

Query 1 – details of continuous fit for purpose defence line at construction stage

We accept that details will be provided at the detailed design stage when a contractor is appointed and a Flood Risk Activity Permit is applied for.

Query 2 – details of the lifespan of the flood defence

Accepted.

Query 3 – TE2100 raisings

We note that the proposed glass balustrade will be part of the flood defence wall thereby raising it to TE2100 levels at the construction phase. We will require cross sections representative of all sections through the defence illustrating the proposed crest level of the flood defence line and all supporting structures (particularly where steps are located).

Drawing 38262/5501/062 illustrates the boathouse building on the eastern end of the site incorporates windows and internal access point below the TE2100 level within the flood defence line. The finished floor levels in the lobby/entrance area of the boat house are proposed to be set at 6.03m AOD, but the boat house finished floor level is to be set at 4.25m AOD. Details of how access will be achieved from the landward side of the flood defences into the boathouse will need to be provided

We will require cross section drawings of the boathouse and demonstration of how TE2100 levels will be achieved. The flood defence line must be continuous and not contain openings such as windows and access points. Additionally it will need to be demonstrated that no utilises which could compromise the defence line and integrity of the river wall structure.

The proposed boathouse should be structurally independent of the Tidal Defence and offset to allow access for inspection. The separation between the Tidal defence and the building is important as it would allow for potential future maintenance works and defence raising.

Additionally, the developer will need to demonstrate how the flood defence line within the redline boundary will tie into adjacent properties for future TE2100 raisings (specifically at Ship Lane and Bull Alley). The developer may wish to reconsider the line of the flood defence and how the continuous line of the defence between the proposed boathouse and Bull Alley can be achieved.

Query 4 – Vehicle tracking plan

Drawing 38262/5501/062 illustrates a vehicle tracking plan for a 10m long lorry, however the circa 4m clearance height appears to be insufficient to actually operate any plant within these areas. Furthermore, the flood defence within the northwest corner of the site appears to be inaccessible. It appears that the applicant will use of the existing building as the defence line. Further information is required as to how the defence will be accessed from the landward side.

We appreciate a new flood defence will reduce the likelihood of failure, however unrestricted access is still required for any unforeseen maintenance and emergency works and the future raisings.

Query 5 – Ship Lane and Bull Alley

Bull Alley, and the flood boards for this location are within the redline boundary of the application. Irrespective of ownership, developer will have to demonstrate both the residual lifespan and TE2100 crest level raising for all tidal flood defences within their red-line boundary. Our preference would be for the flood boards to be removed and a passive (static) flood defence installed.

Regarding Ship Lane, we appreciate the applicant may not be the freeholder of this land, and therefore may not be liable to ultimately provide the flood defence across the road. However, the applicant is responsible for demonstrating how all flood defence line within their redline boundary, will be treated in light of TE2100 raising requirements and how these will tie in with the defences on adjacent properties. Developments should not preclude or limit future defence raising options nor should they increase flood risk to neighbouring properties.

A development that precludes options for passive defences (to meet TE2100 levels), both increases the cost of future flood defence provision and increases residual flood risk due to the potential for the gate not to be operated. On public highways this risk is greatly increased because of 3rd party vehicle use that may damage the gate or simply park across it.

We appreciate that the gate options were discussed at the meeting of 26 September 2016, but as set out in the minutes to the meeting our preference is always for passive options for defence provision to be kept open – in this case we stated that the applicant would have to demonstrate that passive solutions were unsuitable prior to considering gated options. We do not believe the applicant has demonstrated this and do not accept that a flood gate is the only feasible solution, nor that gates are appropriate for a public highway. A review of our (open source) LiDAR data suggest the road levels already rises to approx. 6.1mAOD, albeit further landward than the current line. Hence a potential further 600mm is all that is required to archive TE2100 levels (not 1m). Given the complete re-development of this site, we see no obvious reason why the scheme cannot be designed to allow for a passive solution to be provided in ship lane, and would recommend you progress your designs along this principle (rather than try and demonstrate a passive defence is not possible).

We accept that some future passive defence line options would require changes to third party defences (namely the ship pub). While we do not expect the developer to deliver works outside their red-line boundary, we do expect the developer to design a scheme that would not preclude a passive defence being installed in the future, and that this future passive defence line should be achievable with the minimum level of cost and disruption both to the development itself and adjacent properties.

Query 6 – drainage strategy

Regarding the proposed outfalls, the applicant should note outfalls will have to be positioned at an appropriate height, and should be assessed to deal with expected tide locking at this height. An assessment of the need for scour protection (to protect foreshore and structural stability of flood defences) will be needed, along with delivery of appropriate scour mitigation. Outfalls, that penetrate the tidal defence line below the statutory level and with a diameter greater than >300 mm must contain 2 in-line non-return valve's (such as flap valves). Further details on the construction of the outfalls and method statements etc. will have to be provided and reviewed as part of the Flood Risk Activity Permit application.

Query 7 – enhancement to the Thames Path and river bank

The application offers minimal enhancements for nature and biodiversity. The development is located immediately adjacent to the River Thames and offers an excellent opportunity to enhance the river environment and improve the river corridor for people and wildlife.

The applicant states that they do not own do not own the tow path which. However little has been done to improve biodiversity within the submitted proposals. There are green areas and trees, but no mention of green roofs, biodiverse planting (i.e native species flowers to attract invertebrates) or bat boxes, bird boxes etc. It is therefore not been demonstrated that the development will result in a net gain to biodiversity.

Any new planting within the buffer zone should use native species. Any loss of habitat should be mitigated for within the development with the use of green and/or brown roofs to encourage biodiversity.

The National Planning Policy Framework (NPPF) requires local planning authorities to aim to conserve and enhance biodiversity when determining planning applications by minimising impacts on biodiversity and providing net gains in biodiversity where possible.

In addition, the Thames river basin management plan requires the restoration and enhancement of water bodies to prevent deterioration and promote recovery of water bodies

London Borough of Richmond's Local Plan Policy LP 15 Biodiversity states that 'The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats.

By

- supporting enhancements to biodiversity;
- incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;
- enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and
- maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.'

The London Borough of Richmond's Local Plan Policy LP 18 River corridors states that 'Development adjacent to the river corridors will be expected to contribute to improvements and enhancements to the river environment.'

The development as submitted does therefore not comply with the requirements of the National and Local Planning Policy.

Flood Risk Activity Permit (FRAP)

Under the Environmental Permitting (England and Wales) Regulations 2016, you must submit plans to the Environment Agency and apply for a FRAP if you want to do work:

In, over or under a main river
Within 16m if it is a tidal main river
Within 16m on a tidal main river

Flood risk activities can be classified as: Exclusions, Exemptions, Standard Rules or Bespoke. These are associated with the level of risk your proposed works may pose to people, property and the environment.

You should apply for a Bespoke FRAP if your work cannot be classified as one of the following:

- an **excluded activity** (listed [here](#))
- an **'exempt' activity** (listed [here](#))
- a **'standard rules' activity** (listed [here](#)).

Decision notice request

We record the outcome of planning decisions and request the decision notice is emailed to kslplanning@environment-agency.gov.uk

I hope our comments are helpful, if you have any questions please contact me.

