FLOOD RISK ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT AT 68 SILTSIDE GOSBERTON RISEGATE, LINCS.

FINAL REPORT

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GCB/TaC ARCHITECTS

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Fig 1 - Location Plan – OS Map

Fig 2 - Proposed Block Plan & Floor Plan –
TaC Architects Ltd. drg. no. 23/646/PA/001

Fig 3 - Topographical Survey – SE Surveys Ltd drg. no. SE 1229-1

Fig 4 - Environment Agency Flood Map for Planning

Fig 5 - South East Lincs Updated Strategic Flood Risk Assessment
Residual Flood Depths (present day and 2115)

Fig 6 - Welland & Deepings Internal Drainage Board district plan

1.0 INTRODUCTION

1.1 An outline planning application is to be submitted by TaC Architects Ltd on behalf of Ms Liz Lenten for proposed residential development at 68 Siltside, Gosberton Risegate, Lincs.

1.2 Planning approval requires a Flood Risk Assessment to accompany the application to meet the requirements and general principles contained in the Planning Practice Guidance to the National Planning Policy Framework (NPPF) and for approval by the Environment Agency.

The site is shown partly within Flood Zones 2 and 3 of the Environment Agency's Flood Map for Planning. The latest Flood Zone Maps have been created as a tool to raise awareness of flood risk with the public and partner organisations, such as Local Authorities, Emergency Services and Drainage Authorities. The Maps do not take into account any flood defences.

The site is also shown in Flood Zone 1 of the South East Lincs. Updated Strategic Flood Risk Assessment Map (2016) as a low probability of flooding and located in the Welland and Deepings Internal Drainage Board district.

1.3 Geoff Beel Consultancy was appointed on 21st August 2023 to undertake a Flood Risk Assessment.

2.0 LOCATION

2.1 The development site is at 68 Siltside, Gosberton Risegate. The National Grid Reference of the central point of the site is TF15310030.

2.2 The position and extent of the site are shown on Fig 1 – Location Plan at the end of the document.

2.3 The site, located within the Welland and Deepings Internal Drainage Board district is shown partly within Flood Zones 2 and 3 as detailed on the Environment Agency Flood Map for Planning but in Flood Zone 1 with a low probability of flooding in the South East Lincs. Updated Strategic Flood Risk Assessment (2016).

3.0 THE SITE AND SEQUENTIAL TEST

3.1 The site is land at the rear of 68 Siltside, Gosberton Risegate.

3.2 The area of development is approximately 0.20 hectare.

3.3 The proposed site layout consists the construction of 4 single storey dwellings with shared access off Siltside.

3.4 The Sequential Test and Exception Test are met as located in Flood Zone 1 of the South East Lincs. Updated Strategic Flood Risk Assessment with the development protected against the 1 in 200 year tidal event and the 1 in 100 year fluvial event by a combination of existing defences with mitigation measures meeting the requirements of NPPF.

Flood mitigation measures have been incorporated into the design and construction of the dwellings to ensure the development remains safe during its lifetime.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

4.1 The site is within a defended floodplain, as defined in Appendix 1 of the Environment Agency's policy for the Protection of Floodplains and is considered to be passive until such time as a flood greater than that for which the defences were designed occurs. The likelihood of flooding due to overtopping or failure of a flood defence embankment is considered to be small.

The development site within the Welland & Deepings Internal Drainage Boards is protected by the River Welland tidal defences between Spalding and Fosdyke Bridge with embankment levels of a minimum 7.00m aOD.

4.2 The site is located within the Welland and Deepings Internal Drainage Board district with the nearest 'main drain' open watercourse immediately on the site frontage alongside 68 Siltside. Land levels at the site are generally at 3.20m aOD with carriageway level of Siltside at 3.50m aOD.

4.3 The existing standard of drainage for the Welland and Deepings Internal Drainage Board is 1 in 50 years return period, compatible with the Department of the Environment, Food and Rural Affairs target level of service for rural drainage and flood defence works. Freeboard of 1.00 metre is provided to the lowest land levels.

4.4 The site and surrounding land drains to the Upper Risegate system which discharges into the tidal River Welland some 7.50kms south-east of the site at the Risegate Eau Pumping Station.

4.5 Current maintenance standards within the Welland and Deepings Internal Drainage Board are generally very good. During the operation and maintenance of its pumping stations, associated structures and channel systems, particularly those that could affect property, the Board seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Boards assets are commensurate with the standard of protection that is sought. However, bank slips, blocked culverts etc may occur from time to time and these matters are usually dealt with promptly.

4.6 Maintenance standards of the Environment Agency's main rivers and defences are well maintained and regularly inspected for their asset condition.

5.0 POTENTIAL SOURCES OF FLOODING

5.1 Three potential sources of flooding have been identified as a result of this assessment:

a) storm return period of 1 in 50 years being exceeded
b) failure of Risegate Eau Pumping Station
c) overtopping and breaching of the tidal River Welland defences

5.2 The probability of flooding from a) is low due to the Welland & Deepings IDB main drain design standard incorporating storage in the Board's system.

