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**REDEVELOPMENT TO PROVIDE A REPLACEMENT
FORECOURT SHOP WITH DRIVE-THROUGH RESTAURANT**

181 HAVANT ROAD, HAYLING ISLAND

FLOOD RISK ASSESSMENT

February 2023



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1.0 INTRODUCTION AND DEVELOPMENT DESCRIPTION

1.1 Project Introduction and Objectives

Euro Garages Ltd. has commissioned NSugg Ltd. to undertake a Flood Risk Assessment (FRA) to support a planning application for the proposed development of a replacement forecourt shop with drive-through restaurant at the existing petrol filling station, 181 Havant Road, Hayling Island. This document represents a site-specific FRA for the proposed development.

1.2 Planning Policy and Guidance

This FRA has been undertaken in accordance with the relevant planning policy and guidance outlined below.

1.2.1 National Planning Policy

The National Planning Policy Framework (NPPF)¹ and associated Planning Practice Guidance for Flood Risk² aim to steer new development to areas with the lowest risk of flooding.

New development must also ensure that flood risk is not increased elsewhere, and where appropriate, planning applications should be supported by a site-specific Flood Risk Assessment.

The NPPF recommends that development should only be allowed in areas at risk of flooding where the FRA (and the sequential and exception tests, as applicable) can demonstrate that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
- b) the development is appropriately flood resistant and resilient;
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

The guidance confirms that major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate.

1.2.2 Environment Agency Policy and Guidance

The Environment Agency's guidance for FRAs³ confirms that planning applications for the following development proposals must be supported by a FRA:

¹ Ministry of Housing, Communities & Local Government, March 2012 (last updated: July 2021), National Planning Policy Framework.

² Ministry of Housing, Communities & Local Government, March 2014 (last updated: August 2022), Planning Practice Guidance, Flood Risk and Coastal Change.

- Development in Flood Zone 2 or 3 including minor development and change of use
- Development sites of more than 1 hectare (ha) in Flood Zone 1
- Development sites less than 1 ha in Flood Zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than rivers and the sea (for example surface water drains, reservoirs)
- Development in an area within Flood Zone 1 which has critical drainage problems as notified by the Environment Agency

The Agency's guidance supports the NPPF and specifies the requirements for FRAs based on the level of flood risk and the vulnerability of the proposed development to flooding.

In addition, Environment Agency consent is required for any proposed works or structures, in, under, over or within eight metres of the top of the bank of the watercourse, designated a 'main river', (or sixteen metres in the case of a tidal watercourse).

1.2.3 Local Policy and Guidance

The following documents provide local flood risk policy and guidance for development within Hayling Island, Hampshire:

- The Partnership for Urban South Hampshire (PUSH) 2007 Strategic Flood Risk Assessment (SFRA)⁴ and 2016 Update⁵ present a summary of the local hydrology, potential sources of flood risk across the region and flood risk information for planning.
- The North Solent Shoreline Management Plan⁶ provides details of the local risks associated with coastal flooding and erosion and proposals for future management strategies.
- Havant Borough Council's Local Plan Core Strategy (adopted March 2011) presents local planning policy up to 2026. **Policy CS15: Flood and Coastal Erosion Risk** 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.*

³ Environment Agency, March 2014 (last updated: February 2017), Guidance – Flood Risk Assessments if you're applying for planning permission.

⁴ Partnership for Urban South Hampshire, December 2007, Strategic Flood Risk Assessment, Final Report.

⁵ Eastern Solent Coastal Partnership, February 2016, Partnership for Urban South Hampshire, Strategic Flood Risk Assessment 2016 Update.

⁶ New Forest District Council, December 2010, North Solent Shoreline Management Plan, Coastal sub-cells 5A, 5B and 5C.

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.

Havant Borough Council has prepared additional policy guidance regarding the Flood Risk Sequential Test and Exception Test⁷, although their website states this guidance is currently being updated to reflect the new national guidance² on planning for flood risk.

1.3 Site Location

The application site comprises an existing petrol filling station at 181 Havant Road, Hayling Island, Hampshire PO11 0LG, as shown on the Site Location Plan within Appendix 1. The site is located on the western edge of the village of Stoke, in the north-west of Hayling Island, approximately 3.8km south of Havant town centre. The western boundary of the application site is located approximately 30m from the shoreline of Langstone Harbour. The site currently comprises a petrol filling station with forecourt shop, food retail unit and parking, with peripheral areas to the north and west of dense vegetation.

The total area of the application site, as indicated on the Site Location Plan, is approximately 0.85 hectares. The Environment Agency's on-line flood map for planning indicates that the application site is located entirely within Flood Zone 3, defined as land with a high probability of fluvial/tidal flooding.

The National Planning Policy Framework (NPPF) and associated technical guidance confirms that all applications for proposed new development within Flood Zone 2 or 3 and development proposals exceeding one hectare within Flood Zone 1 must be accompanied by a site-specific Flood Risk Assessment.

1.4 Topography and Existing Land Use

Review of Ordnance Survey mapping indicates that the local topography comprises flat, low-lying coastal land, with a ground level of approximately 3mAOD within the application site.

⁷ Havant Borough Council, May 2022, Flood Risk Sequential Test & Exception Test, Policy Guidance for Applicants & Planning Officers.

A topographic survey of the application site was undertaken in October 2022 and a copy of the survey is included as Appendix 2. The survey confirms that ground levels within the developed part of the application site record a gentle topographic fall towards the east, from approximately 2.8mAOD on the western boundary to approximately 2.35mAOD in the east at the vehicular access off Havant Road. Limited survey information is available for the areas of vegetated rough ground in the west and north of the site, but available data indicates that ground levels are slightly elevated (2.7mAOD to 3.4mAOD) and undulating in the west of the site. Topographic levels on the adjacent Havant Road are in the range 2.2mAOD to 2.6mAOD.

The application site is accessed off, and bound to the east by, Havant Road, with residential development of Stoke village beyond. The site is bound to the north and south by residential properties and to the west by a small public car park and foot/cycleway with the shoreline beyond.

The application site currently comprises a petrol filling station with linked convenience (Spar) store and standalone unit occupied by Greggs. The western part of the site is currently undeveloped but includes significant areas of redundant hardstanding, including vehicular access off Victoria Road to the south.

1.5 Geology

British Geological Survey mapping indicates that the local geology beneath the application site comprises Chalk of the undifferentiated Lewes Nodular, Seaford, Newhaven, Culver and Portsdown Chalk Formations, overlain by superficial River Terrace Deposits (sand, silt and clay) and Raised Marine Deposits (sand and gravel)⁸.

A Phase 2 Ground Investigation was undertaken at the site in December 2022⁹ which included the installation of four window sample boreholes to a maximum depth of 6.0m below ground level (mbgl). The boreholes confirmed the presence of Made Ground (up to 0.8m thickness) overlying Beach and Tidal Flat Deposits (0.2m to 1.2m thickness of clayey, gravelly silt and sandy, gravelly clay), in turn overlying River Terrace Deposits (1.5m to 3.5m thickness of sand and gravel). The Chalk bedrock was encountered at between 2.5mbgl and 4.5mbgl and described as extremely weak, white structureless Chalk with approximately 20% intact Chalk and gravel.

Groundwater was recorded within the superficial deposits at 1.0mbgl to 1.5mbgl.

Review of Cranfield University's soil maps¹⁰ indicates that the soils beneath the application site are defined as Soilscape 22: loamy soils with naturally high groundwater.

Review of Natural England's MAGIC geographic information mapping confirms that the application site is not located within a Groundwater Source Protection Zone.

1.6 Hydrological Features

The application site lies within the surface water catchment of Langstone Harbour, an inlet of the English Channel between Hayling Island and Portsea Island. Langstone Harbour has

⁸ British Geological Survey, GeoIndex Onshore, accessed 16th January 2023.

⁹ EPS, January 2023, Phase I & II Geo-Environmental Assessment, 181 Havant Road, Hayling Island. EPS Ref: UK22.6230.

¹⁰ Cranfield University's Soilscape Map, accessed 16th January 2023.

nationally and internationally important wildlife designations due to the mudflats which attract wading birds, wildfowl and seabirds.

Ordnance Survey mapping indicates that a minor, unnamed tributary watercourse rises within the western part of the application site, flowing towards the south, parallel with the shoreline, discharging into the harbour at Stoke Common Lake. This area is not included within the site topographic survey but is reported to comprise overgrown rough ground.

No other significant surface water features are identified in the vicinity of the application site.

The local hydrological setting is presented as Figure 1.

