Flood Risk Assessment for 69 – 73 Bishopstoke Road,

Eastleigh, Hants, SO50 6LA

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1 Introduction

1.1 Instructions were received from Mr A Kalirai to undertake a Flood Risk Assessment (FRA) for the proposed change of use of an existing petrol filling station to a hand car wash on land at 69 – 73 Bishopstoke Road, Eastleigh, SO50 6LA.

1.2 This assessment has been prepared by W L Fielder MEng

1.3 The client's attention is drawn to the conditions and limitations contained in Appendix D.

2 Development Description & Location

2.1 The development site comprises approximately 700 sqm of land at 69 – 73 Bishopstoke Road, Eastleigh, SO50 6LA (grid reference SU 46566 19163).

2.2 The site at 69 – 73 Bishopstoke Road currently comprises a petrol filling station.

2.3 A change of use is proposed for the site to convert it to a hand car wash. An indicative layout for the proposed hand car wash at the site is shown on the 1:500 scale drawing, a copy of which is contained in Appendix A.

3 Local Development Documents & Strategic Flood Risk Assessment

3.1 The Partnership for Urban South Hampshire (PUSH) Strategic Flood Risk Assessment (SFRA) has been reviewed (refer to appendix for local mapping) and this indicates the following:

3.2 SFRA map set 1A indicates that the site is wholly within FZ3b.

3.3 SFRA map set 1B indicates that the site is within a low hazard zone (FZ3 undefended).

3.4 SFRA map set 1D indicates a breach index is not relevant to the site.

3.6 SFRA map set 1E indicates the site lies in 2115AD Climate change FZ3.

3.7 SFRA map set 1F2 indicates the site overlies low permeability bedrock and is not in an historic groundwater flooding area.

3.8 SFRA map set 1F5 indicates no observed sewer flooding incidents at the site.

3.9 SFRA EA flood zone map set indicates the site is wholly within FZ3 (fluvial).

3.10 SFRA EA historic flood zone map set indicates the site is not in an historic flood zone.

3.11 SFRA EA pluvial flood zone map set indicates the site does not contain any pluvial flood risk areas. However, the land to the north and east of the site are areas that are at low risk of being susceptible to pluvial surface water flooding.

3.12 SFRA EA surface water flood zone map set indicates the site does not contain any surface water flood risk areas. However, the land to the north east of the site is at risk of surface water flooding.

3.13 Flood mapping data has also been reviewed from the EA website (refer to Appendix for local mapping). This indicates the following:

3.14 The EA mapping indicates the site is wholly within FZ3. There is a main river to the east and west of the site.

3.15 The EA mapping indicates the site is not in an area at risk of flooding from reservoirs.

3.16 The EA mapping indicates the site is not located in a Source Protection Zone.

3.17 The EA mapping indicates the site is not within surface water safeguard zone for drinking water.

3.18 The EA mapping indicates the groundwater is in a not within a groundwater safeguard zone for drinking water.

4 Catchment Flood Management & Shoreline Management Plans

4.1 The site is at an elevation of some 12m AOD and is remote from the influence of tidal flooding. Shoreline Management Plans are not applicable to this location.

4.2 The Test and Itchen Catchment Flood Management Plan summary – December 2009 (CFMP) indicates the site falls within Policy sub-area 7 Lower Itchen. The CFMP states that Policy 4 is the preferred policy approach:

- *"Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change. This policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. In this case we would need to do more in the future to contain what would otherwise be increasing risk. Taking further action to reduce risk will require further appraisal to assess whether there are socially and environmentally sustainable, technically viable and economically justified options."*

4.3 Overall the CFMP does not present any issues that would prohibit the change of use of this site and retention of the existing roofs and pavements.

5 Catchment Data

5.1 The site lies within the NRFA gauging station 42023 catchment. This gauging station is located at SU 444 15 and has a catchment area of 415 km^2. The catchment is characterised as principally a rural, Chalk catchment but with appreciable urban growth near the outfall (where impervious Tertiary formations predominate).

5.2 The BGS Geology of Britain viewer indicates the site bedrock geology to be Wittering Formation (sand silt and clay) with superficial beach deposits on the coastline.

