

## Flood Consultant Response to EA Letter

Consultant response directly within the EA letter in blue text

Date: 21<sup>st</sup> June 2022

Our ref: WA/2021/129495/02-L01  
Your ref: 211739

### Demolition of the existing buildings and the erection of 9 new houses with associated parking and landscaping

#### 2-4 Send Road, Caversham, Reading, RG4 8EH

Thank you for re-consulting us on the above application following the submission of additional and amended details. Please accept my apologies for the delay in responding.

We have reviewed the submitted documents:

- Letter from Ark Environmental to Environment Agency (undated)
- Existing Site Survey GA – drawing number SR\_P\_085, revision P01, dated 24 February 2022
- Proposed Foundation Plan GA - drawing number SR\_P\_086, revision P05, dated 7 March 2022

We are satisfied that this detail confirms that no ground level raising will take place across the site within this development and that voids can be designed in accordance with our guidance with openings from existing ground levels up to a level of 37.72 metres above ordnance datum (AOD). This level is above the expected 1 % annual probability flood level with a suitable allowance for climate change.

**Great. No further comment required.**

However, we remain concerned that the proposed development as currently proposed will result in a loss of flood storage and will obstruct flood flows which will increase the risk of flooding to the site and the surrounding area.

**Please see comments below**

#### Environment Agency position

We **object** to this application because it fails the second part of the flood risk exception test. We recommend that planning permission is refused on this basis.

Reason(s)

This application lies within Flood Zone 3a, which is land defined by the planning practice guidance (PPG) as having a high probability of flooding. As shown in the Flood Zones and flood risk tables of the PPG, development classified as More Vulnerable is only appropriate in these areas if the exception test is passed alongside the sequential test.

The National Planning Policy Framework (paragraph 165) makes it clear that both elements of the exception test must be passed for development to be permitted. Part 2 of the test requires the applicant to demonstrate, via a site-specific flood risk assessment, that the development will be safe, without increasing flood risk elsewhere. Where possible, the development should reduce flood risk overall.

In this instance the developer's flood risk assessment fails to demonstrate that flood risk will not increase in the surrounding area or address opportunities to reduce flood risk.

- Flood risk mitigation measures to address flood risk for the lifetime of the development included in the design are inadequate. Consequently the development proposes inadequate flood storage compensation and mitigation.

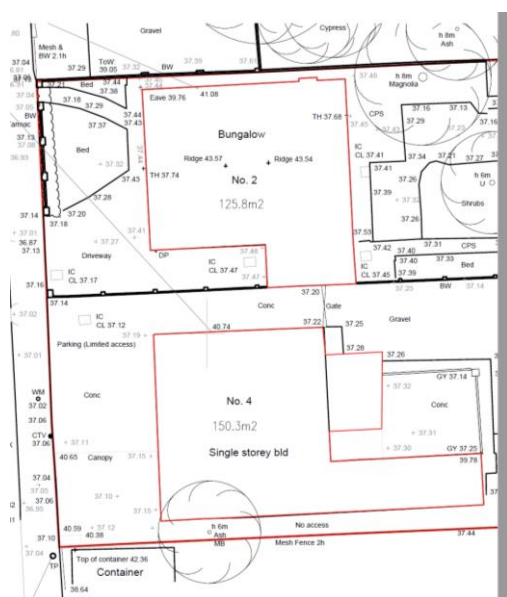
It is our understanding that only the existing bungalow is included as existing built footprint, and that the bungalow has a footprint of 125m<sup>2</sup> (and gross internal area of 112m<sup>2</sup> as implied in the submitted FRA). The total proposed footprint has still not been provided, however the letter from Ark Environmental states: '*CAD calculated areas of foundations, steps, stores etc i.e. footprint below the design flood level = 121.33m<sup>2</sup>*'. It is therefore our understanding that the proposed development would result in an increase in built footprint on site as a result of demolishing an existing bungalow and the erection of 9 new dwellings, and voids are proposed to mitigate for this.