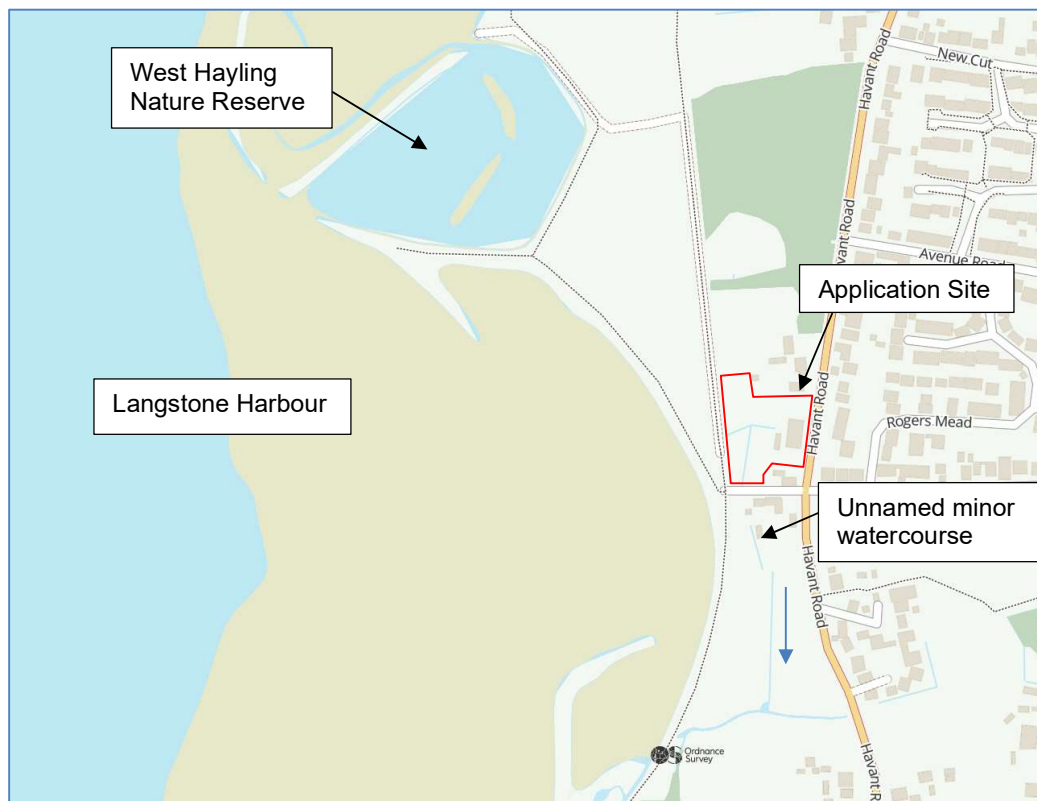


Figure 1. Local Hydrological Setting

1.7 Proposed Development and Flood Risk Vulnerability Classification

The proposed development comprises demolition of the existing convenience store and standalone unit (Greggs) and the erection of replacement store with drive-through restaurant, creation of additional parking spaces, EV charging bays and landscaping. A proposed site layout plan is included within Appendix 3.

In terms of flood risk vulnerability classification, general industry and buildings used for shops, cafes and hot food takeaways are classified as 'less vulnerable'. This is discussed further in Section 2.3.

2.0 FLOOD RISK ASSESSMENT

2.1 Sources of Information

In addition to the flood risk planning policy and guidance outlined in Section 1.2, the following sources of information have been consulted during the preparation of this FRA:

- Environment Agency website – for information regarding surface water, reservoir and fluvial/tidal flood risk and outline flood zone maps.
- Environment Agency consultation response (Product 4) which provides site-specific flood risk data including modelled flood water levels. A copy of the consultation response received from the Environment Agency on 24th January 2023 is included as Appendix 4.

2.2 Flood Hazard

All potential sources of flooding to the application site are considered within this section of the report.

2.2.1 Environment Agency Flood Zone Map and Fluvial/Tidal Flood Risk

The Environment Agency flood zone map presents information regarding the fluvial and tidal flood risk to the application site and is included as Figure 2 below. The flood zone map indicates that the entire application site lies within Flood Zone 3, defined as land with a high probability of flooding from rivers or the sea. The application site is located within approximately 30m of the shoreline of Langstone Harbour and is therefore at potential risk of tidal flooding. The flood zone map ignores the presence of any local flood defences.

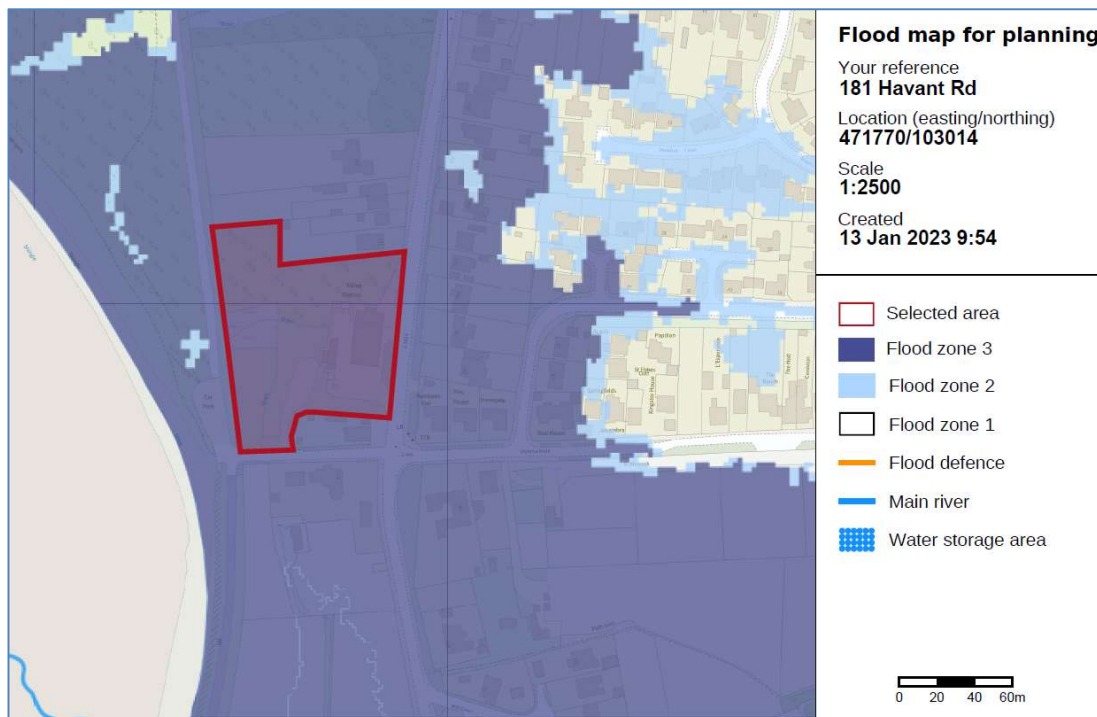


Figure 2. Environment Agency Flood Zone Map¹¹

¹¹ www.flood-map-for-planning.service.gov.uk accessed 13th January 2022.

Figure 3 presents the Environment Agency's fluvial/tidal flood map which takes into account the presence of local flood defences. This confirms that the application site has a 'low' risk of flooding from rivers or the sea, defined as land with between 0.1% and 1.0% annual probability.

