategy

**Mill Rythe Holiday Village, 16 Havant Rd, Hayling Island
PO11 0PB**

Away Resorts

December 2020

Preface

Site Address:	Mill Rythe Holiday Village, 16 Havant Rd, Hayling Island PO11 0PB
NGR:	E: 473076 N: 100757
Site Use:	Mill Rythe Holiday Village
Proposed Use	Application for full planning permission, pursuant to APP/16/01237, for the redevelopment of the holiday site including the demolition of redundant chalets, use of land for the siting of 112 holiday caravans with areas of open recreational space, cease the use of the land for pitch and putt purposes and retain the remaining pitch and putt area as a managed wildlife area including the provision of an ecology bund and ditch, landscaping, the siting of three bird hides with bat roost in their roof spaces and a mown circular wildlife walkway.
Site Area:	Site ownership boundary: 13.14ha Planning Application Area: 5.7ha
Date of Inspection:	23 September 2020
Avison Young Contact:	David Hoppe DD: 0121 609 8828 Email: david.hoppe@avisonyoung.com
Instruction Number:	01C000816

Report Control:

Status:		Date:
Version 1		December 2020
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1. Scope of Instruction and Brief

Objectives

- 1.1 Instructions were received from Away Resorts (the Client) to undertake a Flood Risk Assessment and Drainage Strategy to support a planning application for the redevelopment of Mill Rythe Holiday Village including; the demolition of redundant chalets, use of land for the siting of 112 holiday caravans (in lieu of the 87 chalet units) with areas of open recreational space, cease the use of the land for pitch and putt purposes and retain the remaining pitch and putt area as a managed wildlife area including the provision of an ecology bund and ditch, landscaping, the siting of three bird hides with bat roost in their roof spaces and a mown circular wildlife walkway.
- 1.2 A copy of the proposed Masterplan can be found in **Appendix I** and is discussed further within Section 4 of this report.

Background

- 1.3 On 5th May 2017, planning permission was granted for the full redevelopment of the Application Site under planning application APP/16/01237. This included 203 holiday caravans and refurbishment of two storey holiday chalets to form 87 units of holiday accommodation. The permission did not increase the number of permitted units of holiday accommodation which remained at 290.
- 1.4 Following the granting of planning permission, a number of discharge of condition applications were submitted and approved. Planning permission was then commenced on site in January 2020 and 10 bases were laid to facilitate the siting of 10 holiday lodge caravans. As the development was commenced within the statutory timeframe, the planning permission remains extant and is capable of being implemented in full.
- 1.5 However, Away Resorts has been unable to justify or attract the funding required for the proposed refurbishment of the existing chalet buildings approved under APP/16/01237. This is because the cost of refurbishing each individual unit within the chalets is higher than the cost of providing a replacement caravan.
- 1.6 **Therefore, the Applicant seeks permission to replace all the remaining chalet units, 87 in total, with 112 caravans to create a more viable project to attract the necessary development finance.**

- 1.7 Combined with the implementation of APP/16/01237 on the remaining parts of the park, the proposed development seeks to increase the total number of units of holiday accommodation at the park from 291 to 309, an increase of 18 holiday accommodation units which will be in the form of holiday caravans.
- 1.8 The proposed changes over and above these which have been granted by APP/16/01237 can be found in **Section 4** of this report.

New Planning Application

- 1.9 For reference purposes within this report only, we have titled the two areas of the Park where the new units will be sited as Area no.1; located in the central portion of the Park and Area no.2; located within the eastern portion of the Park. Please see Figure 2 (page 5) which shows their locations on a plan:
- Area no.1: Siting of 54 holiday caravans; and
 - Area no.2: Siting of 58 holiday caravans. In addition, an ecology bund & ditch is proposed, landscaping and the siting of three bird hides.

Data Sources

- 1.10 This report is based upon a detailed review of the following readily available documentation:
- The North Solent Shoreline Management Plan;
 - Hampshire County Council Preliminary Flood Risk Assessment, April 2011;
 - Hampshire Local Flood Risk Management Strategy, July 2013;
 - Havant Borough Council Strategic Flood Risk Assessment (Local Plan Sites), November 2018; and
 - Southern Water and Portsmouth Water sewer maps.
- 1.11 Regulatory enquiries with the Environment Agency, Hampshire County Council (Lead Local Flood Authority) and Southern Water have been undertaken to obtain historic flood records and an understanding of the local flood risk (if any).
- 1.12 The findings and opinions conveyed in this report are based on information obtained from a variety of sources as detailed in the report and which Avison Young assumes to be reliable, but has not been independently confirmed. Therefore, Avison Young cannot and does not guarantee the authenticity or reliability of third party information it has relied upon.
- 1.13 All Ordnance Survey Mapping contained within this report is © Crown Copyright. All rights reserved, licence number 100000795.

Report Preparation

- 1.14 Local Planning Authorities are advised by the Government's National Planning Policy Framework (NPPF) to consult the Environment Agency on development proposals in areas at risk of flooding and/or for sites greater than 1 hectare in area. In such circumstances the Environment Agency would require a Flood Risk Assessment to be submitted in support of the planning application for the proposed development.
- 1.15 In order to satisfy any potential concerns the Environment Agency may have with the proposed development at the site; this report has been prepared to assess the requirements of NPPF through:
- Assessing whether the proposed development is likely to be affected by flooding;
 - Assessing whether the proposed development is appropriate in the suggested location; and
 - Presenting measures necessary to mitigate any flood risk identified, to confirm that the proposed development and occupants would be safe, whilst ensuring that flood risk would not be increased elsewhere.

2. Site Location

- 2.1 The following site location plan and table provides a summary of the site's location and surrounding land uses.

Item	Description	
Site Location	The subject site is situated on the east coast of Hayling Island and is accessed from the A203, the main arterial link between the A27 and Hayling Island. Portsmouth is located approximately 6.5km to the west of the site. Site location and layout plans are provided below.	
Surrounding Land Uses	North	Mill Rithe channel and estuary.
	East	Mill Rithe channel and estuary with the Emsworth Channel and Chichester Harbour beyond.
	South	Tournerbury Golf Course with Tournerbury Estate beyond.
	West	Vacant parcel of land with Mill Rythe Infant and Junior School beyond.



Figure 1: Site Location Plan (boundaries shown are indicative only)