Yours sincerely

Joe Martyn
Planning Specialist

Direct dial 020 3025 5546

Direct e-mail kslplanning@environment-agency.gov.uk

cc Gerald Eve LLP



B. First Response Letter to Environment Agency

Appendices

River Wall Environment Agency Comments
WIE10667-103-BN-7-2-1-EA
WIE10667

Direct Tel: 0207 928 7888
Direct Email: sophie.mccabe@watermangroup.com

Our Ref: WIE10667-103-180627-SM-RiverWall
Your Ref: SL/2018/118128/01-L01

Date: 27th June 2018

Joe Martyn
Environment Agency
3rd Floor, Seacole Building
2 Marsham Street
London SW1P 4DF

Dear Joe,

RE: Stage Brewery – River Wall

I am writing in response to your objection dated 11th May 2018 in relation to the proposals for a new river wall at the Stag Brewery Site. Please see below the information for the removal of your objection.

Query 1) – Details of how a fit for purpose flood defence line at the statutory level will be maintained during the construction phase (as previously conveyed at the meeting on 26 September 2016) and outlined in the FRA. Detailed method statements and sequence drawings for both temporary and permanent flood defences can be provided at the Flood Risk Activity Permit stage but we would like an outline Method of Work.

Response – The outline method of work and the design presented to date is based on the assumption that the new river wall is to be constructed behind the existing river wall, allowing for the existing flood defences to be maintained throughout the construction of the new wall. Therefore, in the temporary case, whilst the new river wall is being constructed, the existing flood defence will remain in place and serve as the flood protection in the area as it currently stands. The existing wall would then be reduced in height to match the new flood defence, set at the statutory defence level. The new river wall will only come into use once it is completed along the alignment shown in WIE-SA-04-1006 A04 (Appendix A).

More detailed method statements and construction sequence drawings can be provided at the detailed design stage when a contractor is on board.

Query 2) – Details of how the new flood defences will be commensurate with the 100 year lifetime of the development.

Response – Currently two options are being proposed for the river wall. For the sheet piled wall option, the new flood defences will consider a 100 year design life by following the guidance provided in accordance with BS EN 1993-5 and the accompanying national annex. The standards present tables (specifically Table 4-2) that allow for a reduction in the section thickness over time for a marine/river environment. The section capacity for the sheet piled wall will be considered based on the reduced section thickness therefore allowing for the 100 year lifetime of the development.

For the concrete secant pile option, exposure classes for the concrete will be considered in accordance with BS 8500 with a mix design and concrete cover being provided that is appropriate for a marine environment exposure class. The section capacity will then be derived from BS EN 1992.

The building concrete retaining structures will be designed to accommodate the surcharge loads to BS EN 1992 and marine exposure class will be in accordance with BS8500 for both mix design and cover.

Any windows to the boathouse building that form part of the defence line would require a bespoke design to ensure protection to the appropriate standard. These windows would be fully tested prior to installation to ensure that they are fit for purpose. An example of the sort of product that could be used can be found here <https://thefloodcompany.co.uk/case-study-items/bam-nuttall/>. In this example testing of the bespoke flood product was undertaken at HR Wallingford to ensure it was of a suitable standard.

Query 3) – *We note that the new flood defence walls will have a crest level of 6.13m AOD and “topped by a 1.1m high glass balustrade, with effective crest at 7.23m AOD”. The applicant should demonstrate how TE2100 level can be achieved in future; if this additional raising is effectively the glass balustrade, then it must be demonstrated that this element is structurally sound as a flood defence component (i.e. will it be made from toughened glass to sufficiently withstand the calculated hydrostatic pressure as well as being watertight?).*

Response – The main construction of the river wall would be either sheet pile or secant pile (to be confirmed at the detailed design stage). Where required to achieve the minimum defence height of 6.70m AOD, a glass balustrade/wall would be installed on top of the piled wall. The glass balustrade/wall would be a flood defence specific product, an example of which is provided in the enclosed document prepared by Hydro-Logic (Appendix B).

The flood defence would be raised to the full height of 6.70m AOD as part of the proposals, as required by the TE2100 Plan, no further raising would therefore be required. The construction of the crest of the defence would vary along its length, however would always be a minimum of 6.70m AOD. Please refer to the enclosed plans which shows the treatment of the river wall (Appendix A).

Query 4) – *A vehicle tracking plan should be produced to ensure the offset between the defences and built development is sufficient to allow plant unrestricted access for future works on the flood defences. The applicant should also note that vertical unrestricted access is also required, i.e. consider positions of balconies.*

Response – As set out above, the defences would have a design life of 100 years. This would remove the requirement for future piling to raise/maintain the defences during the lifetime of the development. The requirement for tracking is therefore based on maintenance rather than reconstruction. It is considered that given the piled construction of the defences any maintenance is likely to be minor/superficial. Please find enclosed drawings prepared by Peter Brett Associates (Appendix C) showing the tracking of a 10m Rigid Vehicle and a Small Crane. These vehicles are considered appropriate for maintenance works. In the location adjacent to the Maltings Building the vehicles would not be able to park directly adjacent to the river wall, however they would be able to crane materials into the appropriate location. The proposed tracking accounts for vertical clearance to balconies and tree canopies, ensuring vehicles can pass beneath unrestricted.

Query 5) – *The FRA includes reference to a minimum of 4m clear access route. Is the 4m between the new flood defences and development? Site Plans are also required clearly outlining the exact location of the new defence line including access arrangements and distances. It is also not clear what is being proposed for Ship Lane and Bull Lane. Details of the proposed flood gate barriers should be provided.*

Response – Please refer to the enclosed plan and sections prepared by Gillespies (Appendix A) which show the 4m minimum clear access route and offsets to defences.

The existing defence in Bull Alley is not part of this application and is not under the applicant's ownership. Our proposals would therefore only tie into this existing defence, however no changes would be made to it as part of our proposals.

In the existing situation there is no raised defence in Ship Lane. Instead the defence is formed by ground levels in the public highway itself, which rise away from the river. Ship Lane is a public highway and therefore outside of the applicant's ownership. Whilst some works would take place to Ship Lane (wider footways and landscaping (including retention of all trees) to provide a functional and attractive street) these would not impact on the existing flood defence level provided by the highway.

Whilst the applicant is not responsible for installing a flood defence across Ship Lane, options were discussed at the meeting on the 26th September 2016 that could be implemented by others in the future. It would not be feasible for a permanent defence to be located across Ship Lane as this would block access along the public highway. Instead, a demountable defence would more suitable for this location. The defence would need to tie into the existing Maltings Building on the Stag Brewery Site. On the other side of the public highway the defence would need to tie into the existing public house (noted as a defence on the Environment Agency's flood map). The enclosed document prepared by Hydro-Logic (Appendix B) provides information on the type of defence that could be provided in the future, and the approximate location it would need to be installed. Given the Thames Estuary 2100 Plan does not require this raising to take place until 2065 it would not be sensible to install a flood gate now as it would be required for several decades.

Query 6) – *The drainage strategy states that surface water runoff would be discharged to the River Thames via 3 outfalls; depending on the position and location of the outfalls, the applicant should consider whether scour protection may be necessary to minimise scour which could adversely impact the structural stability of flood defences. The drainage scheme and outfalls should be designed to minimise the likelihood of scour protection being needed.*

Response – Scour protection would be designed (e.g. concrete mattress) and incorporated to protect the River Thames in consultation with the Environment Agency and the Port of London Authority (PLA). The design of this protection would need to be confirmed at the detailed design stage once the pipe sizes, locations, and velocities are known.