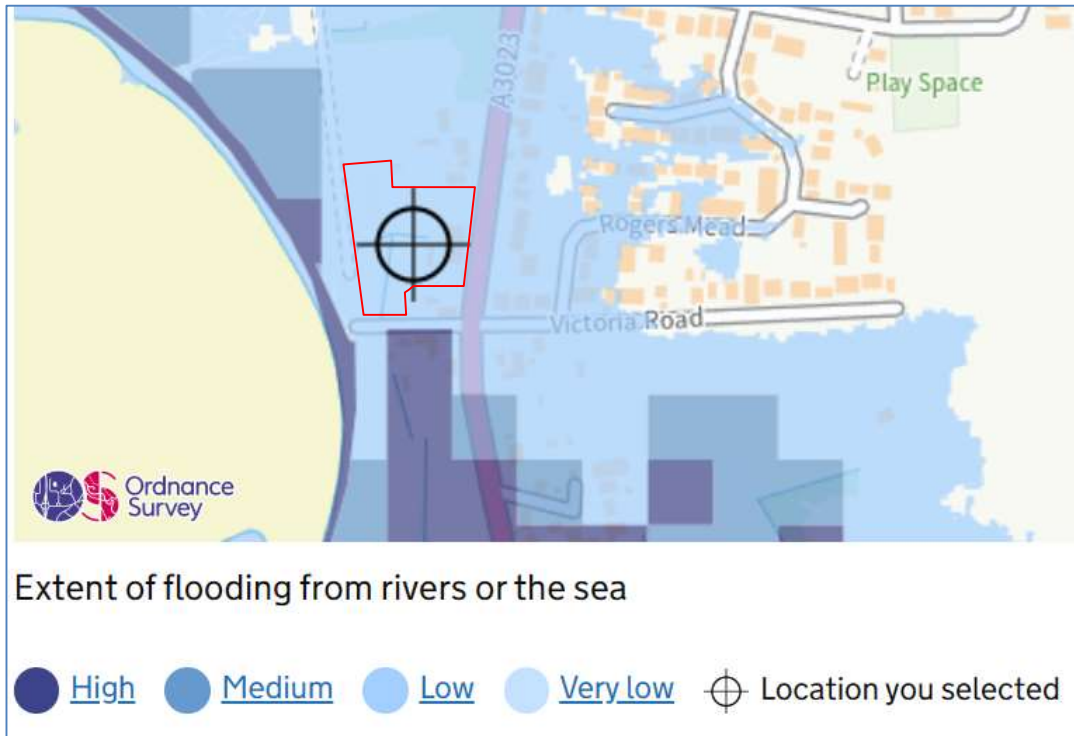


Figure 3. Environment Agency Fluvial/Tidal Flood Map

The site-specific Product 4 response received from the Environment Agency is presented as Appendix 4 and includes predicted peak flood water level data for the site extracted from the 2018 East Solent Coastal study. Model node locations are indicated on Figure 4; nodes 2 to 5 are located within the application site.



Figure 4. Model Nodes, 2018 East Solent Coastal Study (EA Product 4)

Predicted peak tidal flood water levels have been provided for a range of flood events, with model results summarised in Table 1.

Table 1: Predicted Peak Tidal Flood Water Levels (2018 East Solent Coastal Study)

Model Node (refer to Figure 4)	Predicted Peak Flood Water Level (mAOD)			
	Present Day (2018)		2115 (Climate Change Allowance)	
	0.5% Annual Probability	0.1% Annual Probability	0.5% Annual Probability	0.1% Annual Probability
2	3.32	3.50	4.07	4.24
3	3.32	3.50	4.07	4.24
4	3.32	3.49	4.07	4.24
5	3.33	3.50	4.07	4.24

The flood model data provided by the Environment Agency and summarised in Table 1, includes an allowance for climate change (sea level rise) to 2115, although the modelling will not include the latest Environment Agency climate change allowances. Assuming a design life of 75 years, which is appropriate for commercial development, Section 2.2.4 below, confirms that sea levels are predicted to rise locally by between 0.78m (higher central allowance) and 1.03m (upper end allowance) between 2018 and 2100, as a result of climate change.

If these climate change allowances are added to the present-day peak flood water level for the 0.5% annual probability flood event of 3.33mAOD, a long-term design flood water level of between 4.11mAOD (higher central allowance) and 4.36mAOD (upper end allowance) can be assumed, when climate change is taken into consideration. Therefore, with allowance for the worse-case, upper end climate change allowance, a design flood water level of **4.36mAOD** can be inferred for the application site. This represents the 0.5% annual probability tidal flood event, plus climate change to 2100.

The Environment Agency's Product 4 response (Appendix 4) confirms the presence of coastal flood defences in the vicinity of the application site, but no design standard of protection is provided.

The 2016 SFRA online map indicates that the coastal flood defences adjacent to the application site have a standard of protection of greater than 1 in 1000 years on the stretch of coastline immediately south of the site, and a standard of protection of between 1 in 200 and 1 in 1000 years for the coastline adjacent to and immediately north of the site.

Review of the Environment Agency's online LIDAR topographic data (2020 1m DTM) indicates that the coastal embankment adjacent to the site has a crest level of between 3.6mAOD and 3.9mAOD. This crest level is higher than the predicted peak flood water level for the present day 0.5% annual probability flood event of 3.33mAOD (refer to Table 1).

Therefore, it is concluded that the application site would not experience flooding during the present day 0.5% annual probability tidal flood event, or the extreme 0.1% annual probability tidal flood event, due to the presence of local flood defences. Therefore, the application site is effectively within low probability Flood Zone 1, when flood defences are taken into account. However, the current flood defences would be predicted to overtop during the design flood event based on a peak flood water level of 4.36mAOD.

Site levels range from 2.35mAOD to 2.8mAOD, therefore a design flood water level of 4.36mAOD equates to peak flood water depths in the range 1.6m to 2.0m, ignoring the presence of local flood defences.

The adjacent coastline is located within the 2010 North Solent Shoreline Management Plan (NSSMP). The NSSMP recommends a 'Hold the Line' policy for the local coastal flood defences but also recommended that a Flood and Coastal Erosion Risk Management (FCERM) Strategy be developed for the Hayling Island coastline. The Draft Hayling Island Coastal Management Strategy was completed in October 2022.

Section 5.15, Appendix E of the Draft Hayling Island Coastal Management Strategy presents the preferred, leading option for local flood defences and confirms a proposed option for the coastal defences adjacent to the application site of: **Sustain 0.5% AEP** (sustain a minimum 0.5% annual probability (1:200 year) standard of protection through the construction of a setback embankment. The report states:

This option would involve constructing new setback defences in epoch 1 (2022 – 2042), as the residual life of the existing defences is between 10 and 20 years. In the present day, there are 30 properties at risk of flooding from a 0.5% AEP event. The implementation of the defences would be phased; the initial height of the defences would be built to a 0.5% standard of protection for 2042, and then raised over time to keep pace with sea level rise. Between raising of the defences, they would be maintained with scheduled maintenance.

Therefore, the local preferred management policy is to maintain a flood defence standard of protection to ensure the local area (including the application site) is protected from flooding during the 0.5% annual probability flood event, throughout the life of the site.

However, it is acknowledged that the provision of future flood defence improvements is subject to the allocation of funding, and in the absence of appropriate flood defences, the design flood water level of 4.36mAOD presents potentially significant peak flood water depths within the site, of 1.6m to 2.0m. If flood defence improvements are introduced, the development would remain at residual risk of flooding in the event of a breach of the defences or overtopping during an extreme flood event.

Therefore, recommendations regarding flood risk mitigation measures are discussed in Section 2.4 below.

2.2.2 Other Potential Sources of Flooding

The local SFRA and online flood maps have been reviewed to identify any other potential sources of flood risk to the application site and evidence of historic flood events in the local area. This information is presented in Table 2 below.

Table 2: 181 Havant Road, Hayling Island – Potential Sources of Flooding

Potential Source	Potential Risk at Application Site?	Reasoning
Fluvial Flooding	No	There are no watercourses in the vicinity of the application site, other than a minor drain which is considered below, under the assessment of surface water flood risk. Review of the 2016 SFRA mapping confirms that the application site remains outside of the future (2115) extent of fluvial Flood Zone 3.
Tidal Flooding	Yes	The application site is located within 30m of the shoreline at Langstone Harbour. The Environment Agency's flood zone map indicates that the site lies within high probability Flood Zone 3, defined as land with >0.5% (1 in 200) annual probability of tidal/sea flooding.
Flooding from High Groundwater	No	The 2016 SFRA confirms that the key areas at risk of groundwater flooding are north of Havant Borough and the SFRA mapping confirms there are no recorded incidents of groundwater flooding within Hayling Island. Site-specific data has confirmed rest groundwater levels of 1.0mbgl to 1.5mbgl. Due to the proximity to the shoreline, shallow groundwater is assumed to be in continuity with local sea levels. No below ground (basement) development is proposed, therefore the risk of flooding from groundwater is considered low and acceptable.
Surface Water Flooding	No	The Environment Agency's online mapping indicates that the majority of the application site, including the area of proposed development, is at very low risk of surface water flooding; this is discussed further below.
Flooding from Artificial Drainage Systems	No	The 2016 SFRA confirms that locally, the mainland area of Havant Borough has recorded the most incidents of flooding from drainage infrastructure. The SFRA mapping confirms no records of flooding from sewers (Southern Water records) in the vicinity of the application site. Therefore, the risk of flooding to the site from artificial drainage systems is considered low.
Flooding due to Infrastructure Failure	No	Review of the Environment Agency's online mapping indicates that the application site is not within the predicted maximum extent of flooding of any reservoirs.