6 Sewerage Authority Data

6.1 The site is already connected to the public sewer network and the change of use will retain the current connection.

6.2 The applicant has been in communication with the sewerage statutory undertaker, Southern Water, concerning modifications to the drainage apparatus on the site. The schematics for this are included in Appendix C. The change of use however will not alter the quantity or impermeable surface drained of rainfall or change the current receptor for discharge of the rainfall runoff.

7 Walkover Survey

7.1 The site comprises an existing fuel filling station. There is also an existing car washing facility on site. The 'Prince of Wales' pub is situated directly to the west of the site. One channel of the river Itchen runs along the eastern boundary of the site. There is a detached residential dwelling to the east of the river Itchen as well as two semi-detached residential dwellings directly opposite the site. Overall the site lies on the western edge of the developed area on the East side of the Itchen valley.

8 Source-Pathway-Receptor Assessments

8.1 The site is currently at an elevation of approximately 12m AOD and is not at risk of tidal flooding.

8.2 The site lies adjacent one of the channels to the River Itchen and is at risk of fluvial flooding.

8.3 The site is not located in the vicinity of any reservoirs and EA flood risk from reservoirs mapping does not indicate any reservoir flood risk to the site.

8.4 The site is not in a location with sewer flooding incidents and is not considered to be at risk of sewer flooding.

8.5 The SFRA data does not indicate the site to be at risk of groundwater flooding.

8.6 The SFRA and EA mapping does not indicate the site to be a location of pluvial or surface water flood risk.

8.7 The governing flood mode for the site is fluvial.

8.8 The flood receptors of the change of use would be:

- The existing commercial building
- Occupiers of the existing building

8.9 The proposed change of use and existing site classifications to Table 2 of NPPF Technical Guidance are as follows:

- Existing hazardous substances installation — Highly vulnerable
- Proposed commercial use — Less vulnerable

9 Flood Probability

9.1 The Environment Agency (EA) flood zones, shown on the outputs and included in the Appendix, represents current best estimates of zone 2 and zone 3 flooding as defined in Table 1 of the Technical Guidance to the National Planning Policy Framework. It does not take account of potential climate change impacts.

Zone 2	Medium Probability of tidal flooding (0.5%-0.1%)
Zone 3a	High Probability of tidal flooding (>1%)
Zone 3b	Functional Floodplain (>5% probability of flooding)

- The flood map does not differentiate between zones 3a and 3b.
- Zone 3b is only considered appropriate for water-compatible development.
- Zone 3a is additionally considered appropriate for less vulnerable uses.

9.2 The site is within FZ3.

10 Climate Change

10.1 Assuming a design life of 100 years, increase in rainfall (Table 5 of NPPF Technical Guidance.) due to climate change is +30% to current rates. The SFRA mapping indicates the site would be located in FZ3 in 2115AD.

10.2 Surface water drainage strategy is discussed in section 11.

11 Detailed Development Proposals & Surface Water Strategy

11.1 The proposed change in use of the site will retain the existing roof and pavement areas. Thus there will be no change in the impermeable area of the site or the receptor for the rainfall runoff (Section 6 refers).

11.2 The applicant has been in communication with the sewerage statutory undertaker, Southern Water, concerning modifications to the drainage apparatus on the site. The schematics for this are included in Appendix C.

12 Sequential & Exception Tests

12.1 The proposed change of use is not subject to the Sequential Test or Exceptions Test (NPPF paragraph 104 refers).

12.2 The reduction in vulnerability associated with the change of use is consistent with flood policy as this will produce a net vulnerability reduction. (Paragraph 8.9 refers)

13 Flood Risk Management Measures

13.1 The source pathway receptor assessment is contained in Chapter 8.

13.2 Paragraph 8.7 identifies that fluvial flooding is the governing flood source.

13.3 The proposed change in use of the site will retain the existing roof and pavement areas. Thus there will be no change in the impermeable area of the site or the receptor for the rainfall runoff. There will therefore be no adverse impact on flood flow rates within or outside the site.