Query 7) – *We request clarification about whether any enhancement works will be taking place to the Thames Path and river bank. Previous discussions with the applicant have indicated that subject to the ownership issues being resolved enhancement may be possible. However from the information submitted this is unclear.*

Response – The tow path is outside of the ownership of the applicant and under the control of the PLA and LBRuT. Pre-application discussions were undertaken with the PLA, LBRuT, and local interest groups regarding the extent of the enhancements. Detailed works are covered within the Landscape Design and Access Statement (pages 103-111), an extract of which can be found in Appendix D. Please see the list of proposed works below:

- Pruning of understorey vegetation on Towpath to open key views;
- Existing granite setts on Towpath, public draw dock and slipway retained;
- Rediscovered railway track - express within new pavement design to new seating area;
- Seating provided at locations with good views to the river;
- Life-saving equipment will be provided by PLA - locate as directed;
- Retain lower section of boundary wall where feasible - as facing to new flood wall;
- Additional seating and interpretative signage is proposed to be added in the new paved dock area;
- Some amendments to existing kerbs and paving will be required to integrate with proposed works and access into the Rowing Club storage area.

Yours sincerely






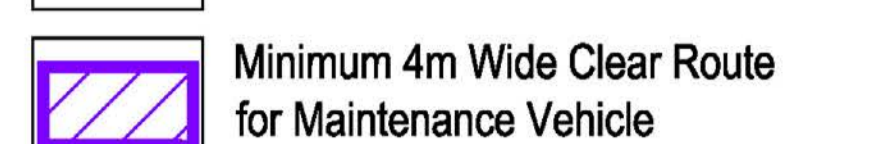


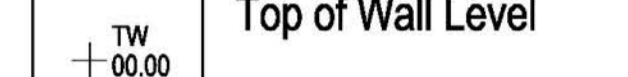


Sophie McCabe
Associate Director
For and On Behalf of Waterman Infrastructure & Environment Ltd

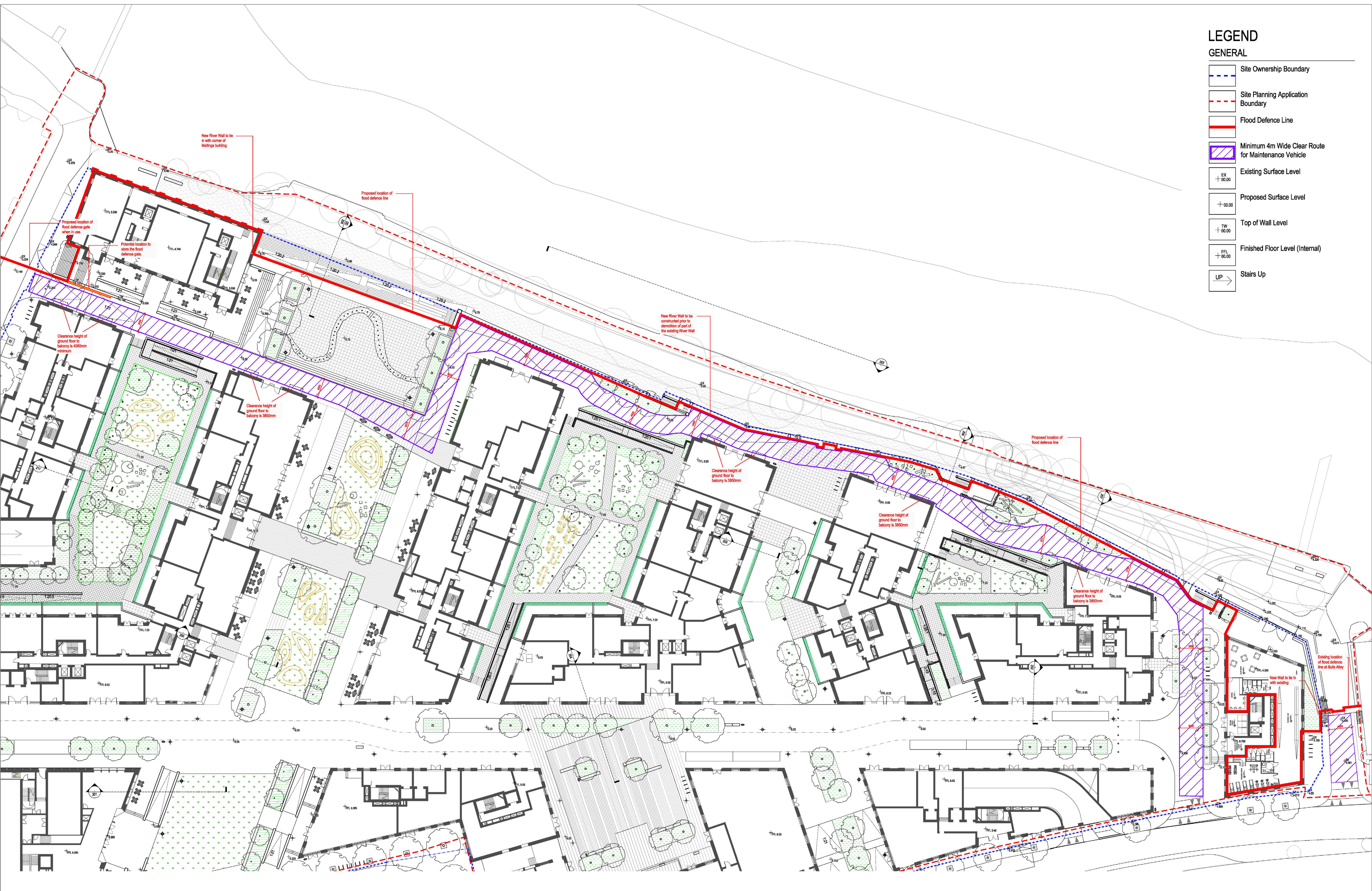
Appendix A

DRAFT

LEGEND

GENERAL

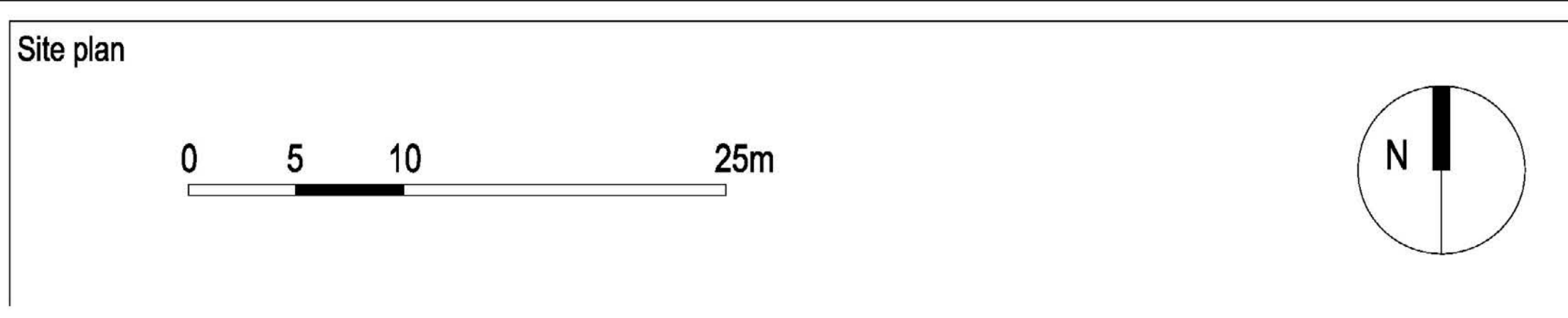
-  Site Ownership Boundary
-  Site Planning Application Boundary
-  Flood Defence Line
-  Minimum 4m Wide Clear Route for Maintenance Vehicle
-  Existing Surface Level
-  Proposed Surface Level
-  Top of Wall Level
-  Finished Floor Level (Internal)
-  Stairs Up



| rev | details | by | date | rev | details | by | date |
|-----|----------------------|----|------------|-----|---------|----|------|
| D00 | Issued for Planning. | RJ | 04.06.2016 | | | | |
| D01 | Issued for Planning. | RJ | 08.06.2016 | | | | |
| D02 | Issued for Planning. | RJ | 21.06.2016 | | | | |