Table 1 confirms the only significant potential source of flooding identified within the application site is tidal/sea flooding. The tidal flood risk is detailed above in Section 2.2.1, with appropriate mitigation measures presented in Section 2.4.

Figure 5 presents the Environment Agency's surface water flood map for the application site; this indicates that the risk of surface water flooding across the majority of the application site, including the area of proposed development, is very low (<0.1% annual probability). The north-west part of the application site is shown to have a low risk of surface water flooding (defined as between 0.1% and 1.0% annual probability of flooding). The site survey and

aerial mapping indicate that this area comprises undeveloped rough ground; no development is proposed within this area.

The minor tributary watercourse within the western part of the site is not indicated as a potential source of surface water flood risk. The alignment of this feature(s) should be confirmed through surveying, to ensure it remains outside of the footprint of proposed development. If the development proposals may affect the flow or alignment of the watercourse, prior approval in the form of Ordinary Watercourse Consent should be obtained from Hampshire County Council, prior to works being undertaken.

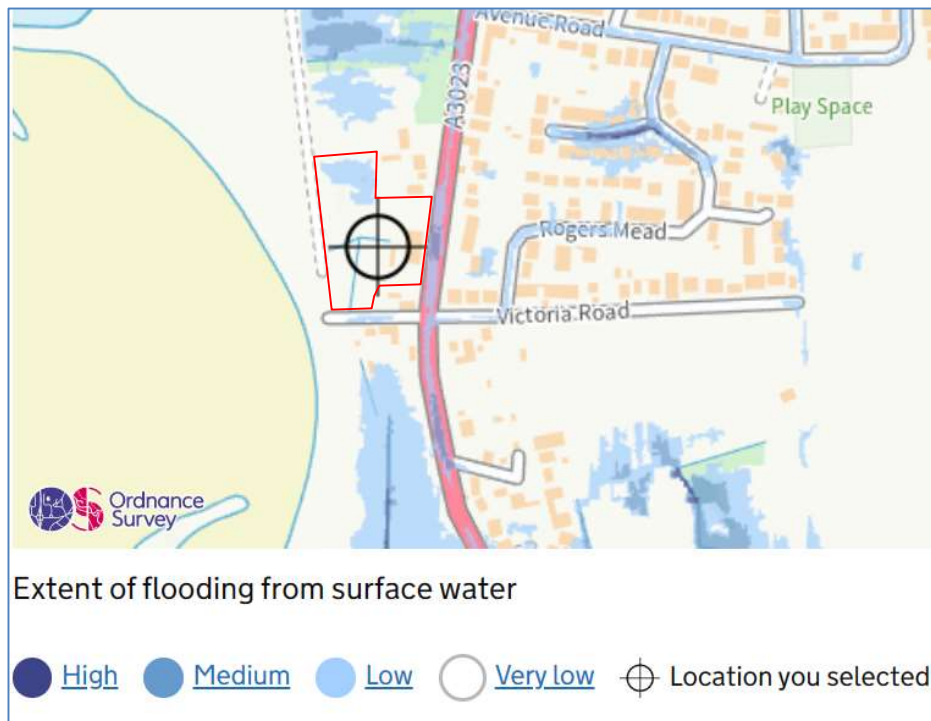


Figure 5. Environment Agency Surface Water Flood Map

2.2.3 Historic Flooding

Review of the Environment Agency's online historic flood map confirms that there is no record of flooding within or in the immediate vicinity of the application site¹². The Environment Agency's consultation response (Appendix 4) also confirms no record of flooding within the site.

The 2016 SFRA mapping presents information regarding flood incidents from groundwater and sewer and confirms there are no recorded flood incidents within 2km of the application site.

¹²<https://environment.data.gov.uk/DefraDataDownload/?mapService=EA/HistoricFloodMap&Mode=spatial> accessed 16th January 2022.

2.2.4 Climate Change

The Environment Agency's climate change allowances guidance¹³ confirms that rainfall, sea levels and river flows are predicted to increase as a result of climate change, which must be considered throughout the lifetime of the proposed development.

The application site lies within the South East River Basin District, where sea levels are predicted to rise by between 1.2m (higher central allowance) and 1.6m (upper end allowance) between 2000 and 2125.

A 75-year design life is considered appropriate for commercial/industrial development, in accordance with the Planning Practice Guidance, representing an end life of 2100. Section 2.2.1 of this FRA includes present-day (2018) predicted extreme sea levels; review of the Environment Agency's climate change guidance indicates that sea levels are predicted to rise between 0.777m (higher central allowance) and 1.028m (upper end allowance) between 2018 and 2100.

The Environment Agency's guidance confirms that flood risk assessments should assess both the higher central (70th percentile) allowance and the upper end (95th percentile) allowance. These have been considered within the assessment of tidal flood risk (Section 2.2.1).

The Environment Agency's climate change allowances guidance also indicates that the application site lies within the East Hampshire Management Catchment, where peak rainfall intensity for the 1% annual probability rainfall event is predicted to increase by between 25% (central allowance) and 45% (upper allowance) by the 2070's (2061 to 2125).

The Environment Agency's guidance confirms that drainage systems should be designed for new development to ensure there is no increase in the rate of runoff discharged from the site for the upper end climate change allowance appropriate to the lifetime of the development.

A surface water drainage strategy shall be developed for the site and include appropriate allowance for long-term climate change.

2.3 The Flood Risk Sequential Test

As set out in the NPPF, the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding (Flood Zone 1). The site-specific assessment of flood risk detailed above within Section 2.2.1 confirms that the application site is effectively within low probability Flood Zone 1, due to the presence of local flood defences.

However, when long-term climate change is taken into account, over the lifetime of the development, it is predicted that the current defences would be overtopped during the design flood event.

The proposed development is limited to demolition of the existing convenience store (106m²) and standalone unit (94m²) and the erection of replacement store with drive-through restaurant (total footprint: 623m²); therefore, it is not appropriate to consider alternative potential development sites. The Sequential Test does not apply to minor non-residential extensions (<250m²) and whilst the proposed development represents an increased footprint

¹³ Environment Agency, February 2016 (last updated: May 2022), Guidance: Flood Risk Assessments: Climate Change Allowances.

of approximately 420m², it is reiterated that the site is currently protected by flood defences and within an area where the local policy is to sustain a minimum 0.5% annual probability standard of protection.

Therefore, it is inferred that the development proposals pass the requirements of the flood risk sequential test.

However, it is recognised that a residual risk of fluvial flooding remains within the application site during an extreme flood event greater than the design flood event and in the event of a breach of the flood defences. Therefore, appropriate flood risk mitigation measures are outlined in Section 2.4 below.

2.4 Flood Risk Mitigation Measures

Section 2.2.1 of this FRA indicates that the application site would remain dry during the present-day 0.5% and 0.1% annual probability tidal flood events, due to the presence of local flood defences. The preferred local shoreline strategy is to improve the coastal flood defences to ensure a minimum 0.5% annual probability standard of protection throughout the life of the development. However, it is recognised that this relies on funding being allocated, and the present day flood defences would be overtopped during the design flood event, equivalent to the 0.5% annual probability tidal flood event plus climate change, based on worse-case sea level rise allowances. Potential peak flood water depths of 1.6m to 2.0m are predicted under this scenario, ignoring the presence of local flood defences. Even if flood defences were improved and maintained as proposed, a residual risk of flooding would remain, in the event of a breach or overtopping of the flood defences during an extreme event.

Therefore, the following flood risk mitigation measures are recommended.

Flood Resilient Design

The development should be designed to allow water to pass through to avoid structural damage by:

- using materials with low permeability to at least 0.3m,
- making it easy for water to drain away after flooding, and
- making sure there's access to all spaces to enable drying and cleaning.

The design of the building should be reviewed by a structural engineer to ensure its integrity with potential peak flood water depths of up to 2.0m.

Flood resilient design measures are aimed at minimising the damage caused by flooding and facilitating cleaning and drying following a flood event and can include:

- Raising electrical sockets, fuse boxes and other services to limit being at risk from flood water;
- Use of water-resistant materials in fixtures and fittings, such as plastic or stainless steel rather than wood; and
- Use of clay ceramic tiles instead of carpets as they are easier to clean and do not soak up floodwater or debris.

Further details and examples are provided within the Environment Agency's design guidance¹⁴.

Site Access and Evacuation

The application site is located within the Environment Agency's Flood Warning Area for Ferry Point, The Kench, Sinah Warren and Stoke, West Hayling. Therefore, it is recommended that a Flood Warning and Evacuation Plan be prepared for the development. The property manager should sign up to the Environment Agency's free Flood Warning Service and the Flood Warning and Evacuation Plan would set out the appropriate actions to be taken in the event of a Flood Alert or Flood Warning being issued.