3. Site Setting

3.1 The following site layout plan and table provides a summary of the site's condition and setting.

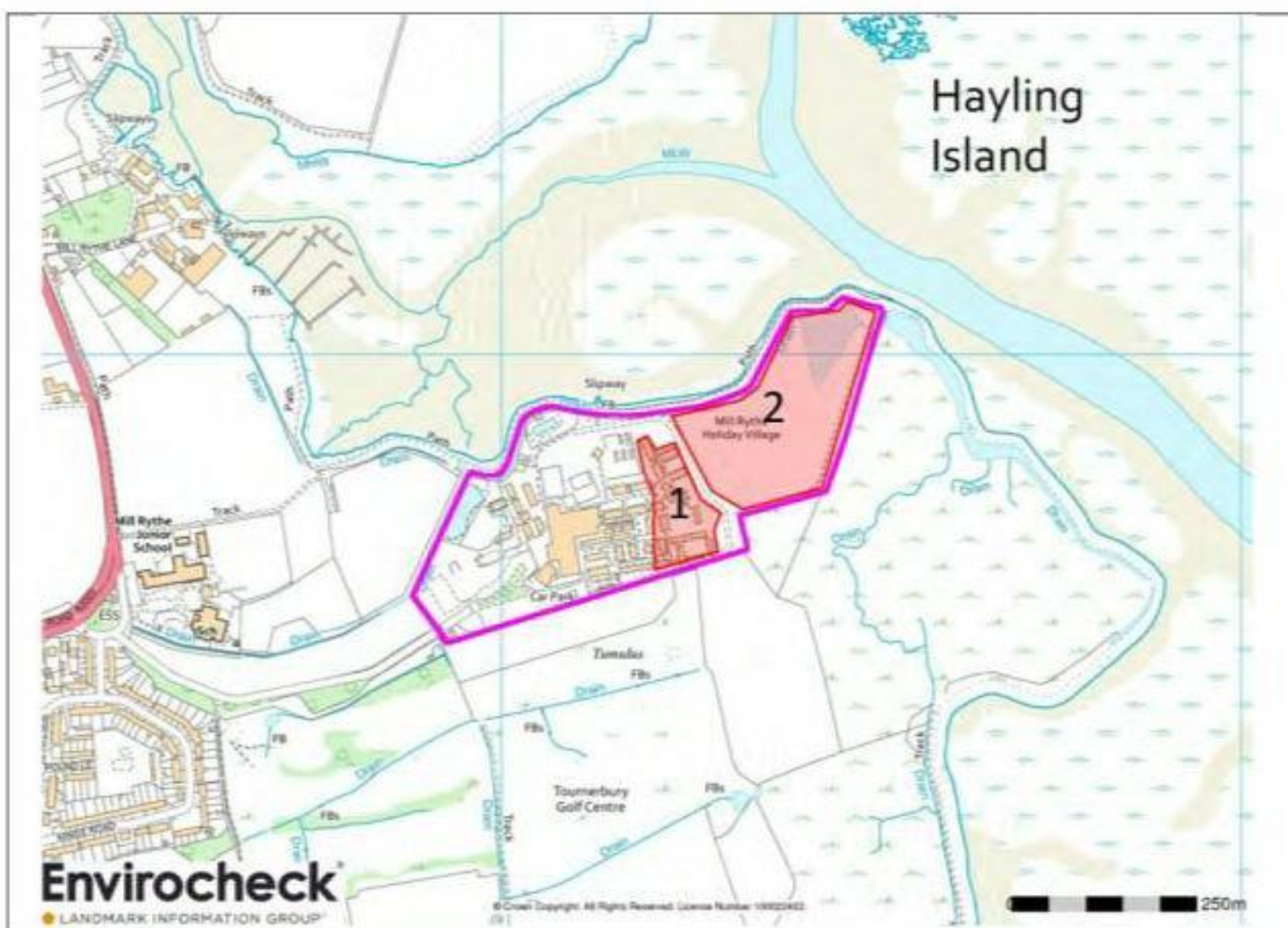


Figure 2: Site Layout Plan (boundaries shown are indicative only)

Item	Description
General Description	The subject site is irregular in extent totalling 13.14ha in size, with the application extent totalling 5.7ha. The Park is accessed off the A3023 along a private road which is approximately 500m in length. The western portion of the site generally consists of extensive car and coach parking. There is a boating lake located in the northwest corner of the site. Located within the central portion of the site there are chalet buildings comprising of 260 units of chalet accommodation and an additional 10 caravan pitches which were recently constructed under planning application APP/16/01237. The parks facilities are also predominately located within the centre of the site including; offices, reception, ballroom, restaurant bar, indoor pool and hair/ beauty salon, a restaurant, and playground. An outdoor swimming pool is located in the northern corner of the site. The eastern portion of the site was formally a golf course and is now overgrown, with long grass and brambles. A fishing pond is located in the north-eastern

Item	Description
General Description (continued)	corner. A drainage ditch runs along the entire northern site boundary. This feature discharges into the fishing pond. As part of this planning application, there are two development areas which we have referenced as Area no.1 and no.2. <u>Area no.1</u> This area totals approximately 1.38ha and consists of 18 standard rooms, standard plus and Ambassador holiday chalet buildings. The northern, eastern and southern boundaries are marked by a pedestrian track which runs around the perimeter of the Park. The western boundary is marked by facility buildings. <u>Area no. 2</u> This area totals approximately 4.21ha and was formally a golf course. The area is now overgrown with grass and brambles. The northern boundary is marked by a drainage ditch. At the time of the inspection, this feature was dry. An Environment Agency earth embankment flood defence is located immediately beyond the ditch. In the north-eastern corner there is a fishing pond which during rainfall events receives flows from the ditch. The southern boundary is marked by an access path which provides access to the Estuary. The access path continues along the southern boundary until it joins the Park access road which leads to the Park entrance. A copy of the existing park plan can be found in Appendix I.
Topography	A topographical survey of the site has been carried out on behalf of A&M Architectural Partnership LLP in September 2020 (ref. MLR-Extg-Topo). <u>General Park Levels</u> This survey indicates that the Park generally slopes in a north-easterly direction towards the Mill Rithe. Within the western portion of the Park, levels fall in a north-easterly direction from approximately 2.4m AOD to 1.8m AOD. Within the central portion of the site, levels also fall in a north-easterly direction from approximately 2.85m AOD to 1.85 AOD. The drainage ditch which runs along the northern boundary falls to a depth of 0.22m AOD. The eastern portion of the site generally falls in a north-easterly direction from approximately 1.42m AOD to 0.70m AOD in the north-eastern corner, adjacent to the fishing lake. The access track which runs along the eastern and southern boundary has a level of approximately 1m AOD. <u>Development Areas</u> Within Area 1 the levels are generally 2.5m AOD to the south, falling to 1.85m AOD within the northern portion of the development area. Where the caravans are proposed within Area 2, the levels are generally between 1.20m AOD to 1.50m AOD.

Item	Description
	<u><i>Flood Defences</i></u> The Environment Agency flood embankment which marks the northern and north-eastern site boundary has a general crest level of 3.5m AOD falling to 3.2m AOD. However, there are some low spots in the north-eastern corner opposite to the fishing lake, where levels fall to 3.18m AOD. The eastern boundary is also marked by an Environment Agency flood defence earth embankment. The crest level is approximately 2.8m AOD. A copy of the topographical survey can be found in Appendix II.
Geological Conditions	From a review of the online British Geological Survey Geindex of the 1:50,000 scale map sheet for Portsmouth (331), the site area is shown to be immediately underlain by superficial Raised Marine Deposits which comprise a variable lithology of gravel (shingle), sand, silt and clay; commonly charged with organic debris (plant and shell). The map indicates that the south western portion of the application area may not be underlain by any superficial deposits with direct exposure to the underlying bedrock. With respect to the solid bedrock geology, the site lies on the boundary of two lithologies; the London Clay Formation which mainly underlies the eastern portion and the Bognor Sand Member (part of the London Clay Formation parent unit) which mainly underlies the western portion, wholly or in part, although the exact boundary between the two strata is hard to define on site based on the map scales available. The London Clay Formation mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. The London Clay can extend to a thickness greater than 100m. The Bognor Sand Member comprises glauconitic bioturbated or cross-bedded fine and medium grained sands, partially cemented and typically has a thickness of 5-10m. The BGS Geindex does not record any artificial deposits (Made Ground) on or close to the application area, however, unrecorded deposits may be present as a result of previous phases of development. There are a number of historical BGS borehole records close to the site. These include two shallow boreholes located to the north east of the application area on the edge of Mill Rythe and two auger driven holes located on the western boundary of the site adjacent to the boating lake. The shallow boreholes in the north east of the site were drilled in 1983 for the Sunshine Holiday Camp (BGS Ref. SU70SW144 and SU70SW145) and recorded fill material to 1.5 – 2.2m below ground level (bgl) overlying very soft dark grey very silty Clay with some shells to a depth of 10.5m bgl. This material was described as recent Alluvium. This material was underlain by firm to stiff grey brown mottled silty fissured Clay suspected to represent the London Clay and encountered to an unproven depth of 13m bgl. Water monitoring within one of the boreholes recorded a rest water level of 1.80-1.85m bgl. The hand augers (BGS Ref. SU70SW142 and SU70SW143) were extracted in 1977 and recorded a thin veneer of topsoil overlying very soft dark grey silty organic Clay identified as recent Alluvium. This material extended to 4m bgl beyond which penetration was impossible due to gravel lenses. The logs record a water table at or very near ground surface. Copies of the exploration records are provided in Appendix III.

Item	Description
Catchment Hydrology	The channel of the Mill Rithe is located immediately to the north and east of the Park, with a flood embankment separating the site from the channel. The channel is tidal and the Mill Rithe flows into the Emsworth Channel which flows into Chichester Harbour. The mouth of the harbour is located approximately 2.5km to the south east of the site at which point it joins the Solent. At low tide, a large expanse of marshy land is exposed. The mean low tide mark is located at the edge of the Emsworth Channel which is located approximately 1km to the east of the site. A drainage ditch (ordinary watercourse) runs along the northern site boundary. This feature issues approximately 1km to the west of the Park. During our site inspection, this feature was dry and predominately overgrown, especially at the downstream section adjacent to the former golf course. The channel discharges into the fishing pond located in the north-eastern corner of the site. During our site inspection we were unable to find any outfall. However, following a review of Google maps, we have identified an overland flow route / channel, located to the north-east of the pond. This channel trends in an easterly then a northerly direction until it reaches a manual flood gate valve, located approximately 10m from the Mill Rithe channel. It is understood that when the manual flood valve is opened, surface water discharges directly into the Mill Rithe. However, it is assumed that during high tide, water would not be able to discharge due to a tidal locking scenario.
Catchment Hydrogeology	The underlying superficial strata are generally identified as a Secondary Undifferentiated Aquifer which may have permeable or lower permeability layers and the Environment Agency has not been able to assign either a Secondary A or B Aquifer classification to it. The underlying London Clay is considered an Unproductive Strata with low permeability with negligible significance for water supply or for the supply of base flow to streams and rivers. However, the Bognor Sand Member is considered a Secondary A Aquifer with permeable layers capable of supporting water supplies and base flow to rivers on a local scale. The ground conditions across the application site are expected to be variable. However, based on the description of the strata within historical borehole records, the near surface ground conditions are likely to be generally low permeability with groundwater levels at or near surface, therefore infiltration as a means of disposing surface water may not be a viable option. Specific soakaway testing would be required to confirm this as given the variable geology, there may be areas of more permeable material, for example the areas where the Bognor Sand Formation directly underlies the site, where infiltration may be viable, although groundwater levels are expected to be high across the site.