**Resolved: see Table in response further below with full explanation.  
See also Appendix A: existing footprint with areas drawing.**

**For clarity, the existing site has the following footprint (existing buildings) that will be removed as part of the scheme**

**Bungalow: 125.80m<sup>2</sup> GEA**

**Commercial building: 150.30m<sup>2</sup>**



We are not satisfied with the design of the void spaces and openings. The letter from Ark Environmental states 'The scheme has not changed from the application submission'. Therefore, our earlier concerns in relation to void design have not been overcome. From the Proposed Foundation Plan GA drawing, it appears that void openings have still not been provided on all sides of the proposed buildings (please note that void openings should be clearly labelled and not inferred from a plan). In particular there are no openings on the sides of the buildings to the north and south, or between the terraced dwellings, which would prevent the free flow of flood waters. As it has not been demonstrated that flood waters can freely enter and leave the void spaces, the proposed development is likely to obstruct flood flows, which could result in an increase in flood risk elsewhere contrary to national policy.

**Resolved: We have included voids on all elevations now. The drawings have been updated accordingly.**

**All void openings are greater than 1.0m in width and their opening is from existing ground level up to a minimum of the agreed design flood level.**

**See Appendix B for the revised foundation layout with voids on all elevations and each void dimensions provided.**

**See Appendix B also for a typical void dimension sketch.**

**See Appendix B with the updated elevation drawings to show the voids on the north and south elevations.**

**So it is unequivocal: the scheme results in a reduction of footprint on the site that is below the design flood level.**

**(For clarity, we stated that "the scheme has not changed from the application submission" purely on planning grounds i.e. we only changed the substructure layout / void openings such that there could be no query from the council planning officer about whether other "material planning" changes had been made; there have not been any material planning changes, just an update to the scheme for the purposes of providing additional design information to the EA)**

Further, we are concerned with the use of garages in the void design. Garage doors appear to provide void openings to the west of the development site, in accordance with the Proposed Foundation Plan GA drawing (number SR\_P\_086, revision P05, dated 7 March 2022). Garage doors would block flood flows, and therefore are clearly not appropriate as void openings. In addition, we do not identify new garages as being suitable for flood storage areas. Land to be utilised as flood storage during a flood event must remain open and free of any obstruction. Therefore, proposed garages should be included as part of the

proposed built footprint.

The garages are not part of the house as there is no direct access from the garages to the house.

The garages are purely a space to park a car that also happens to have a roof over it which forms the 1<sup>st</sup> floor of the dwellings.

The EA never allows garages to be used as footprint in flood compensation calculations so it follows that these garages are not footprint and would allow flood waters to flood into the garage and flow under / through the house as part of the void flow pathways.

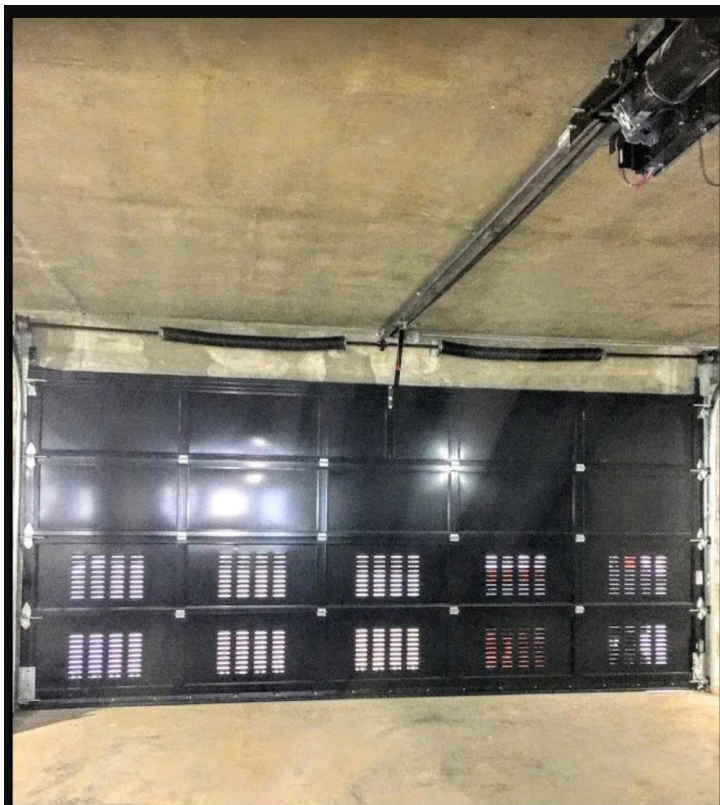
Cars parked on the site, not in garages would perform the same in terms of flooding.