13.4 The change of use will retain the existing office/welfare building and pavements. The pavements are inherently flood resilient. Although the office is already present consideration should be given to the level of resilience of the existing construction. As an advisory note the applicant may wish to consider enhancements to the existing resilience and is referred to DCLG publication “Improving the Flood Performance of New Buildings-Flood Resilient Construction”.

14 Off Site Impacts

14.1 The proposed change in use of the site will retain the existing roof and pavement areas. Thus there will be no change in the impermeable area of the site or the receptor for the rainfall runoff. There will therefore be no adverse impact on flood flow rates within or outside the site.

15 Residual Risks

15.1 The proposed surface water strategy for the development provides for flood events up to 1:100 year 2014_{AD} +30% rainfall. The residual flood risk is therefore events in excess of 1:100 year 2014_{AD} +30% rainfall.

APPENDIX A:

Existing & Proposed Site Layout

Front elevation of site, looking east.



Front elevation of site, looking west.



Adjacent water course





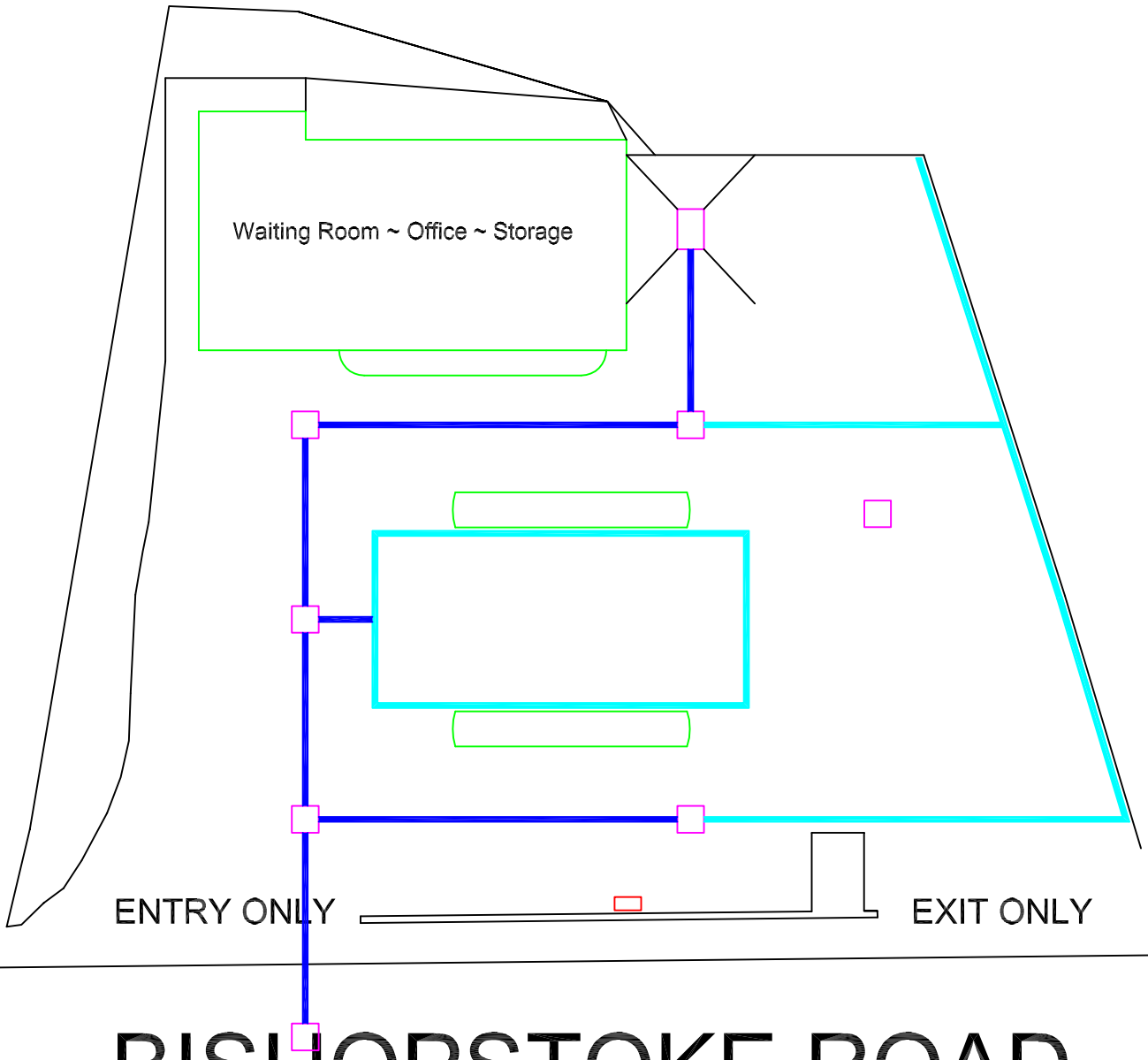
River Itchen
Mill House Lodge
1 to 4
Mill House
El Sub Sta
1 to 7
75
Tesco
Waiting Room ~ Office ~ Storage
EXIT ONLY
ENTRY ONLY
BISHOPSTOKE ROAD
34
32
61
Scale 1:500