Item	Description
Existing Site Drainage	There is no as-built drainage layout plan for the site. However, the topographical survey drawing includes information on existing drainage pipework. Based on the above and our site visit observations, a brief description of the existing drainage system is presented in the following paragraphs. <u>Surface Water</u> Rainwater from the roofs of the existing buildings and park homes are drained by rainwater downpipes that discharge into a network of carrier drains. The access roads and other hardstanding areas are drained by road gullies and linear channel drains. These surface water collection features discharge into the network of carrier drains. The carrier drains discharge into the ditch (example photo 2, 5 and 6) which runs along the northern boundary of the site. This ditch discharges into the fishing pond (photo 7), located in the north-eastern corner of the Park. During extreme rainfall events, should the capacity of this pond be exceeded, flood water overflows through an open channel connected to this pond towards the north-eastern corner. This overflow channel is connected to a ditch (photo 10) which discharges into the Mill Rithe. The diameters of the existing surface water sewers vary from 100mm to 225mm. <u>Foul Water</u> Based on the topographical survey and site visit observations, it is understood that the site is drained by a separate foul water drainage network. The central and southern part of the site is drained by gravity and discharges into a main pumping station located in the forecourt of the reception building. Foul water drainage network serving the lower part (north and north-eastern) portion of the site, discharges into two satellite pumping stations located towards the central and southern part of the site. We understand that the satellite pumping station to the southern part of the site is not in use. The other pumping station pumps foul water into the above main pumping station. We understand from the Site Manager that the above pumping station pumps foul water into the public sewer located approximately 600m to the west of the Park, opposite the Mill Rythe Junior School. The diameters of the existing foul water sewers vary from 100mm to 150mm. Copies of the Southern Water sewer record are included in Appendix IV.

Site Photographs

3.2 A selection of site photographs taken on 23 September 2020 is presented below.



Photo 1: Area no.1 – chalet buildings



Photo 2: Area no.1 – surface water outfall into the drainage ditch



Photo 3: Area no.2 - Site Area no.2 - the former golf course



Photo 4: Area no.2 - showing the recently constructed caravan bases (planning app APP/16/01237)



Photo 5: Drainage ditch located along the northern site boundary. Photo taken 50m from fishing lake



Photo 6: View looking of the drainage ditch looking towards the Park with the flood embankment to the right



Photo 7: Area no.2 - fishing lake



Photo 8: View of the flood embankment looking towards the centre of the Park



Photo 9: View of the flood embankment, adjacent to the fishing lake



Photo 10: Small drainage channel connected to the fishing pond, which outfalls into the Mill Rithe



Photo 11: Manual flood gate valve



Photo 12: Access track along the eastern boundary – leads from the Park entrance to estuary

4. Development Proposals

4.1 For reference purposes, please refer to **Appendix I** which shows the existing park plan and the proposed Masterplan.

4.2 The proposed development includes:

- The demolition of chalet buildings A – K and M.
- Retention and refurbishment of chalet building L for staff accommodation comprising 8 units (in lieu of the 5 staff caravans granted APP/16/01237).
- The siting of 112 holiday lodge caravans (referenced within this report as Area no.1 and no.2). This is in lieu of the 87 chalet units that were originally to be retained under APP/16/01237.
- The extension of the area used for siting of caravans eastwards into the west part of the pitch and putt area.
- The permanent cessation of the pitch and putt area for pitch and putt and foot-golf activities.
- Cessation of the use of the pond for leisure fishing.
- Conversion of the remainder of the pitch and putt area and pond into a 1.95ha managed wildlife area including a circular wildlife walkway through. The wildlife walkway will be mown into the long grass.
- The siting of three single storey, timber clad bird hides with bat roosts in the roof space.
- The creation of a land bund and ecology ditch.
- Creation of additional open recreational open space resulting in 1.8ha of open space over the combined application areas.
- Landscaping scheme.

4.3 In summary, the proposed development seeks to increase the total number of units of holiday accommodation at the park from 291 to 309.



5. Flood Risk

- 5.1 This section identifies what potential sources of flooding could affect the site and includes further details on how flooding might occur.

Tidal

- 5.2 The entire site is located within Environment Agency Flood Zone 3 (land assessed as having a 1 in 100 year or greater annual probability of river flooding, or a 1 in 200 year or greater annual probability of flooding from the sea). However, the entire site benefits from flood defences, providing a 1 in 200 year or greater standard of protection. A copy of the Flood Map for Planning is shown in Figure 4 below.



- 5.3 Upon review of the Environment Agency's Long Term Flood Risk Map, the site is at 'Low' risk of flooding with an annual probability of river or sea flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. A copy of the Long Term Flood Map is shown in Figure 5 below.