5.3 Failure of the Risegate Eau Pumping Station may occur due to long term mechanical breakdown or power supply being disrupted. However, in these circumstances, if conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by utilising temporary pumping equipment. The probability of such an occurrence is also considered to be low.

5.4 The flood embankments to the tidal River Welland provide a 1 in 200 year return period level of protection.

The 1 in 200 year River Welland tidal event at Fosdyke Bridge in 2069 is estimated to be 6.41m aOD as against existing embankment levels of a minimum of 7.00m aOD.

There is a low risk during such an event for wave and wind action to cause overtopping and/or breaching of the first line defence parallel with the River Welland. However, the site is located 6.50kms from the River Welland defences and any impacts of overtopping/breaching would be minimal.

The site is shown outside the effects of any floodwaters as a result of a breach to the River Welland tidal defences.

5.5 It is therefore recommended that proposed floor levels of the development should be 300mm above existing Siltside carriageway level to safeguard against the risk of a breach occurring to the River Welland tidal defences. Flood resilient measures will also be incorporated into the design and construction of the dwellings up to 300mm above finished floor level.

5.6 The developer will ensure that the eventual occupiers of the new dwellings are sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high. Indirect warnings are provided to all flood risk areas, even those at low risk of flooding. The main method is media broadcasts via local radio and also by television.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding, contact tel. no: 0345 988 1188.

6.0 EXTENT OF KNOWN FLOODING

6.1 During the preparation of this assessment no evidence was discovered of the site and adjoining properties being flooded.

7.0 PROBABILITIES AND TRENDS OF FLOODING

7.1 The probability of this development flooding from localised drainage systems is very low. It is also intended to construct floor levels 300mm above existing Siltside carriageway level with flood resilient construction up to 300mm above finished floor level.

7.2 The probability of the site flooding with water from any Welland and Deepings main drain system is less than 1% because of the standards of the existing flood defence systems, storage within existing drainage channels and the location of the site.

7.3 If under very extreme events, levels of floodwater from any Environment Agency or Welland and Deepings river or arterial systems rose to such an extent that the site was affected, the situation would not be sudden. It is very probable that sufficient time would be available to take precautionary actions to limit the extent and potential impact of flooding.

7.4 The water levels in the drainage channels will tend to rise as a result of the impacts of climate change. However the existing systems and defences together with the raising of floor levels 300mm above existing Siltside carriageway level will be appropriate for the design life of the development (i.e. 100 years).

8.0 IMPACTS OF FLOODING

8.1 No significant impacts of flooding are anticipated due to the mitigation measures being proposed.

8.2 Floor levels of the development will be raised 300mm above existing Siltside carriageway level offering additional protection against impacts arising from any extreme short duration, localised events. Surface water drainage will be discharged to soakaway designed to BRE365 specification and Building Regulations approval.

8.3 The general location of the site within the catchment is such that if flooding occurred from any of the Environment Agency or Welland and Deepings river systems, then sufficient warning time would be available.

8.4 No displacement of water from the site will affect any adjoining properties and agricultural land as soakaway drainage will be designed to BRE365 requirements and Building Regulations approval.

9.0 RESIDUAL RISK – EXTREME EVENTS

9.1 The residual risk from extreme events is very low on this site, because of its location protected by the River Welland tidal defences and the Welland & Deepings IDB system.

9.2 The site is within Flood Zone 1 according to NPPF classification of the South East Lincs. Updated Strategic Flood Risk Assessment with a very low risk of flooding due to the current standards of drainage and flood defence and land levels. The site is located outside any Functional Flood Plain of 'main river' or 'main drain'. The Environment Agency Flood Map for Planning has been produced irrespective of existing flood defences and standards of protection.

9.3 South Holland District Council and Boston Borough Council in conjunction with the Environment Agency and the local IDB's within the Councils' area have carried out the South East Lincs. Updated Strategic Flood Risk Assessment (2016) of the whole District by appointed Consulting Engineers.

The Updated Strategic Flood Risk Assessment has produced more definitive Flood Risk Maps similar to those published by the Environment Agency and at the same time has analysed flood return periods of all tidal and fluvial defences for up to 2115 to account for the effects of climate change.

Breach scenarios of embankments failing and/or being overtopped have also been carried out to establish Flood Risk Zones. The site is shown to have a low probability of flooding.

9.4 Safe access and egress to the site is available via Siltside into Gosberton village where land is in Flood Zone 1.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 As a result of the assessment, the following conclusions have been reached:-

- The proposed development is in the Passive Floodplain of the River Welland defences and the Welland & Deepings IDB.
- The site is in Flood Zone 1 with the actual risk of flooding from the River Welland being very low.
- Although the site is located within an Internal Drainage District with a minimum standard of drainage of 1 in 50 years, this accords with Defra guidelines for rural development. Freeboard to design water level of 900mm to lowest land level is available for events greater than 1 in 50 years providing further storage within the drainage channels.
- Floor levels will be raised 300mm above existing Siltside carriageway level with flood resilient construction incorporated into the design and construction of the new dwellings up to 300mm above finished floor level.
- On site surface water drainage will be discharged to soakaway to BRE365 specification and Building Regulations approval.