Notes

- 1.0 Do not scale from drawing, use figured dimensions only
- 1.1 All dimensions to be checked onsite
- 1.2 This drawing to be read in conjunction with all other Gillespies drawings and specifications

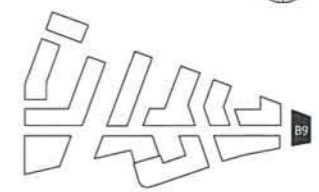


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| Drawing Status DESIGN | | Revision D02 | | Project Ref P 107 00 001 | |
| Date 04.06.16 | Scale 1:250 @ A0 | Drawn RJ | Checked RC | GILLESPIES <small>1 St John's Square, London, EC1M 4EH P 0207 2632929 F 0207 2633002 E design.team@gillespies.co.uk</small> | |

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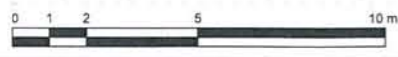
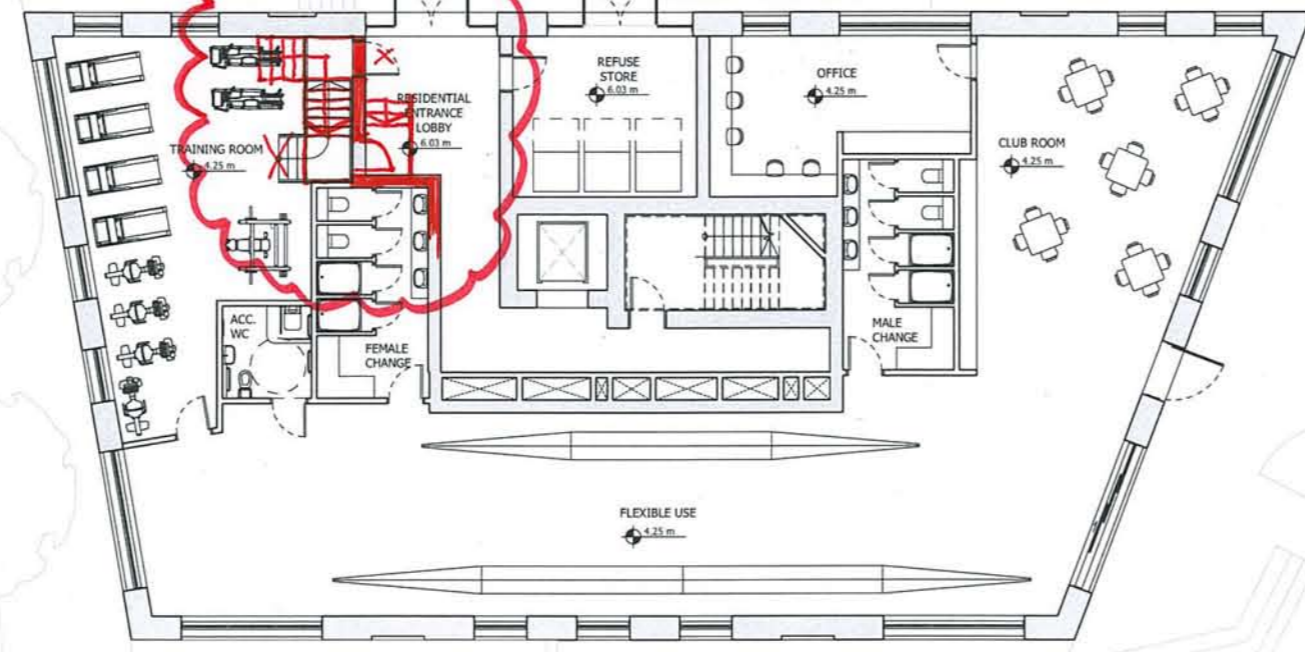
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NOTE:
[] WHEELCHAIR ACCESSIBLE UNIT / CONVERTIBLE UNIT
○ WHEELCHAIR TURNING AREA

S & P COMMENTS
19.06.2018

AMENDMENT
TO ESCAPE STEPS FROM
BOAT CLUB, THROUGH
RESIDENTIAL ENTRANCE
LOBBY. TOP LANDING AT
ESCAPE DOOR TO BE RAISED
TO 6.7M A.O.D.



| PLANNING APPLICATION | 12/02/18 | BJ |
|----------------------|----------|-----------|
| Revision description | Date | Check Rev |