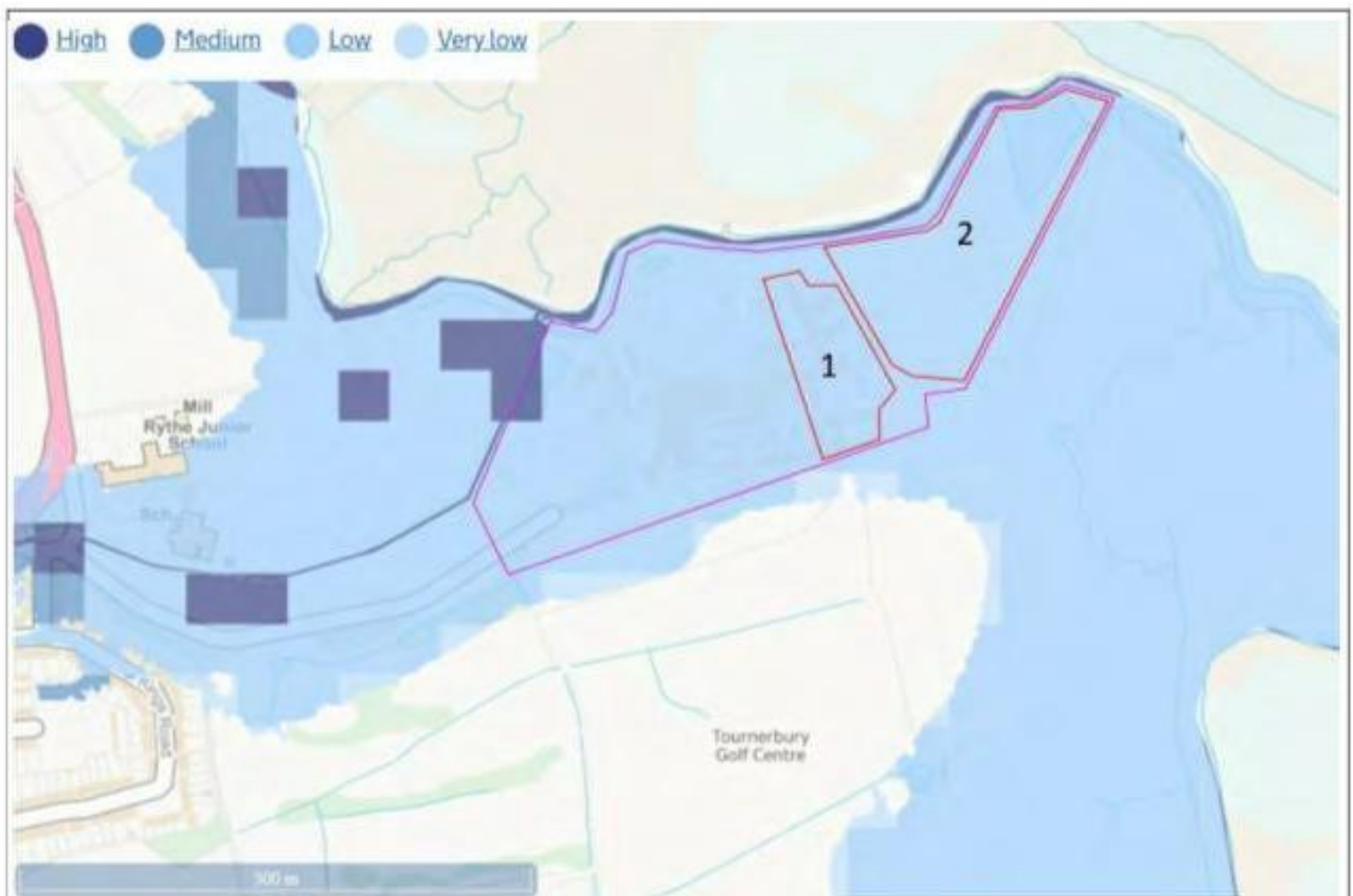
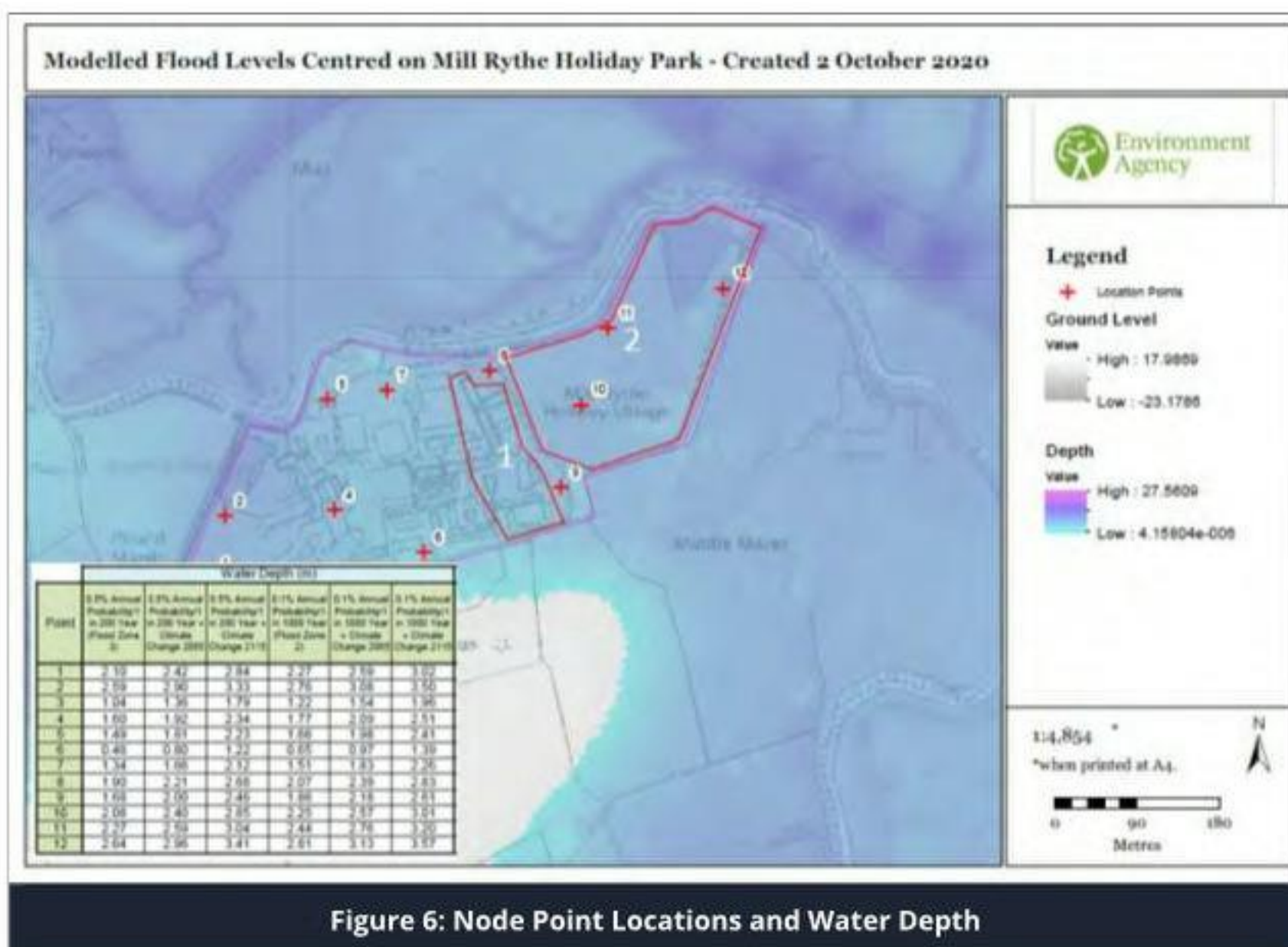


Figure 5: Environment Agency Long Term Flood Map

Product 4

- 5.4 We have requested Environment Agency Product 4 data for the site (Reference SSD/185997). This included modelled flood levels across the site, flood defence asset data and a copy of the Flood Map for Planning.
- 5.5 To help understand potential flood depths, we have reviewed the Modelled Flood Levels provided within the Environment Agency Product 4. The data does **not** take into account the presence of the flood defences which protect the site.
- 5.6 For reference purposes, the 1 in 200 year level for Area no.1 and 2 is 3.42m AOD. The 1 in 200 year plus climate change (2065) level for Area no.1 and 2 increases to 3.73m AOD.
- 5.7 As shown below in Figure 5, within Area no.1 there are two Node Points (which contain the level data) which can be used to understand potential flood depths, including Points no. 8 and 9. During in a 1 in 200 year plus climate change (2065) flood event, the flood depth is shown to be approximately 2.00m and 2.21m respectively.

- 5.8 Within Area no.2, there are three Node Points including no. 10, 11 and 12. The new holiday units will be located within close proximity to Point 10. During a 1 in 200 year plus climate change (2055) flood event, the flood depth is shown to be approximately 2.40m.



Flood Defences

- 5.9 Mill Rythe Holiday Village benefits from Environment Agency flood defences. These are present along the coastline including along the northern and eastern site boundary. The location of these defences can be seen in Figure 7 below.
- 5.10 The last Environment Agency inspection of the flood defences was in March 2020 where the defences were given a fair to good rating.