Surface Water Management

It is recognised that new development has the potential to increase the rate and volume of surface water runoff through the introduction of impermeable surfaces; this could result in an increased flood risk to others.

A surface water drainage strategy shall be prepared for the development, in accordance with local and national planning policy, to ensure it does not increase flood risk to others and to ensure the risk of surface water flooding to the development is appropriately managed.

A detailed surface water drainage strategy shall be prepared post-planning, following completion of the CCTV survey of the existing drainage infrastructure. The survey shall also inform the required on-site sewer diversion works, as indicated within Appendix 3.

The minor tributary watercourse indicated in the western part of the site shall be reviewed and surveyed to determine any potential impact from the footprint of the development. Appropriate Ordinary Water Consent would be obtained from Hampshire County Council, if appropriate, prior to works commencing.

¹⁴ Environment Agency, May 2007, Improving the Flood Performance of New Buildings – Flood Resilient Construction.

3.0 SUMMARY AND CONCLUSIONS

This report represents a site-specific Flood Risk Assessment to support the proposed development of a convenience store with drive-through restaurant, following demolition of the existing convenience store and standalone unit (Greggs) at the existing petrol filling station, 181 Havant Road, Hayling Island, Hampshire PO11 0LG.

The Environment Agency flood zone map for planning indicates that the application site lies within Flood Zone 3 associated with coastal flooding; therefore, a detailed site-specific FRA is required.

A review of all potential sources of flooding to the application site has been undertaken and the Environment Agency has been consulted to obtain site-specific predicted flood risk information.

The FRA concludes that the only significant potential source of flooding to the development is: tidal (coastal flooding). Site-specific predicted flood water level data have been obtained from the Environment Agency from the 2018 East Solent Coastal study. The model results indicate that the application site would remain dry during the present-day 0.5% and 0.1% annual probability flood events due to the presence of flood defences. However, in the absence of flood defence improvements, the current flood defences would be overtopped during the design flood event (0.5% annual probability + climate change) as a result of sea level rise. Peak flood water depths of up to 2.0m are predicted during the design flood event.

However, the local Coastal Management Strategy and confirms that the coastal defences adjacent to the application site have a proposed option of sustaining a minimum 0.5% annual probability (1:200 year) standard of protection.

It is recognised that future flood defence improvements are subject to funding and implementation, and a residual risk remains in the event of a flood defence breach/overtopping during an extreme flood event. Therefore, the following site-specific flood risk mitigation measures are recommended:

- It is recommended that the building be designed to flood and the structural integrity of the building during a flood event should be confirmed. Flood resilient design measures should be introduced as appropriate, including raising electrical and other services and the use of water-resistant materials.
- The application site is located within an Environment Agency Flood Warning Area, and it is recommended that a Flood Warning and Evacuation Plan be prepared for the development. The property manager should sign up to the Environment Agency's free Flood Warning Service and the Flood Warning and Evacuation Plan would set out the appropriate actions to be taken in the event of a Flood Alert or Flood Warning being issued.
- A surface water drainage strategy shall be prepared for the development post-planning, following completion of appropriate surveys, to ensure the appropriate management of surface water runoff and to ensure no increased flood risk to others.
- Any potential impact of the development on the minor tributary watercourse in the western part of the site shall be reviewed through surveying. Ordinary Watercourse consent shall be obtained, if required, prior to any works commencing.

This FRA concludes that the proposed development of a replacement convenience store with drive-through restaurant, classified as 'less vulnerable' development, at the existing

petrol filling station, 181 Havant Road, Hayling Island is appropriate and sustainable with regards to flood risk.

4.0 CLOSURE

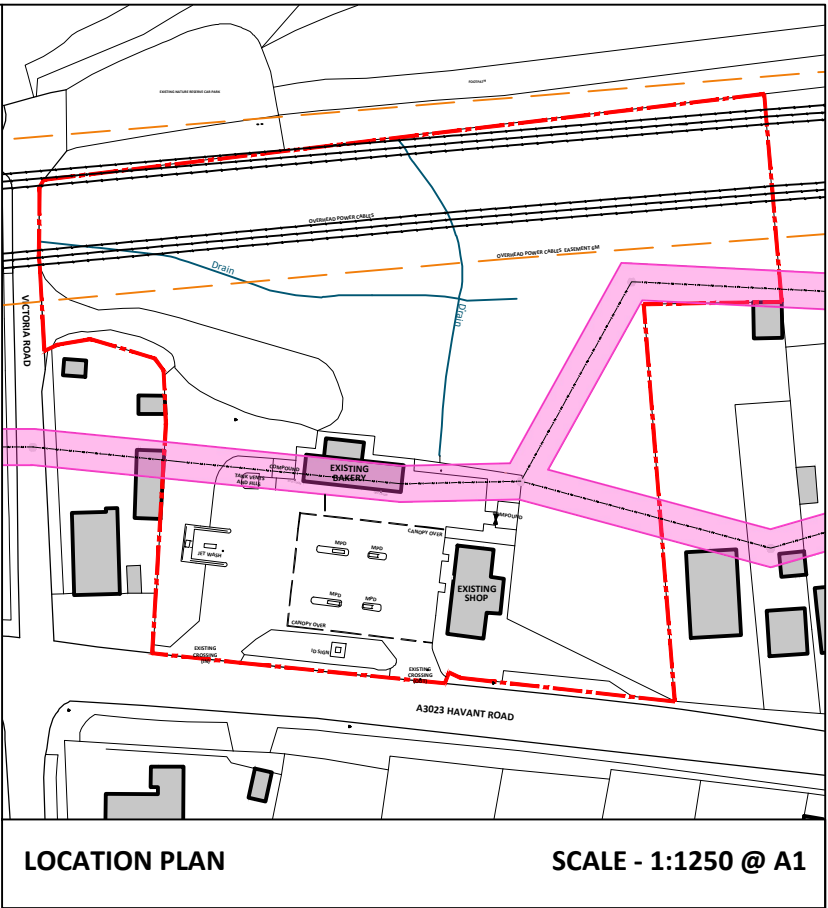
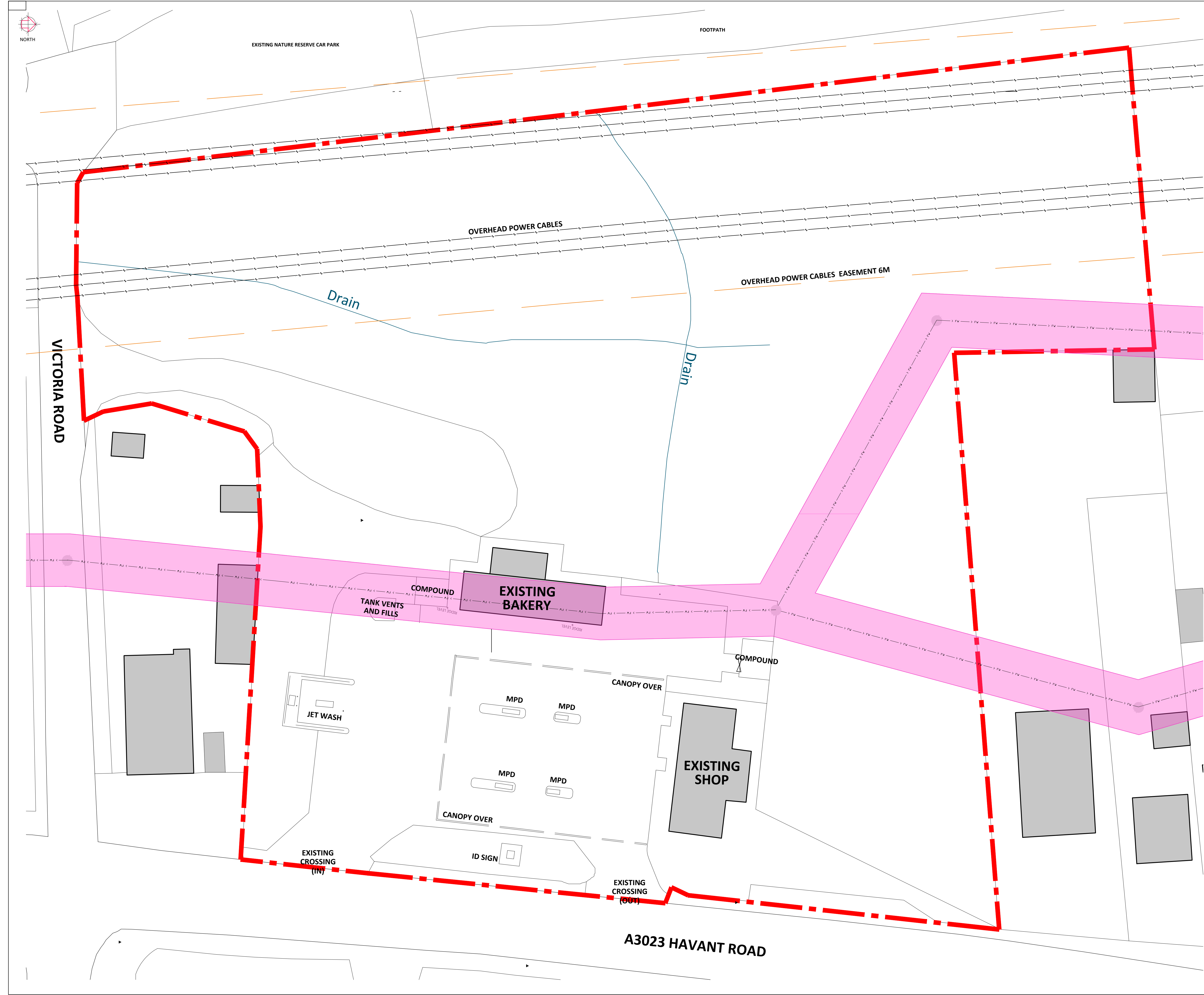
This report has been prepared by Nicola Sugg (trading style of NSugg Limited) with all reasonable skill and care, and in accordance with the services agreed with Euro Garages Ltd. Relevant information provided by Euro Garages Ltd. has been accepted in good faith as being accurate and valid. This report is based on the relevant guidance and legislation in force at the date of the report and should be reviewed if such guidance and legislation are amended or superseded.