SQUIRE & PARTNERS

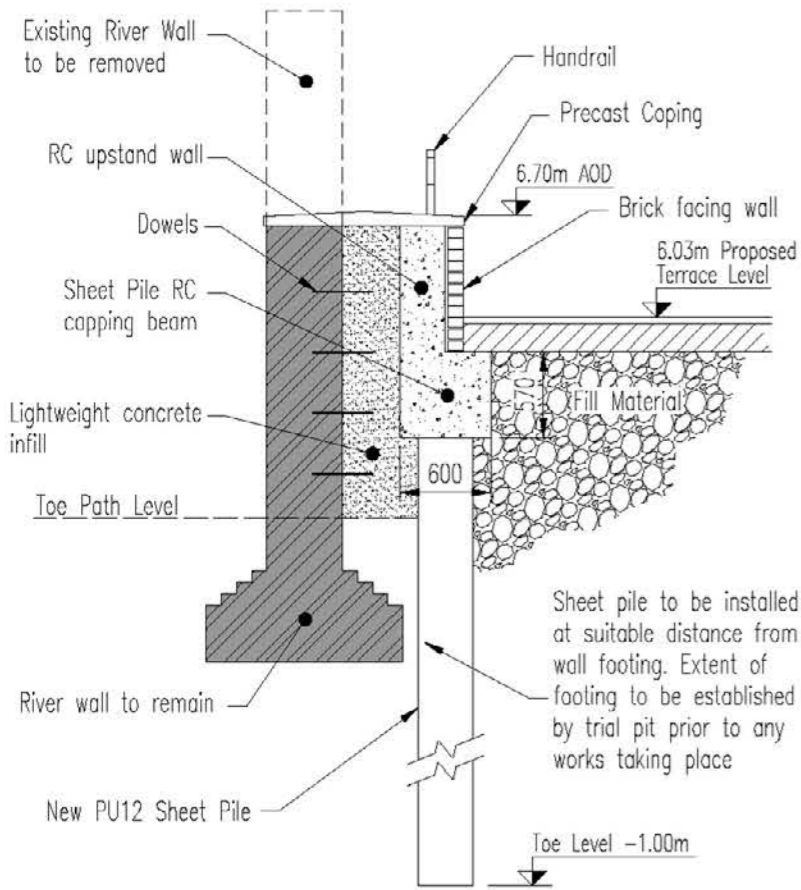
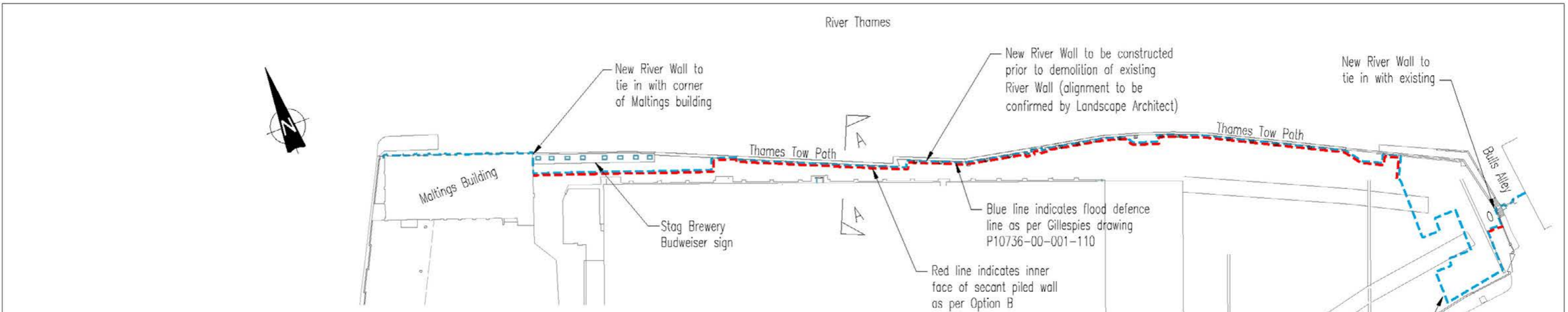
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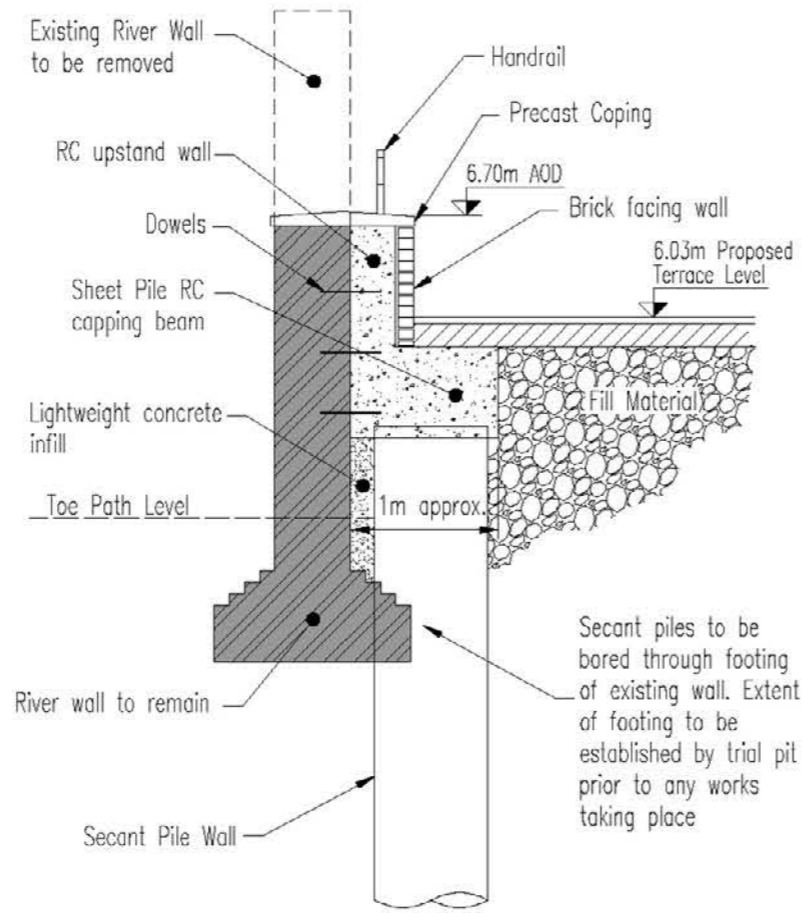
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Stag Brewery
Richmond

Drawing:
BUILDING 09 - PROPOSED GROUND FLOOR PLAN

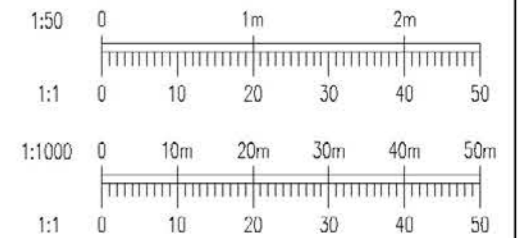
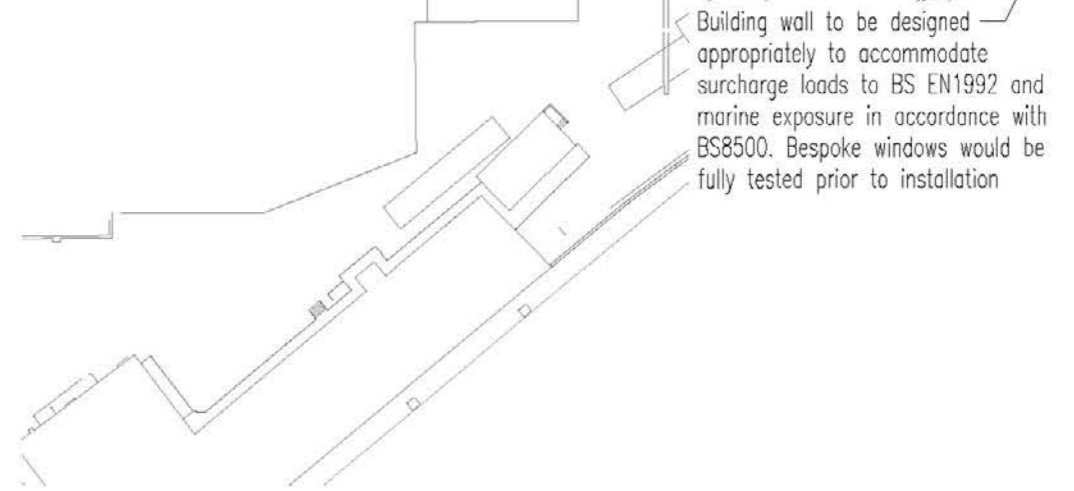
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| Job Number | Drawing number | Revision |
| 16019 | C645_B09_P_00_001 | - |



Section A-A
Typical New Wall Section
Option A
(Scale 1:50)



Section A-A
Typical New Wall Section
Option B
(Scale 1:50)



1. CONSTRUCTION JOINTS IN CAPPING BEAM AT 13m CENTRES.

| Rev | Date | Description | By |
|------------|----------|--|-----|
| A05 | 22.06.18 | WALL ALIGNMENT REVISED | SPO |
| A04 | 14.06.18 | WALL ALIGNMENT REVISED | SPO |
| A03 | 07.06.18 | WALL ALIGNMENT REVISED, NOTES ADDED | SPO |
| A02 | 19.10.17 | WALL ALIGNMENT REVISED, SECTIONS ADDED/REVISED | SPO |
| A01 | 13.07.17 | ISSUED FOR INFORMATION | TLR |
| Rev | Date | Description | By |
| Amendments | | | |