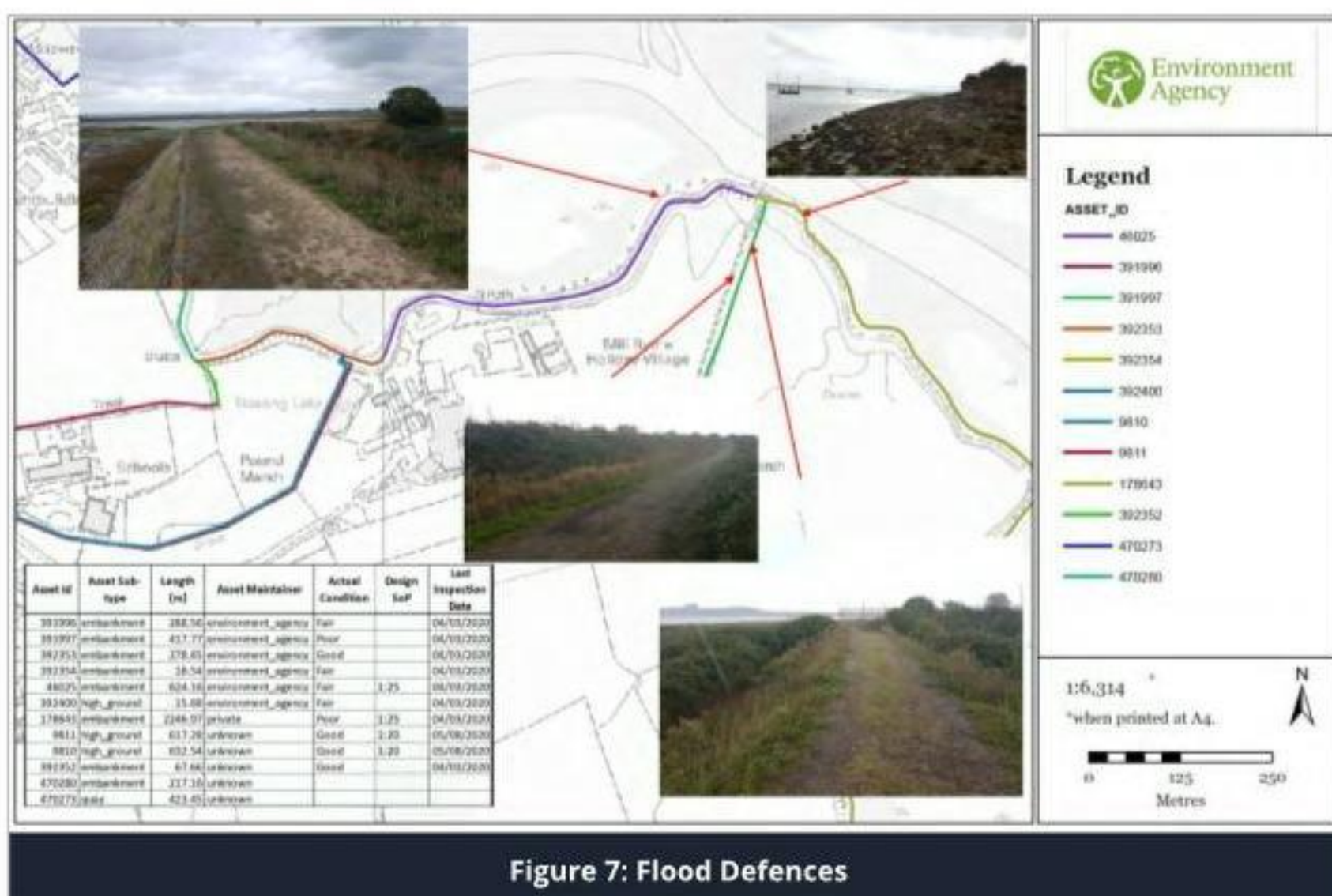


Figure 7: Flood Defences

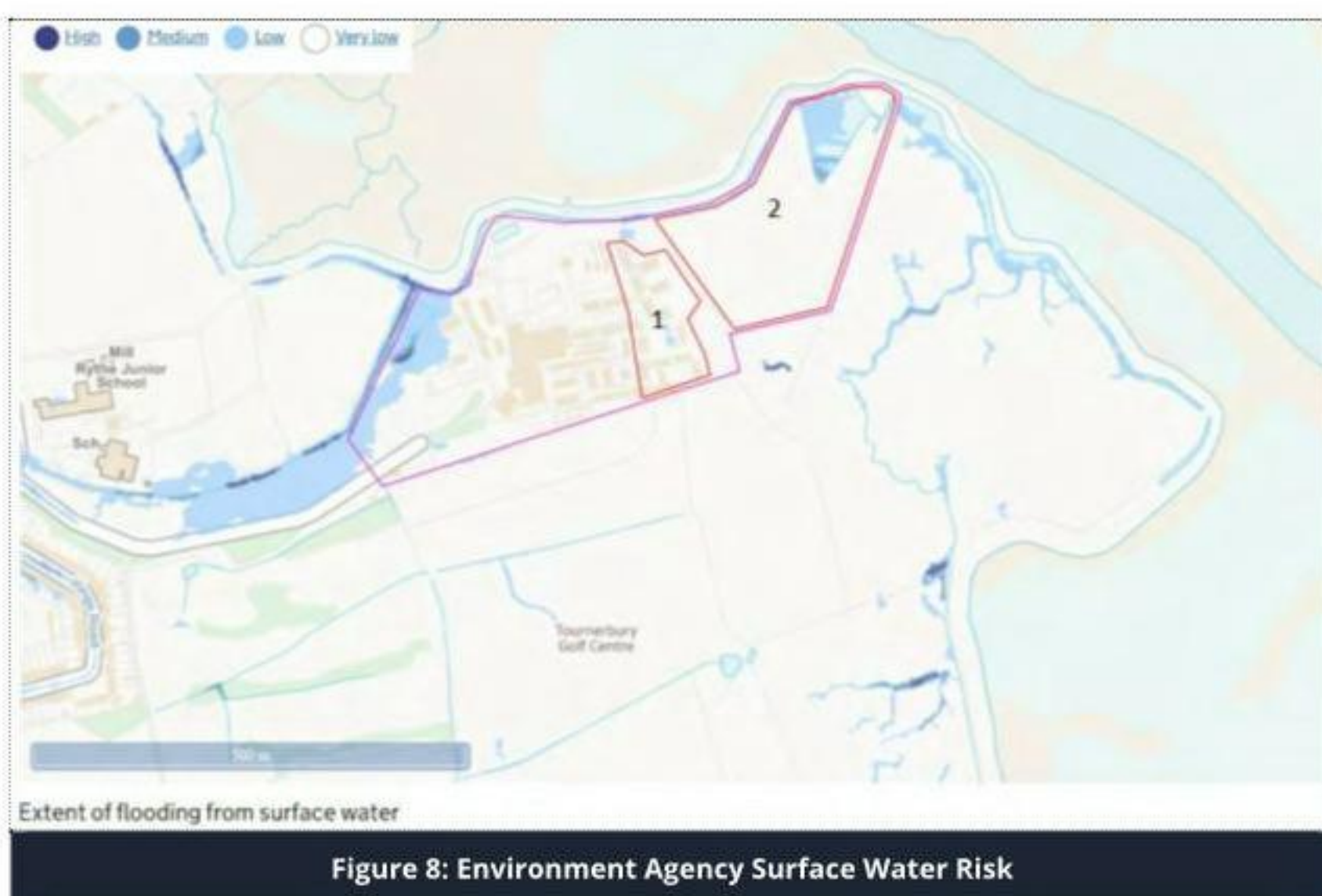
- 5.11 The information provided by the Environment Agency did not contain the Design Standard of Projection that the defences provide. We therefore made further enquiries with the Environment Agency. Ms. Aimee Etheridge, Partnership and Strategic Overview team, Hampshire and Isle of Wight confirmed during a telephone call on 15th September 2020 that the defences provide a 1 in 200-year standard of protection against a 1 in 200 year tidal flood level of 3.43m AOD.
- 5.12 Following a review of the site topographical survey which included flood defence crest levels, we have identified a number of low spots along the embankment where crest levels fall below 3.43m AOD. The lowest crest level was recorded at 3.18m AOD adjacent to the fishing pond. Therefore, we consider that the defences may provide less than a 1 in 200 year standard of protection.
- 5.13 The North Solent Shoreline Management Plan identifies a 'Hold the Line' position for this area (5AHI03) for the next 100 years. Therefore, the standard of protection of the defence should be maintained. The Product 4 shows that the Environment Agency are the asset maintainer and therefore are responsible for their condition and ongoing maintenance. We therefore recommend that works are undertaken by the Environment Agency to maintain the flood defences ensuring they continue to provide a 1 in 200 year standard of protection.
- 5.14 A copy of the Product 4 can be found in **Appendix V**.

Flood History

- 5.15 The Environment Agency has no records of the site having been affected by flooding and there is no mention of the site having been flooded within the council's Strategic Flood Risk Assessment. Park management also have no records of the Park flooding.
- 5.16 The risk of flooding from tidal sources is considered to be **'low to medium'**.

Surface Water

- 5.17 According to the Environment Agency Surface Water Flood Map, the majority of Area no.1 and 2 are at 'very low' risk of surface water flooding (land assessed as having a chance of flooding of less than 1 in 1,000 (0.1%)).
- 5.18 However, there is an area of 'low' risk of flooding (land assessed as having a chance of flooding between 1 in 100 and 1 in 1,000 (0.1% and 1%) located along the north-eastern boundary of Area no. 2, associated with the fishing pond.
- 5.19 A copy of the Environment Agency Surface Water map can be found in Figure 8 below.



- 5.20 No records of surface water flooding are held by the Environment Agency or Council. Site management have no records of the site having been affected by surface water flooding. The risk of

surface water flooding to the site is considered as **'very low'** in the areas where caravans are to be located.

Groundwater

- 5.21 From a review of the British Geological Survey's Susceptibility to Groundwater flooding information, we understand that within Area no. 1, there is limited potential for groundwater flooding to occur at the surface. However, Area no.2 is located within an area where there is the potential for groundwater flooding to occur at the surface.
- 5.22 A copy of the BGS Groundwater Map can be found in Figure 9 below.



Figure 9: BGS Groundwater Map

- 5.23 Enquiries made on site have not identified any issues relating to the emergence of groundwater at the surface. However, Park management have reported that the low ground around the fishing pond can become boggy during wet periods.
- 5.24 We consider that the site is at moderate risk of groundwater flooding, however, due to the nature of the proposed development which includes holiday lodge caravans which are naturally elevated by approximately 650mm by 'legs', we do not consider it necessary to provide any specific mitigation measures.
- 5.25 The risk of groundwater flooding is considered to be **'moderate'**.