NSugg Ltd do not warrant that the advice in this report will guarantee the availability of flood insurance either now or in the future.

It will be the owner's /occupier's responsibility to ensure the recommended flood risk mitigation measures outlined within this FRA are implemented and to maintain the site drainage system throughout the lifetime of the development.

This report is for the exclusive use of Euro Garages Ltd.; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from Nicola Sugg.

APPENDIX 1



- GENERAL NOTES**
1. This plan has been prepared for the submission and approval under Town and Country Planning only.
 2. Fuel installation to be fully compliant with all relevant current Licensing and Environmental Standard and Regulations.
 3. Any advertisement shown is subject to a separate application.
 4. Site levels to be detailed by engineer

SCHEDULE OF AREAS	
Application Site	2.1 Acre / 0.85 Hectare
Existing Shop Footprint	102 m ² / 1100ft ²

- Demolished
- Existing Foul Sewage
- Existing Overhead Cables
- █ Foul Sewage Easement
- █ Overhead Cables Easement
- █ Existing Buildings

PLANNING

PROJECT
Euro Garages
 181 A3023 Havant Road
 Hayling Island PO11 0LG

TITLE
 Existing Layout

CLIENT
 Euro Garages

JENNINGS DESIGN

8 Feast Field, Horsforth, Leeds, West Yorkshire, LS18 4TJ
 www.jennings-design.com 01274 395422 office@jennings-design.com

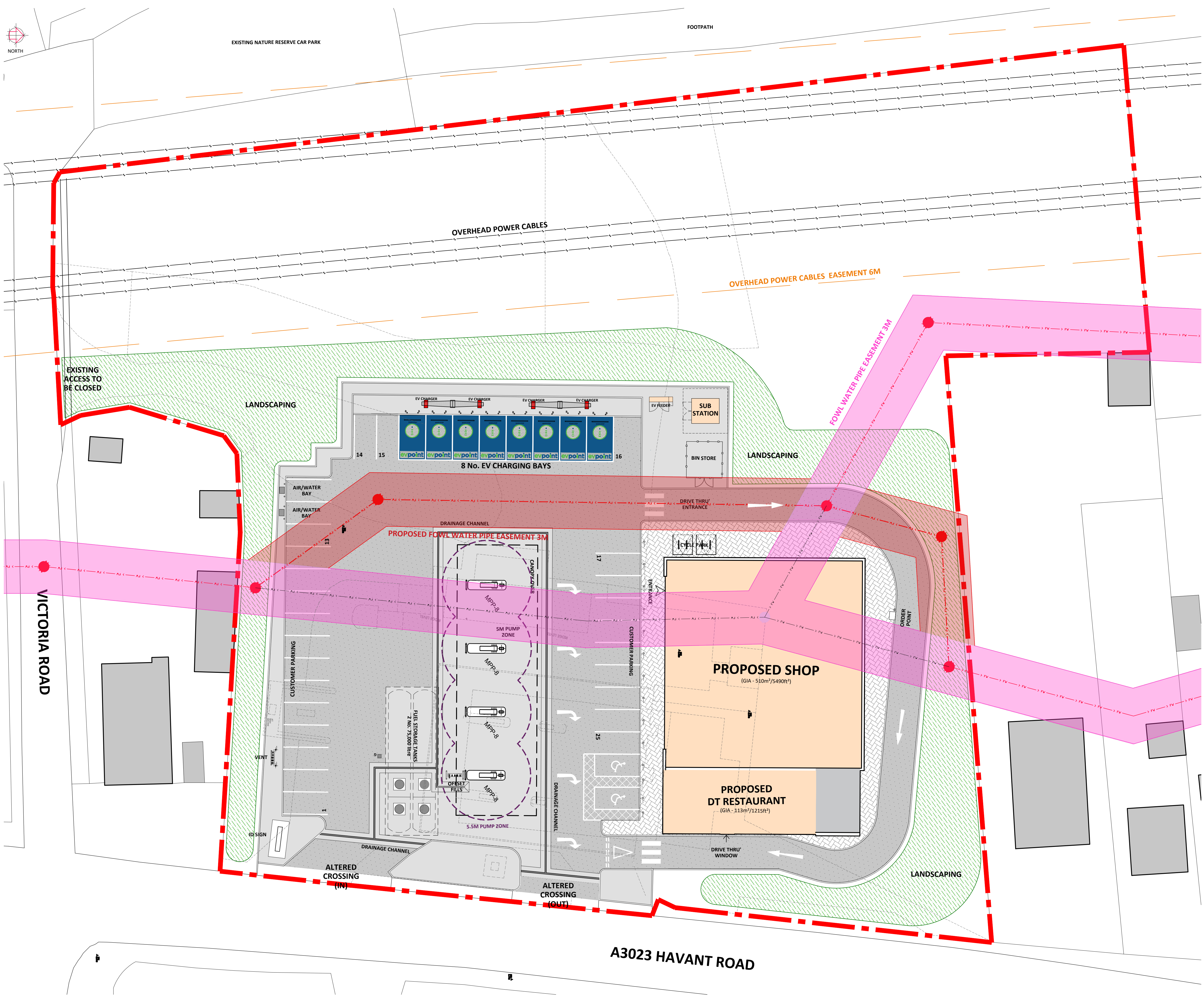
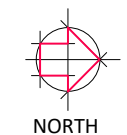
Drawn: GE	Check: HJ	Scale: 1:200 @ A1	Date: Jan '23
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Plan Number: 221034 - 100

0 10 20
 SCALE - METRES - 1:200

APPENDIX 2

APPENDIX 3



GENERAL NOTES

- This plan has been prepared for the submission and approval under Town and Country Planning only.
- Fuel installation to be fully compliant with all relevant current Licensing and Environmental Standard and Regulations.
- Any advertisement shown is subject to a separate application.
- Site levels to be detailed by engineer

GENERAL SITE NOTES

BUILDING MATERIALS

Refer to Proposed Building Elevations Sheet.

LANDSCAPING

All denoted landscaped margins to be detailed by specialist

- Tree Root Protection Zone on Grade B Trees

SURFACED MATERIAL

See surfacing key for all relevant surface finishes

CROSSINGS

ENTRANCE/EXIT - Existing entrance/exit crossing to be used with the installation of appropriate entry / no exit signage.

NOTE - ALL HIGHWAY WORKS ARE SHOWN FOR INDICATIVE PURPOSES ONLY, DETAILED DESIGN TO BE DONE BY SPECIALIST

SURFACE FINISHES:

- Denotes selected & approved paving stones for seated terraced area to the side of the building
- Denotes macadam road surfaced areas
- Denot landscape areas as DEP details (any planting to be detailed by specialist)
- Denotes Concrete surface areas
- Denotes Blue surfacing for EVC Bays

BIN / PLANT COMPOUND

2m High PSE lantaised close boarded timber fence with double access gates as shown

CANOPY

New steel framed canopy over the forecourt formed with polycarbonate dome. Canopy to be set 5.2m high from the highest forecourt level. Lighting to underside of canopy by specialist & signage to perimeter to be part of a separate application.