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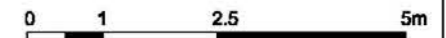
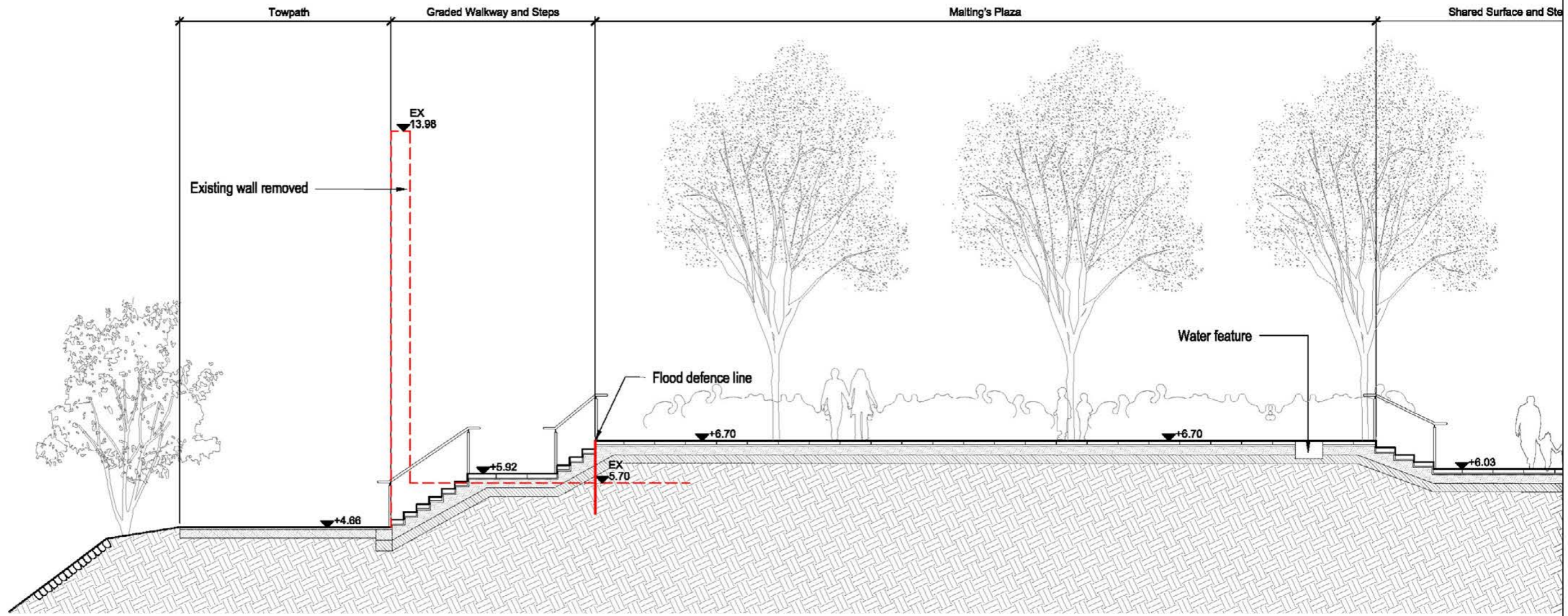
Project **STAG BREWERY, MORTLAKE**

Title **THAMES RIVER WALL CONCEPT DESIGN**

Client **DARTMOUTH CAPITAL ADVISORS LTD**

Drawing Status **PRELIMINARY**

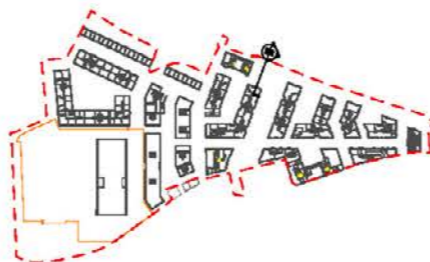
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| Drawn by | MC | Date | JULY 2017 | Computer File No | WIE-10667-SA-04-1006.dwg |
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| Publisher | Zone | Category | Revision | | |
| WIE | SA | 04 | A05 | | |



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| D00 | Issued for Planning | CC | 03.11.2017 |
| D01 | Issued for Planning | RJ | 01.02.2018 |
| D02 | Issued for Planning | RJ | 09.02.2018 |
| D03 | Issued for Planning | RJ | 08.06.2018 |
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Notes

- 1.0 All dimensions in millimeters.
- 1.2 Use only dimensions shown.



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STAG BREWERY

Drawing
Proposed Maltings Plaza
Section

Drawing number
P10736-00-001-205
Revision
D03
drawing status

DESIGN

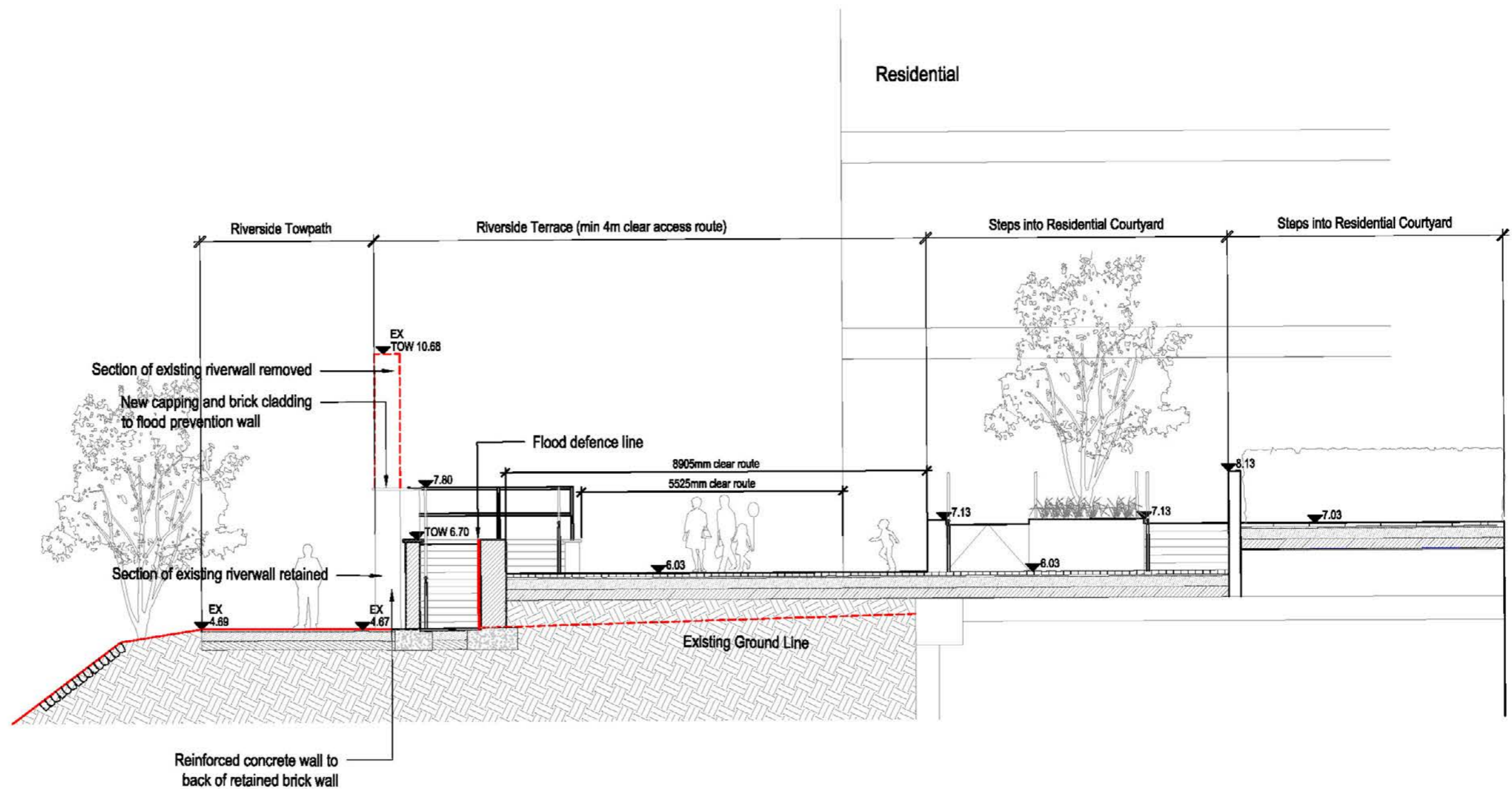
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Checked
RC

Client

DARTMOUTH CAPITAL
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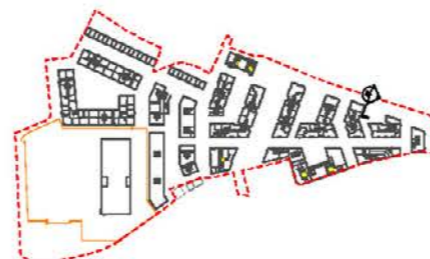
1 St John's Square, London EC1M 4DH
P 0207 2532829 F 0207 2533900 E design.london@gillespies.co.uk



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| D00 | Issued for Information | RJ | 03.11.2017 |
| D01 | Issued for Planning | RJ | 01.02.2018 |
| D02 | Issued for Planning | RJ | 09.02.2018 |
| D03 | Flood defence update | RJ | 05.06.2018 |
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Notes

- 1.0 All dimensions in millimeters.
- 1.2 Use only dimensions shown.