Garage doors are not waterproofed / watertight and generally the EA has always considered that the water would enter garages as if they were not present.

In order to provide additional confidence and as a practical approach, the garage doors will have louvres similar to the specification below. These will be integrated and hence unlike flaps etc will not be obstructed, cannot be used to gain unlawful entry and would not be tempting to alter.

The louvres can provide suitable flood entry openings to higher than the worse case design flood level.

If this is not deemed suitable to the EA, the only option would be to have the garages fully open, but this does pose unnecessary health and safety concerns as these would be fully accessible and whilst no persons can access the house from the garage, it does provide a place for unauthorised persons to conceal themselves, particularly when a car is parked. For the sake of being practical, the garage doors with louvres (and technically without louvres as well) will allow floodwaters to enter and given the site is not subject to fast inundation given the nature of the floodplain, the floodwaters will indeed gradually seep through as they will across all sites in this floodplain area.



**As per the section above, voids are provided under all of the proposed development and all elevations have void openings. We have included a revised foundation layout drawings (showing the void and the void openings) and revised elevation drawings showing the voids openings.**

**The scheme reduces footprint in the floodplain / increases flood storage by a minimum of 2.76m<sup>3</sup>.**

| Existing Footprint below the Design Flood Level                                                                                             | Proposed Footprint                                                                                                                                                                                                                                                                             | Overall Change in Footprint in the floodplain                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>A</b>                                                                                                                                    | <b>B</b>                                                                                                                                                                                                                                                                                       | <b>A - B</b>                                                                                                          |
| <p>Bungalow = GEA of 125.8m<sup>2</sup><br/>0.62m depth of flooding</p> <p><b>= 77.99m<sup>3</sup></b><br/>(125.8m<sup>2</sup> x 0.62m)</p> | <p>No habitable below the design flood level</p> <p>Total building elements below the design flood level calculated using CAD i.e. void walls (foundations), stairs = 121.33m<sup>2</sup><br/>0.62m depth of flooding</p> <p><b>= 75.23m<sup>3</sup></b><br/>(121.33m<sup>2</sup> x 0.62m)</p> | <p>(The existing footprint displacing floodwaters is greater than the proposed)</p> <p><b>= 2.76m<sup>3</sup></b></p> |

- a) It does not include the existing commercial footprint that will be removed
- b) It does not include any of the extra flood storage volume created on site by the area of external space that is to be reduced in height (a further 21.0m<sup>3</sup> of new flood storage volume on site)