TANKS

Install 2No. 75,000ltr tanks as shown, encased in pea gravel along with all associated pipework, offset fills, 5m high vent stack etc, all in accordance with current regulations (blue book).

BOUNDARY TREATMENTS

Existing 3 rail highway spec' fence to be retained where feasible & replaced where necessary to match existing.

SCHEDULE OF AREAS	
Application Site	2.1 Acre / 0.85 Hectare
Existing Shop Footprint	102 m ² / 1100ft ²
Proposed Shop GEA	510m ² / 5490ft ²
Proposed Parking	33 Bays (2 DDA Bays)
Proposed EV Charging	8 Bays

- Demolished
- Existing Foul Sewage
- Existing Overhead Cables
- Proposed Foul Sewage
- Foul Sewage Easement
- Overhead Cables Easement
- Existing Buildings
- Proposed Foul Sewage Easement
- Proposed Buildings

PLANNING

PROJECT

Euro Garages
181 A3023 Havant Road
Hayling Island PO11 0LG

TITLE

Proposed Layout

CLIENT

Euro Garages

JENNINGS DESIGN

8 Feast Field, Horsforth, Leeds, West Yorkshire, LS18 4TL
www.jennings-design.com 01274 395422 office@jennings-design.com

Drawn:	GE	Check:	HJ	Scale:	1:200 @ A1	Date:	Jan '23
Plan Number:	221034 - 102						

SCALE - METRES - 1:200

APPENDIX 4

Nicola Sugg

From: Partnership and Strategic Overview team, HIOW <psohiow@environment-agency.gov.uk>
Sent: 24 January 2023 15:38
To: Nicola Sugg
Cc: SSD Enquiries
Subject: Product 4 & 8 Request for Havant Road, PO11 0LG - Our ref: SSD/294632

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Nicola,

Enquiry regarding Product 4 & 8 for 181 Havant Road, Hayling Island PO11 0LG.

Thank you for your enquiry which was received on 10 January 2023.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004. The information is attached.

The site may be affected by an extreme flood. According to our published flood map, which provides a general estimate of the likelihood of flooding across England & Wales, the property is shown to be within Flood Zone 3 - an area which may have a 0.5% chance of flooding annually (1 in 200), **ignoring** the presence and effect of any flood defences.

The Environment Agency has no record of flooding to this property/area. Please note our records are not comprehensive and may not include all events. I recommend contacting the Lead Local Flooding Authority, "Hampshire County Council" or the Local Authority, "Havant Borough Council" for a more comprehensive flood history check.

Information on any nearby sea defences is available from Havant Borough Council.

Defences – See attached map.

Flood Levels – Please see the attached map showing the flood levels for your site. These levels have been taken from East Solent Coastal which was produced in 2018 by JBA.

Product 8 – Unavailable

Name	Product 4
Description	Basic / Detailed Flood Risk Assessment Map for 181 Havant Road, Hayling Island PO11 0LG
Licence	Open Government Licence
Information Warnings	The majority of our models will not have the new climate change allowances. +20% is not suitable for the majority of planning purposes and the new allowances to use should be checked here: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
Information Warning - OS background mapping	<i>The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.</i>
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2017 Ordnance Survey 100024198.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning ([Flood Zone 2](#), [Flood Zone 3](#), [Flood Storage Areas](#), [Flood Defences](#), [Areas Benefiting from Defences](#))
- [Risk of Flooding from Rivers and Sea](#)
- [Historic Flood Map](#)
- [Current Flood Warnings](#)

Does Your Proposal Have Environmental Issues or Opportunities? Speak To Us Early!

If you are planning a new project or development, we want to work with you to make the process as smooth as possible. Early engagement can improve subsequent planning applications to you and your clients' benefit and deliver environmental outcomes. For a cost recovery fee of £100 per hour plus VAT we will provide you with a project manager who will coordinate all meetings and reviews in order to give you detailed specialist advice with guaranteed delivery dates. More information can be found on our website [here](#).

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely,

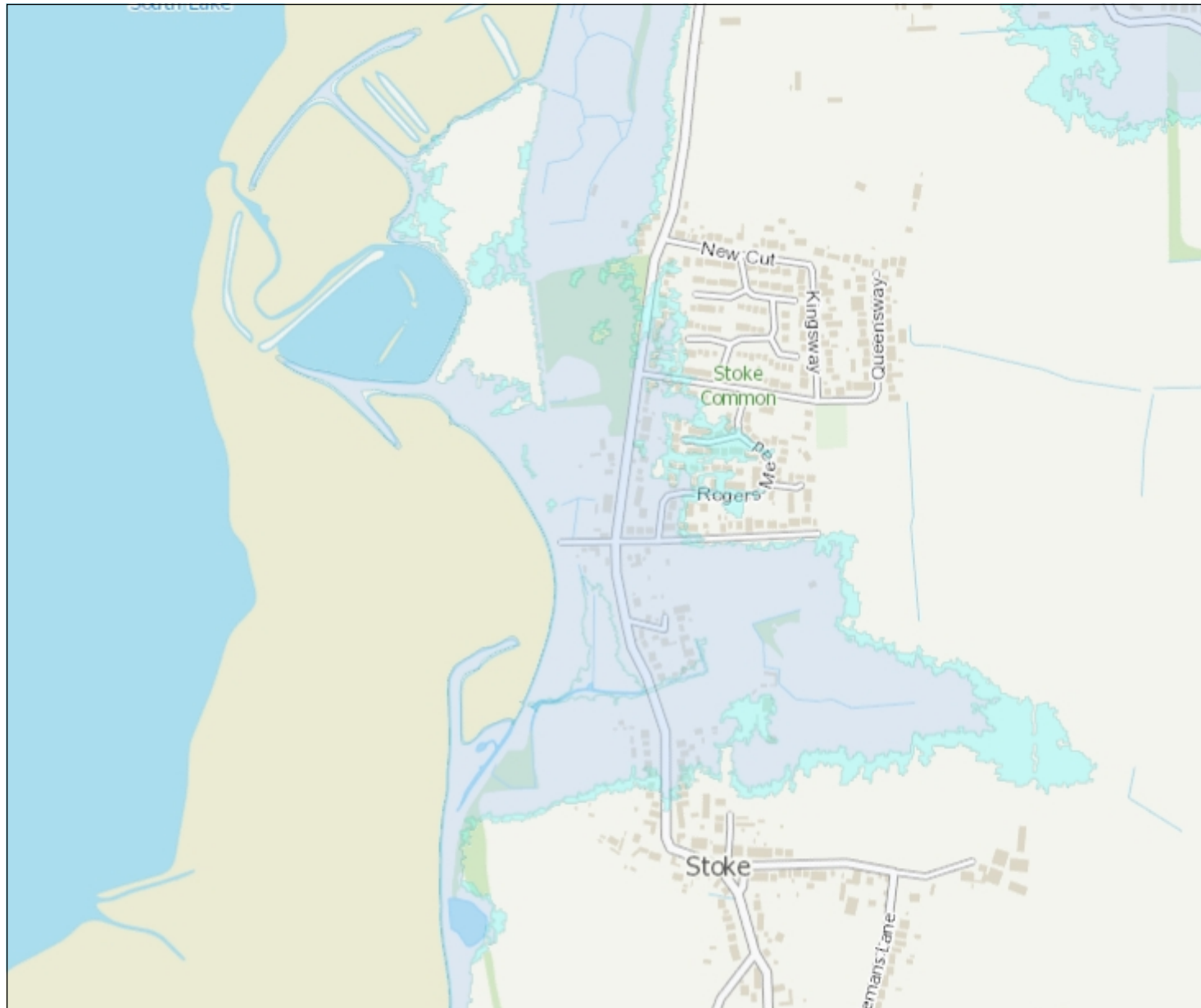
Callum Robins
Partnership and Strategic Overview team, Hampshire and Isle of Wight

Environment Agency

Email psohiow@environment-agency.gov.uk

Information in this message may be confidential and may be legally privileged. If you have received this message by mistake, please notify the sender immediately, delete it and do not copy it to anyone else. We have checked this email and its attachments for viruses. But you should still check any attachment before opening it. We may have to make this message and any reply to it public if asked to under the Freedom of Information Act, Data Protection Act or for litigation. Email messages and attachments sent to or from any Environment Agency address may also be accessed by someone other than the sender or recipient, for business purposes.