Sewer

- 5.26 There are no public sewers located on site, the closest public sewer to the site is located approximately 1km from the western corner of the Park.
- 5.27 The existing private drainage system is regularly maintained by the park authority. The proposed development will be drained by a separate foul and surface water drainage networks following local and national policies on SuDS to minimise risks of sewer flooding. The new drainage scheme will be maintained by the park authority.
- 5.28 The risk of sewer flooding to the site is considered to be **'low'**.

Reservoirs

- 5.29 The Environment Agency Reservoir Flood Map shows that the site is not at risk from reservoir flooding.
- 5.30 It is worth noting that flooding from reservoirs is extremely unlikely due to control measures that are imposed on reservoir owners under the Reservoirs Act 1975. There has been no loss of life in the UK from reservoir flooding since 1925.
- 5.31 The risk of flooding from reservoirs is considered to be **'very low'**.

Artificial Sources

- 5.32 There are no canals in close proximity (5km) to the subject site.
- 5.33 The risk of flooding from artificial sources is considered to be **'very low'**.

6. Flood Risk Classification

- 6.1 This section identifies if the site is suitable for development in line with the 2019 National Planning Policy Framework.

Sequential Test

- 6.2 The risk based sequential test is a planning tool found within the National Planning Policy Framework. It is used to steer new development to areas at the lowest probability of flooding, known as Flood Zone 1 (1 in 1,000 annual probability of river or sea flooding). The Flood Zones are the starting point for the sequential test is summarised below.

Flood Zone	Associated Flood Risk
Zone 1	This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding in any year.
Zone 2	This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding or between 1 in 200 and 1 in 1,000 annual probability of sea flooding in any year.
Zone 3a	This zone comprises land assessed as having a 1 in 100 or greater probability of river flooding or a 1 in 200 or greater probability of flooding from the sea in any year.
Zone 3b	This zone comprises of the functional floodplain. This land comprises land where water has to flow or be stored in times of flood.

- 6.3 According to the Environment Agency flood maps the site is located within **Flood Zone 3a**.

Vulnerability Table

- 6.4 National Planning Policy Framework groups development types into different vulnerability classifications:
- Essential Infrastructure such as essential utility infrastructure;
 - Highly Vulnerable such as residential caravans and basement dwellings;
 - More Vulnerable such as dwelling houses, short stay holiday caravans and educational establishments;
 - Less Vulnerable such as offices, shops, restaurants and cafes; and
 - Water Compatible such as water treatment plants and amenity open space.

- 6.5 Static holiday caravans are classed as **'More Vulnerable'**.
- 6.6 For each Flood Zone within the Technical Guidance, the table below sets out whether development of the various different vulnerability classifications is appropriate.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓
✓ Development is appropriate ✗ Development is not appropriate					

- 6.7 The site is located within Flood Zone 3a and in accordance with National Planning Policy the development is deemed appropriate providing the Sequential and Exception tests are passed.

Sequential Test

- 6.8 The planning application seeks permission to replace the remaining chalet units, 87 in total with 112 caravans to create a more viable project to attract the necessary development finance. Therefore, the application only intends to increase the number of onsite holiday accommodation (in the form of caravans) by 18.
- 6.9 The entire Park is located in Flood Zone 3a and benefits from flood defences. Therefore, there is no land located in Flood Zone 1 or 2 where normally we would steer the development towards. According to the Environment Agency Product 4 data, during an overtopping scenario, the greatest flood depths would be in the north-eastern corner of the site where no caravans are proposed.

Exception Test

- 6.10 The Exception Test, as set out in paragraph 160 of the National Planning Policy Framework, is a method to demonstrate and help ensure that flood risk to people and property will be managed satisfactorily, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.
- 6.11 In accordance with National Planning Policy Framework, an Exception Test is required. We consider that if the proposed mitigation measures included within Section 7 of this report are implemented, the site passes the Exception Test. These include:
- Tethering of Holiday Lodges;
 - Design of a flood warning plan; and
 - Safe access and egress.

Wider Sustainability Benefits

- 6.12 The NPPF Framework introduces a '*presumption in favour of sustainable development*'. In this connection, the Framework details three objectives to achieving sustainable development: an economic objective, an environmental objective and a social objective.
- 6.13 In respect of the economic objective, Away Resorts has been unable to justify or attract the funding required for the proposed refurbishment of the existing chalet buildings approved under APP/16/01237 and upon reflection, the proposal is no longer considered a viable option. Therefore, the Client seeks permission to replace all the remaining chalets (except for one) with caravans and to provide for a modest increase of 18 caravans, in order to create a more viable project to attract the necessary development finance.
- 6.14 As with all holiday parks, Mill Rythe was closed during the Covid-19 lockdown between the end of March and beginning of July 2020. However, without the necessary funding in place to continue with the redevelopment as proposed, Away Resorts has been unable to reopen the park which remains closed for the foreseeable future unless development finance can be secured.
- 6.15 For these reasons, the proposed development is considered crucial from an economic perspective which is fundamental to achieving sustainable development. Once reopened, the holiday park use will once again generate a substantial amount of local employment both directly at the site and indirectly through the off-site spending of visitors at other local service providers on the Island and in the rest of the District. The park previously employed more than 100 permanent staff, and many more jobs will be created in the local economy as a result of increased spending by holiday visitors.

- 6.16 In addition, the benefits of holiday accommodation to the economy are recognised and supported in the NPPF Framework and a similar importance is placed on supporting rural businesses. Paragraph 83 details how planning policies and decisions should enable the sustainable growth of all types of business in rural areas including sustainable rural tourism and leisure developments.

7. Developer Recommendations

Finished Floor Levels

- 7.1 The site is defended by Environment Agency flood defences, providing a 1 in 200 year standard of protection. However, we have investigated the potential onsite flood depths should the flood defences overtop, during a 1 in 200 year plus climate change (2065) event.

Area no. 1

- 7.2 During a 1 in 200 year plus climate change (2065) flood event, it is likely that the flood defences would overtop. During this scenario the flood depths within this area are expected to be 2m to 2.21m. However, each holiday lodge caravan is designed to be naturally elevated by a minimum of 650mm above ground level. Therefore, during a flood event, approximately 1.35m to 1.56m of flood water could occur within the caravans.
- 7.3 Raising the finished floor levels above the 1 in 200 year plus climate change (2065) level would involve having the finished floor level approximately 2.21m above the ground. This is considered as unrealistic and would make the entire development unviable.

Area no. 2

- 7.4 During a 1 in 200 year plus climate change (2065) flood event, it is likely that the flood defences would overtop. During this scenario the flood depths within this area are expected to be 2.4m AOD. However, each holiday lodge caravan is designed to be naturally elevated by a minimum of 650mm above ground level. Therefore, during a flood event, approximately 1.75m of flood water could occur within the caravans.
- 7.5 Raising the finished floor levels above the 1 in 200 year plus climate change (2065) level would involve having the finished floor level approximately 2.4m above the ground. This is considered as unrealistic and would make the entire development unviable.

Bird Hide

- 7.6 We do not consider it realistic to raise the finished floor level of the bird hides. We understand that there will be no utilities within the buildings and the building will be constructed from wood. In the event of a flood, it is likely that the building will be damaged and will need replacing.

Anchoring / Tethering

- 7.7 We recommend that all holiday lodge caravan should be anchored to the ground in at least two places to prevent lateral displacement should a flood event occur.

Safe Access

- 7.8 The main access / egress route of the Park benefits from flood defences. Therefore, during a 1 in 200 year flood event, pedestrians would have a safe dry route away from the Park.
- 7.9 During flood events greater than 1 in 200 years flood water would likely impact the site. Prior to such events the Park should be evacuated. Please see advice on Flood Warning and Evacuation Plan below.

Flood Warning and Evacuation Plan

- 7.10 We recommend that a Flood Warning and Evacuation Plan is written for the site and all staff sign up to receive Environment Agency Flood Warnings. We further recommend that the Flood Warning and Evacuation Plan be submitted to Hampshire County Council for comment.

Drainage Ditch Maintenance

- 7.11 We recommend that the drainage ditch which runs along the northern site boundary is cleared of the dense vegetation. This will help with the conveyance of water towards the pond.

Flood Defence Maintenance

- 7.12 We recommend that the Environment Agency undertakes flood defence improvement works to ensure that the flood defences continue to provide the necessary 1 in 200 year standard of protection.