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STAG BREWERY

Proposed River Terrace
Section 1

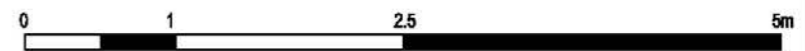
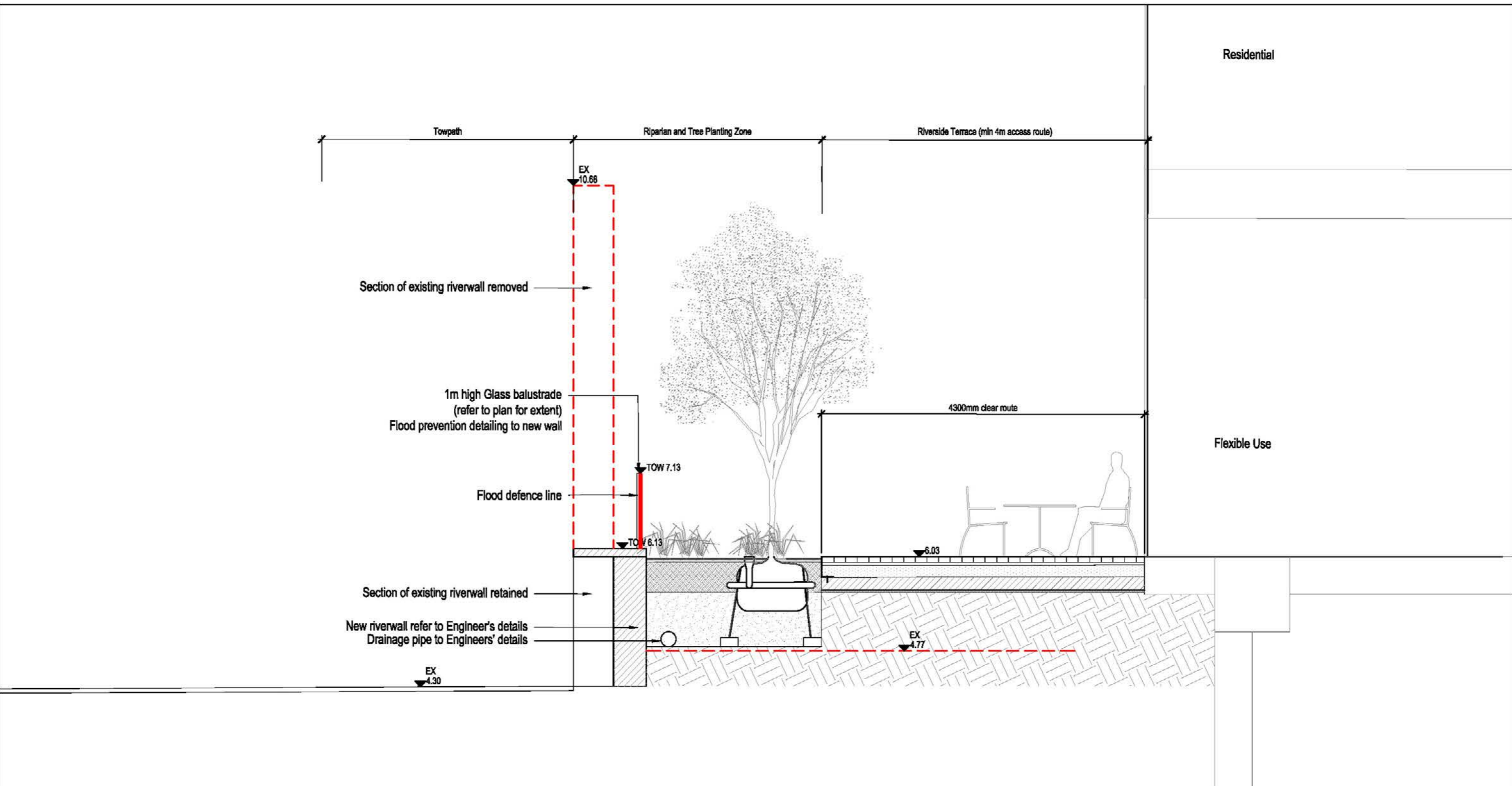
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| Date 03.11.17 | Scale 1:100 @ A3 |
| Drawn RJ | Checked RC |

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| rev | details | by | date |
|-----|------------------------|----|------------|
| D00 | Issued for Information | RJ | 03.11.2017 |
| D01 | Issued for planning | RJ | 01.02.2018 |
| D02 | Issued for Planning | RJ | 09.02.2018 |
| D03 | Flood Defence Update | RJ | 05.06.2018 |
| | | | |
| | | | |

Notes

1.0 All dimensions in millimeters.
1.2 Use only dimensions shown.

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STAG BREWERY

Drawing
**Proposed River Terrace
Section 2**

Drawing number
P10736-00-001-207

Revision
D03

drawing status
DESIGN

Date
03.11.17

Scale
1:50 @ A3

Drawn
RJ

Checked
RC

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Appendix B

DRAFT

GLASS WALL FLOOD BARRIERS/WINDOWS

<http://www.floodcontrolinternational.com/PRODUCTS/FLOOD-BARRIERS/glass-barriers.html>



Flood Control International has developed the ultimate glass wall flood defences that are capable of withstanding virtually any flood condition. See the new Hard Body Drop Test video below.

The glass walls require no operational input and cause minimal visual intrusion where flood protection is required.

Each glass barrier utilises a combination of specially designed high strength structural glass, engineered frames designed to withstand the static and impact loads of the specific location, structural anchoring system, and specially designed watertight and impact resisting sealing technology.

Flood protection heights up to 1.8m as standard.

The result is a virtually clear glass barrier with no loss of visual amenity that can be used as a direct first line flood defence without the need for sacrificial panels, additional deflection devices or external buffers. Self cleaning glass and grade 316 stainless steel frames allow this system to be used in aggressive marine environments if required. Ideal when sea wall flood defences are required.

Our glass barriers can be used as individual viewing panels incorporated into hard flood defences, or as a complete free standing glass wall spanning any length and following virtually any contour. There is also a version of the system that can be retrospectively mounted onto suitable existing foundations.

Tamper proof and concealed fixings are used throughout the system to reduce the possibility of vandalism. Safety factors are incorporated into all load calculations and material design to avoid the possibility of catastrophic system failure. See the Hard Body Drop Test video below.

LIFT-HINGE FLOOD GATE

<http://www.floodcontrolinternational.com/PRODUCTS/FLOOD-GATES/lhg-floodgate.html>



Our design for a lift-hinged flood gate utilises a unique 'raise-swing-lower' mechanism and does not require recessed ground channels, raised ground beams or ramps, making the gates ideal for vehicle entrances and especially suitable for forklift or wheelchair access.

Even the widest flood gate designs can be operated by one person using the smooth winding lift action and the single point locking mechanism. The aluminium construction also provides a far higher level of operator safety than heavy steel flood gate products.