Flood Map for Planning (Rivers and Sea) - Centred on Havant Road, PO11 0LG - Created 20 January 2023



1: 10,000

0 Metres 250



Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Defence Map Centred on Havant Road, PO11 0LG - Created 24 January 2023



Legend

asset_id

180300

asset_id

130201

134282

135532

144149

144150

45738

459558

459598

459619

asset_id

183342

1:12,000 *

*when printed at A4.

0 230 460
Metres



Asset ID	Asset sub-type	Length	Maintainer	Current condition	Design Standard of Protection (Years)	Date of last inspection
130201	Embankment	575.75	Unknown	No Data	200	10/12/2021
134282	Natural High Ground	190.60	Unknown	No Data	10	10/12/2021
135532	Natural High Ground	154.97	Unknown	No Data	10	07/12/2022
144149	Natural High Ground	189.98	Unknown	No Data	10	10/12/2021
144150	Natural High Ground	150.35	Unknown	No Data	10	07/12/2022
45738	Beach	540.20	Unknown	No Data	25	10/12/2021
459558	Embankment	131.01	Unknown	No Data	No Data	28/03/2022
459598	Embankment	242.81	Unknown	No Data	No Data	28/03/2022
459619	Embankment	249.82	Unknown	No Data	No Data	28/03/2022
183342	Embankment	285.69	Environment Agency	Fair	50	10/12/2021
180300	Simple Culvert	20.61	Environment Agency	Fair	50	10/12/2021

Levels Map Centred on Havant Road, PO11 0LG - Created 24 January 2023



Legend

 Location_Point

Ground Levels

Value

- High : 18.1244
- Low : -23.2942

Water depth

Value

- High : 27.5609
- Low : 4.15804e-06



1:928 *

*when printed at A4.


0 10 20
Metres



Water Depths & Levels for Havant Road, PO11 0LG

Point	Water Surface Level (mAOD*)		Ground Level	Water Depth (metres)	
	0.5% Annual Probability/1 in 200 Year Present Day (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)		0.5% Annual Probability/1 in 200 Year Present Day (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year Present Day (Flood Zone 2)
1	3.32	3.50	2.42	0.90	1.08
2	3.32	3.50	2.63	0.69	0.87
3	3.32	3.50	2.10	1.22	1.40
4	3.32	3.49	2.59	0.73	0.90
5	3.33	3.50	2.84	0.49	0.66

* Levels in metres above Ordnance Datum Newlyn

CC Levels Map Centred on Havant Road, PO11 0LG - Created 24 January 2023



Legend

 Location_Point

Ground Levels

Value

- High : 18.1244
- Low : -23.2942

Water depth

Value

- High : 27.5609
- Low : 4.15804e-06



1:928 *

*when printed at A4.


0 10 20
Metres

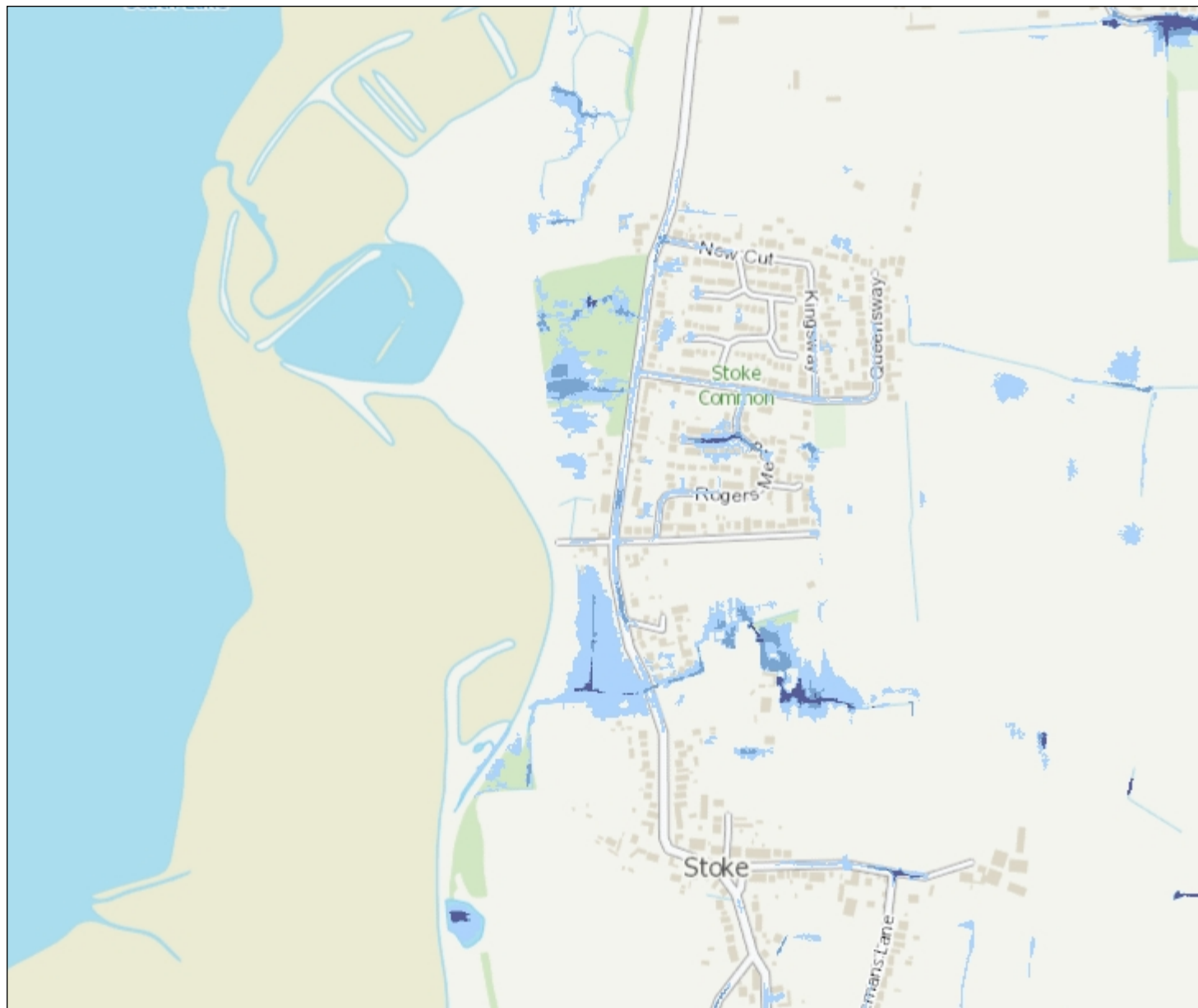


Water Depths & Levels for Havant Road, PO11 0LG

Point	Water Surface Level (mAOD*)				Ground Level	Water Depth (metres)			
	0.5% Annual Probability/ 1 in 200 Year (2065)	0.5% Annual Probability/ 1 in 200 Year (2115)	0.1% Annual Probability/ 1 in 1000 Year (2065)	0.1% Annual Probability/ 1 in 1000 Year (2115)		0.5% Annual Probability/ 1 in 200 Year (2065)	0.5% Annual Probability/ 1 in 200 Year (2115)	0.1% Annual Probability/ 1 in 1000 Year (2065)	0.1% Annual Probability/ 1 in 1000 Year (2115)
1	3.71	4.07	3.85	4.24	2.42	1.29	1.65	1.43	1.82
2	3.71	4.07	3.85	4.24	2.63	1.08	1.44	1.22	1.61
3	3.71	4.07	3.85	4.24	2.10	1.61	1.97	1.75	2.14
4	3.70	4.07	3.85	4.24	2.59	1.11	1.48	1.26	1.65
5	3.71	4.07	3.86	4.24	2.84	0.87	1.23	1.02	1.40

* Levels in metres above Ordnance Datum Newlyn

Risk of flooding from Surface Water - Centred on Havant Road, PO11 0LG - Created 20 January 2023



1: 10,000

0 Metres 250



Likelihood of flooding from Surface Water

- High ($\geq 3.3\%$)
- Medium (3.3% - 1%)
- Low (1% - 0.1%)
- Very Low

Likelihood of flooding from Surface Water

- High:** Greater than or equal to 3.3% (1 in 30) chance in any given year
- Medium:** Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low:** Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low:** Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on GOV.UK.



Nicola Sugg
Consultant Hydrogeologist
& Hydrologist

nicola@nsugg.co.uk

www.nsugg.co.uk

07866 374158

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