Change of Use – chalets to caravans

- 7.13 The planning application includes the replacement of existing chalets with caravans. The chalets generally do not benefit from a raised finished floor levels or flood resilience measures. Should a flood occur, electrics would need replacing along with carpets, beds, furniture etc. at a considerable cost. During a flood, the Park would have been closed and all guests would have vacated the chalets.
- 7.14 The proposed caravans are all raised by 650mm and as discussed above will be anchored to the ground which would avoid displacement during a flood. Should a flood occur with depths less than 650mm, then the units would not be affected or need to be replaced. During this scenario, the chalets would likely have been flooded. However, should a flood occur to the modelled flood depths (2.5m), it is likely the caravans would need to be replaced at a considerable cost. During a flood, the Park would have been closed and all guests would have vacated the caravans.
- 7.15 In summary, we do not consider that changing chalets to caravans increases the risk to the guests as the Park should be closed before the onset of flooding. However, during an extreme flood event, where the defences overtop, it is likely the majority of the caravans would need replacing at a considerable cost.

8. Surface Water Drainage Strategy

Background

8.1 On 5th May 2017, planning permission was granted for the full redevelopment of the Application Site (including 203 holiday caravans and refurbishment of two storey holiday chalets to form 87 units of holiday accommodation) under planning application APP/16/01237.

8.2 Nijhuis H₂OK Ltd were appointed to discharge Condition 14 - surface water and foul water drainage conditions.

8.3 Condition 14:

No development shall commence on site until details of a scheme for foul and surface water drainage has been submitted to and approved in writing by the Local Planning Authority. Such details should include provision for all surface water drainage from parking areas and areas of hardstanding. Where a SUDS scheme is to be implemented, the drainage details submitted to the Local Planning Authority should:

- *Specify the responsibilities of each part for the implementation of the SUDS scheme*
- *Specify a timetable for implementation*
- *Provide a management and maintenance plan for the lifetime of the development. This should include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime.*

8.4 In August 2017, Nijhuis H₂OK Ltd submitted the following documents to the Local Planning Authority:

- Surface water drainage statement (document reference J-11713-01-HG dated 31st August 2017); and
- Foul water drainage statement (document reference J-11713-01-AW dated 31st August 2017).

8.5 Planning Condition 14 was successfully discharged on 13th July 2018, based on the above drainage design works undertaken by Nijhuis H₂OK Ltd.

8.6 We have reviewed the approved strategy and confirm that the design is in accordance with current local and national policies on SuDS. Therefore, the proposed drainage strategy for the revised development proposals discussed within Section 4 of this report will be developed following the same drainage principles and will connect with the approved drainage network where possible.

8.7 Copies of the Nijhuis H₂OK Ltd surface water and foul water drainage statements are included in **Appendix VI.**

Guidance

8.8 This drainage strategy has been developed in accordance with the following national standards for guidance:

- Building Regulations 2010, Part H, Drainage and Waste Disposal;
- CIRIA C753, The Sustainable Drainage Systems (SuDS) Manual, 2015;
- Defra, Sustainable Drainage Systems, Non-statutory technical standards for sustainable drainage system, March 2015 (this document is regarded as the National Standards for SuDS); and
- Environment Agency, Report – SC030219, Rainfall runoff management for developments, 2013.

8.9 In addition, SuDS principles and application as outlined in the Hampshire County Council's 'SuDS – Information for developers on SuDS principles and application, June 2018' have been taken into consideration in developing the drainage strategy.

SuDS Design Criteria

Water Quantity

8.10 The National Standards for SuDS considers that any proposed surface water drainage system should consider flood risk to the development in the following flood events:

- The 1 in 30 year event – water should be stored in areas designated to hold and/or convey water;
- The 1 in 100 year event - flooding should not occur within any part of a building or utility plant susceptible to water unless in an area designated to hold and/or convey water; and
- Exceedance flow – events exceeding the 1 in 100 year event – so far as is reasonably practicable, flows are managed in exceedance routes that minimise the risks to people and property.

Discharge Hierarchy

8.11 The proposed surface water drainage system should follow the 'discharge hierarchy' as stated in the Buildings Regulations (Part H). The surface run-off should be disposed of as high up the hierarchy as is reasonably practicable:

- Infiltration and reuse;
- Surface water body;
- Surface water sewer, highway drain, or another drainage system; and
- Combined sewer.

Water Quality

- 8.12 In order to improve the water quality of the discharges from the site it will be necessary to incorporate a robust primary treatment system to remove silt and sediment from stormwaters from entering the drainage system.
- 8.13 The pollution indices approach for discharge to surface water as outlined in Chapter 26 of the CIRIA SuDS Manual (C753) has been used to select suitable SuDS components to ensure water quality of the surface water discharge effluents.
- 8.14 Based on the Table 26.2 CIRIA SuDS Manual (C753), the pollution hazard indices for the roofs of holiday lodges is 'very low' and for the access roads and driveways are considered as 'low' (see table below).

Land Use	Pollution Hazard Level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential Roofs	Very Low	0.2	0.2	0.05
Individual property driveways, general access roads	Low	0.5	0.4	0.4

- 8.15 Based on the above, the recommendations included in the Table 26.3 in Chapter 26 of the CIRIA SuDS Manual (C753), the following SuDS components are considered suitable to ensure water quality of the surface water run-off from the roads:

- Filter drains and infiltration trenches;
- Swale/vegetated channels;
- Bio-retention system;
- Permeable pavement;
- Detention basin;
- Pond; and
- Wetland

Amenity and Biodiversity

- 8.16 Any SuDS scheme should be integrated with the landscape plan of the development to enhance amenity value. In addition, SuDS should be designed to improve biodiversity whenever possible.

Basis of Design

- 8.17 The strategy has been designed taking into account the following:

Permeable / Impermeable Areas

- 8.18 The proposals will introduce impermeable areas totalling 0.98ha, which is approximately 17% of the planning application boundary area (5.7 ha). This is approximately 0.65ha more impermeable area compared to the existing within the same boundary area.
- 8.19 This will increase both the rate and volume of surface water run-off compared with its existing condition. This additional surface water needs to be managed so that it does not exacerbate or create new flood risk elsewhere during the intended lifetime through the use of SuDS.

Overland Flow Risk

- 8.20 The site is surrounded by flood defences which restricts any overland flow entering the site. The Environment Agency surface water flood map does not show any overland flow entering the site.
- 8.21 Therefore, the drainage strategy has been developed to manage surface water generated from the proposed development only.

Preferred Option for Surface Water Discharge

- 8.22 As discussed in Section 3, the site is underlain by London Clay Formation, which comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. In addition, the site is identified as being at 'medium' risk of groundwater flooding. Therefore, it is considered that the use of soakaways for total surface water discharge into the ground is not feasible for this site.
- 8.23 Therefore, it is proposed that surface water from the new development will discharge into the existing ditch located along the northern boundary of the site. This ditch is hydraulically connected with the Mill Rithe via an on-site pond located to the north-east of the site.

Urban Creep

- 8.24 Considering the location and type of the development, the allowance for any urban creep is not considered required.

Attenuation

- 8.25 The proposed drainage strategy maintains the existing surface water drainage discharge arrangement into the Mill Rithe. Therefore, the increased rate and volume of surface water entering into the existing ditch which is hydraulically connected to the sea will not increase flood risk to third

parties or the site itself. Therefore, surface water attenuation as per the SuDS water quantity requirements to retain surface water within the site for the 1 in 100 year plus 40% climate change storm event is not required for this site.

- 8.26 However, source control measures to attenuate flows to allow some degree of infiltration and water quality benefits are considered.

Proposed of Surface Water Drainage System

- 8.27 The proposed surface water system comprises of a combination of a traditional pipe network and various SuDS features to ensure surface water run-off from the impermeable areas of the development is properly managed.
- 8.28 Rainwater that falls on the roofs of the holiday lodges will initially be collected in high level rainwater gutters and then drained by rainwater pipes. The rainwater pipes will discharge to filter/infiltration trenches which will be installed around the perimeter of the lodges. Due to the likely impermeable nature of the soil, a positive outlet will be installed at the base of the filter trenches and connected to the nearby conveyance system. A 30mm wide and 500mm deep trench is estimated to be adequate to drain each holiday lodge.
- 8.29 Roadside filter trenches are proposed as a surface water conveyance system. The access roads, driveways and the filter drains draining the holiday lodges will discharge into these roadside trenches.
- 8.30 The sizes and depths of the individual trenches are estimated using MicroDrainage drainage design software. The models show that a 500mm trench with a maximum depth of 1m is adequate to drain the impermeable areas for storm events up to 1 in 100 year plus 40% allowance for climate change events.
- 8.31 The level of the driveways will be sloping towards the road, thus allowing free flow of surface water towards the nearby trenches.
- 8.32 The trenches will discharge into a network of carrier drains that will convey surface water towards the ditch. This network of carrier drains will finally discharge into the existing ditch located along the northern boundary of the site.
- 8.33 The drainage scheme for the holiday lodges within Area 1 will join the surface water drainage carrier drain network as proposed in the previous planning application. For Area 2, the surface water will be discharged into the ditch via two new separate outfalls.