APPENDIX B:

SFRA Map Data and EA Data

APPENDIX C:

Existing & Proposed Surface Water Schematics



BISHOPSTOKE ROAD

ECO DRAINS

DRAINAGE BELOW GROUND

MANHOLE

SURFACE WATER DRAIN

Scale 1:200

APPENDIX D:

Conditions & Limitations

OPUS

ENGINEER'S INSPECTION

CONDITIONS AND LIMITATIONS

1. The report is a record of a visual inspection carried out by, or under the direction of a Chartered Structural Engineer and must not be misinterpreted as a Structural Survey such as would be carried out by a Chartered Surveyor. The report is not a Valuation Survey.

2. The inspection is strictly limited to the items requested and these will be detailed in Clause 1 of the report. No consideration will be given to any other aspects or parts of the building.

3. The report is confidential to the Client(s) stated in Clause 1 and has been prepared to their instructions for their own purposes only and it is not permitted to disclose this report to any other parties (except the Clients own Solicitors, Surveyors, Building Societies or Estate Agents) without the prior consent of Opus.

4. The copyright of this report remains the property of Opus.

5. No liability for the contents of this report is accepted to any parties other than the Client(s) stated in Clause 1.1. No parties other than the client stated in Clause 1.1 should rely upon this report.

6. Unless specifically stated otherwise:-

   a) Trial holes will not be excavated prior to the preparation of the report and the depth and construction of the foundations and type of sub-soil will not be inspected.

   b) All external observations will be carried out by eye from the ground level only. Internal inspection is made within the limits of ready accessibility and it is not normal practice to lift floor coverings or floor boards, remove fixtures, panels or plaster, or move heavy items of furniture or bulky goods or materials.

   c) No inspection will be made of any roof voids, floor joists, wall cavities, drainage pipework or any other hidden or inaccessible parts.

   d) No timbers will be checked for damp, rot, infestation by wood-boring insects or other defects.

   e) It should not be construed that any parts of the construction comply with the requirements of the Building Regulations Act or standard practice either current or as current at the time of original construction. No enquiries to any Authorities will be made.

   f) No testing or enquiries into the presence of or susceptibility to pollution, contamination, radiation, methane, radon or other gases or hazardous substances has been carried out.

7. Unless specifically stated otherwise in the report, any recommendations for works given in the report are outline only and are to be confirmed or modified as appropriate at detailed design stage.

8. Where trial holes are specifically included in our instructions the condition of the footing and the founding soil relates only to the point of excavation and does not necessarily confirm a continuation of the same conditions throughout the non-inspected areas of the structure. Whilst such trial pits will usually provide a reasonable indication as to the general state of the foundations and ground conditions, these cannot be determined with complete certainty.

9. Under the Construction (Design & Management) Regulations latest edition, the Client has obligations for ensuring Health and Safety arising from any construction work. If it is proposed to proceed with construction work based upon information or recommendations contained in this report, these regulations probably apply. Further details of any issues arising from our report or the Clients obligations generally are available on request.

10. Unless dealt with more specifically above the Association of Consulting Engineers Conditions of Engagement Short Form Agreement 2002 apply.

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