These floodgates are available as single or double leaf, or integrated with a stop-log system for wide openings in flood defences. Our lift-hinge flood gate products are suitable for use in unmanned locations, are fully lockable and come complete with anti-theft and vandal resistant features.

The components are manufactured from construction grade steel and aluminium with stainless steel and are virtually maintenance free.

Our flood gate range is designed for extreme weather durability to give a lifetime of service and with EPDM seals that reform even after prolonged periods of compression, the gates can, if required, be left closed indefinitely. For locations where leaves greater than 4.5m wide are required, we can also manufacture from steel to any size.

SLIDING GATES

<http://www.floodcontrolinternational.com/PRODUCTS/FLOOD-GATES/sliding-floodgate.html>



Flood Control International offers a full design, manufacture and installation service for heavy duty sliding floodgates. Each sliding floodgate is individually designed for the specific customer's requirements and can be designed to incorporate automation of closure, locking and monitoring status where needed.

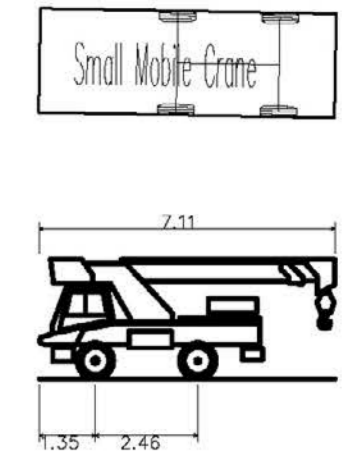
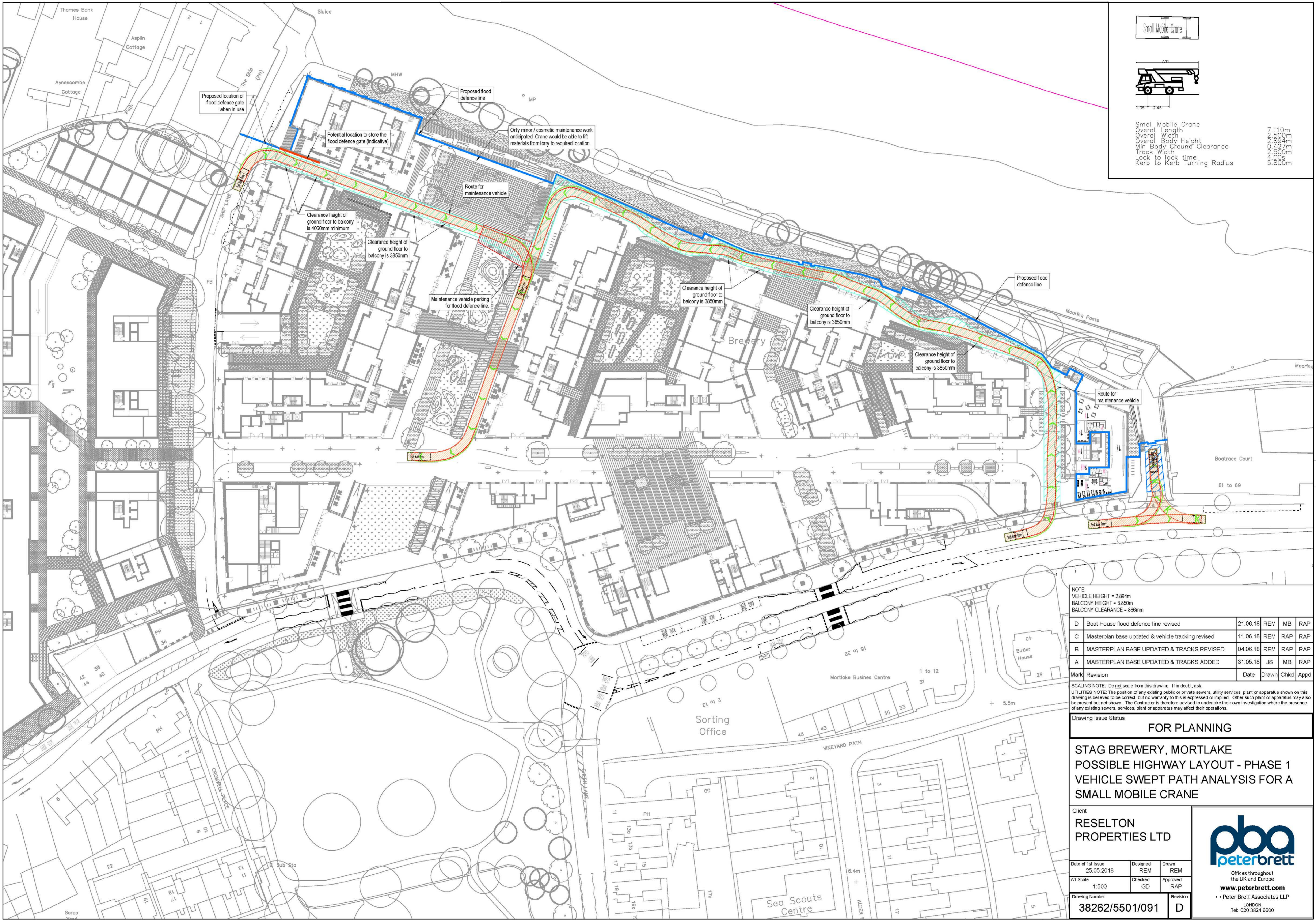
Sliding floodgates incorporate spring wheels to allow an easy sliding operation with the ability to compress seals when in position. Alternatively, inflating seals can be used.

Benefits

- Efficient use of space with no 'swing area' as with traditional flood gates.
- Designed to fit any building or opening.
- Floodgates can be automated and linked to building management systems.
- Can be designed for flood protection heights up to 5m and spans up to 7m.
- Simple one person operation.
- Ability to power / automate closing and opening.
- No excavations required for installation.
- Always on-site ready to be deployed.

Appendix C

DRAFT



Small Mobile Crane
 Overall Length 7.110m
 Overall Width 2.500m
 Overall Body Height 2.894m
 Min Body Ground Clearance 0.427m
 Track Width 2.500m
 Lock to lock time 4.00s
 Kerb to Kerb Turning Radius 5.800m

NOTE:
 VEHICLE HEIGHT = 2.894m
 BALCONY HEIGHT = 3.850m
 BALCONY CLEARANCE = 866mm

| | | | | | |
|------|--|----------|-------|------|------|
| D | Boat House flood defence line revised | 21.06.18 | REM | MB | RAP |
| C | Masterplan base updated & vehicle tracking revised | 11.06.18 | REM | RAP | RAP |
| B | MASTERPLAN BASE UPDATED & TRACKS REVISED | 04.06.18 | REM | RAP | RAP |
| A | MASTERPLAN BASE UPDATED & TRACKS ADDED | 31.05.18 | JS | MB | RAP |
| Mark | Revision | Date | Drawn | Chkd | Appd |

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
 UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

Drawing Issue Status
FOR PLANNING

**STAG BREWERY, MORTLAKE
 POSSIBLE HIGHWAY LAYOUT - PHASE 1
 VEHICLE SWEEP PATH ANALYSIS FOR A
 SMALL MOBILE CRANE**

Client
**RESELTON
 PROPERTIES LTD**

| | | |
|-----------------------|----------|----------|
| Date of 1st Issue | Designed | Drawn |
| 25.05.2018 | REM | REM |
| A1 Scale | Checked | Approved |
| 1:500 | GD | RAP |
| Drawing Number | Revision | |
| 38262/5501/091 | D | |

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