- 8.34 A layout of the proposed Surface Water Drainage Strategy has been included in **Appendix VII** and copies of the MicroDrainage models for the roadside conveyance trenches are included in **Appendix VIII**. The approved drainage strategy has not been provided to us in dwg. format and we have had to reproduce from a pdf copy.

Design for Exceedance

- 8.35 The surface water drainage strategy has taken into consideration the potential for 'exceedance flows' in its formulation. Flood events up to the 100 year plus 40% climate change event will be drained by the proposed drainage system.
- 8.36 The floor levels of holiday lodges are generally set approximately 650mm above the base level. Therefore, should exceedance of the drainage system occur in an event greater than the design envisaged or in the case of a blockage, flood water will not pose a risk to people and property.
- 8.37 The exceedance flow routes are shown in the proposed Drainage Strategy layout drawing included in **Appendix VII**.

Water Quality - SuDS Treatment Train

- 8.38 The pollution potential from the proposed development is low. The proposed filter trenches will improve the quality of surface water run-off prior to discharging into the ditch.
- 8.39 During construction, works should be carried out in accordance with the Government Pollution Prevention Guidelines, 2016 (available online at www.gov.uk/government/publications).

Amenity and Biodiversity

- 8.40 The proposed development includes approximately 4.72ha of soft landscaping areas which constitute approximately 83% of the planning application boundary. This includes an ecology ditch, bird hides and bat roosts.
- 8.41 The proposed surface water drainage scheme will improve the existing drainage condition and ensure that the proposed development is adequately drained, thus contributing to amenity value.
- 8.42 The proposed drainage scheme does not adversely affect the local biodiversity.

SuDS Maintenance Requirements

- 8.43 The proposed drainage systems will remain private and will be operated and maintained by the site owner.
- 8.44 Regular inspection and cleaning of the drainage infrastructure, including guttering, down-pipes, trenches and outfalls, should be carried out frequently to prevent build-up of silt and debris which will reduce the system conveyance capacity.
- 8.45 Visual inspection should ideally be carried out after any heavy rainfall event during the first year of operation, then six-monthly after that. Particular attention should be paid during the autumn months when leaf litter and other dead plant material may cause obstruction.
- 8.46 Routine inspection of the trenches should occur to ensure its volume is maintained. Silt/debris removal may be needed from time to time.
- 8.47 Any issues or failures identified with the system should be rectified immediately by a suitable contractor.

Health and Safety Requirements

- 8.48 The details of the new surface water drainage system will be designed with consideration to minimise health and safety risk to the public and to maintenance staff.
- 8.49 All access points to the below ground drainage structures, sewers, inlet, outlets and outfalls will be designed to be easily accessible and in accordance with the relevant standards to minimise risks to the public and the maintenance personnel.

The Lead Local Flood Authority (LLFA) Requirements

- 8.50 The proposed outfalls into the ditch will require land drainage consents from the Lead Local Flood Authority.

9. Proposed Foul Water Drainage Strategy

- 9.1 Foul water from the proposed holiday lodges will be drained by a separate foul water drainage system. This foul water drainage system will discharge into the existing terminal/main foul water pumping station via the existing foul water drainage network or the new satellite pumping station.
- 9.2 The foul water drainage pipework for the revised layout has been proposed to be connected to the approved foul water drainage network under the previous planning application (APP/16/01237).
- 9.3 The proposed additional 18 units is equivalent to 36 population equivalent. Therefore, a per capita wastewater flow of 150l/person/day (as per British Water's Code of Practice for Flows and Loads – 4, for sizing criteria, treatment capacity for wastewater treatment systems), approximately 6m³ of additional wastewater will be generated. To allow for emergency storage for the proposed additional 18 units, the proposed foul water storage in the proposed pumping station (referenced as PS#5 within the approved drainage strategy layout) located to the north of the site, will need to be increased to 28m³, compared to the originally proposed 22m³.
- 9.4 A copy of the proposed foul water drainage strategy layout is included in **Appendix VII**. The approved drainage strategy has not been provided to us in dwg. format and we have had to reproduce from a pdf copy.
- 9.5 The above additional flow into the local public sewer network will require a formal application to Southern Water under Section 106 of the Water Industry Act 1991.

10. Conclusion

- 10.1 Instructions were received from Away Resorts (the Client) to undertake a Flood Risk Assessment and Drainage Strategy to support a planning application, pursuant to APP/16/01237, for the redevelopment of the holiday site including the demolition of redundant chalets, use of land for the siting of 112 holiday caravans with areas of open recreational space, cease the use of the land for pitch and putt purposes and retain the remaining pitch and putt area as a managed wildlife area including the provision of an ecology bund and ditch, landscaping, the siting of three bird hides with bat roost in their roof spaces and a mown 'circular wildlife walkway.
- 10.2 The Flood Risk Assessment and Drainage Strategy has been prepared in accordance with the National Planning Policy Framework and national and local policies on SuDS in respect of the proposed scheme of development.
- 10.3 A copy of Avison Young Standard Terms of Appointment is presented in **Appendix IX**

Flood Risk

- 10.4 Following the completion of this assessment, the following conclusions can be drawn:
- The Environment Agency Flood Map shows that the entire site is located within Flood Zone 3a, however, the majority of the site is defended by an Environment Agency maintained flood defences which provide a 1 in 200 year level of protection. The Environment Agency Long Term Flood Risk Map shows that due to the presence of these defences, the Park is at **Low** risk of flooding. There are no records that the site has flooded in the past.
 - The North Solent Shoreline Management Plan shows identifies a 'Hold the Line' position for this area for the next 100 years. Therefore, the standard of protection of the defence should be maintained.
 - The planning application seeks permission to replace all the remaining chalet units, 87 in total with 112 caravans to create a more viable project to attract the necessary development finance. We do not consider that replacing the existing chalets to caravans increases the risk to the guests; the Park should be evacuated prior to flooding. However, during an extreme flood event, where the defences overtop, it is likely that the majority of the caravans would need replacing. It is however worth noting that the site has never flooded before.
 - Overall, given that the site benefits from Environment Agency flood defences and the Environment Agency's **Low** flood risk rating, we consider changing the existing chalets to caravans and adding an additional 18 units is acceptable, providing a robust Flood Plan is written, the Park signs up to receive Environment Agency flood warnings and that all caravans are anchored to the ground.

Surface Water Drainage Strategy

- 10.5 The surface water drainage strategy proposes a separate surface water drainage system that discharges into the existing ditch which is located along the northern boundary of the site. The strategy has been based on the same drainage principles as Nijhuis H₂O Ltd drainage strategy which was approved by the LLFA and associated drainage conditions discharged in July 2018.
- 10.6 The proposed surface water drainage system comprises of a combination of traditional pipe networks and various SuDS features to ensure surface water run-off from the impermeable areas of the development is properly managed.
- 10.7 Filter/infiltration trenches are proposed as source control measures, to attenuate flow, for conveyance and also to provide water quality benefits. The trenches are designed so that no flooding occurs within the site for storm events up to 1 in 100 year plus 40% allowance for climate change events.
- 10.8 The proposed surface water outfalls into the existing ditch will require land drainage consent from the LLFA.

Foul Water Drainage Strategy

- 10.9 The proposed foul water drainage strategy is similar to the approved foul water drainage design in relation to the planning permission APP/16/01237.
- 10.10 The proposed 112 holiday lodges will be drained by separate foul water drainage networks. The lodges located within the western boundary of Area 1 will be connected to the approved foul water drainage network to the west. The remaining holiday lodges within Area 1 and the holiday lodges within Area 2 will discharge into the proposed foul water carrier drain located in the nearby access road. This carrier road will convey foul water into a foul water pumping station proposed to be located close to the northern boundary of the site.
- 10.11 The proposed foul water storage in the proposed pumping station (referenced as PS#5) located to the north of the site, will need to be increased to 28m³, compared to the originally proposed 22m³.
- 10.12 The additional flow from the proposed development will require a formal application to Southern Water under Section 106 of the Water Industry Act 1991.