## Sensitivity Test

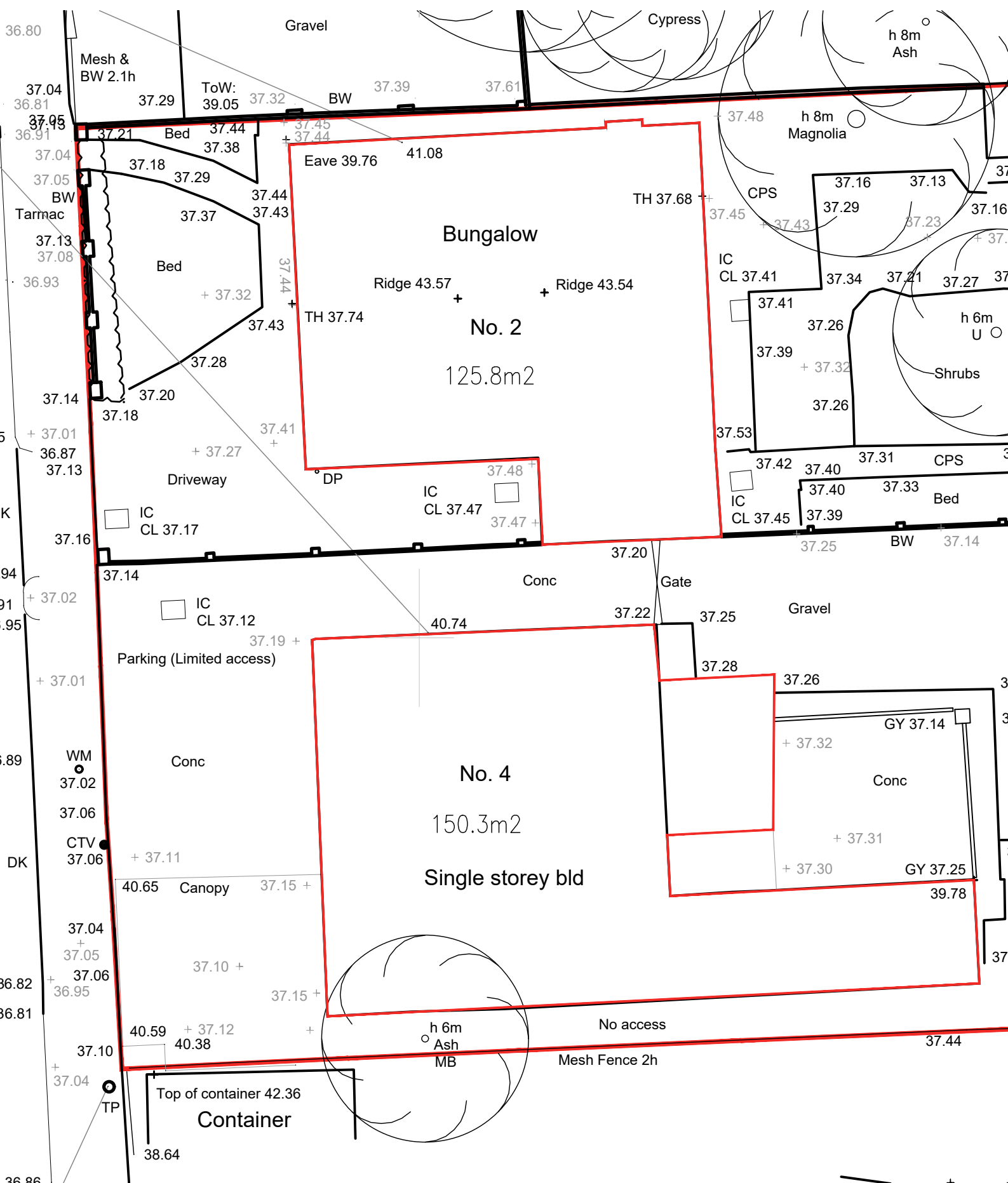
If we were to include the commercial space GEA and the extra flood storage volume provided on site by the reduction in external ground levels:

| Existing Footprint below the Design Flood Level                                                                                                                                                                                                     | Proposed Footprint                                                                                                                                                                                                                                                                  | Overall Change in Footprint in the floodplain                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| A                                                                                                                                                                                                                                                   | B                                                                                                                                                                                                                                                                                   | A - B                                                                                                                                            |
| Bungalow = GEA of 125.8m <sup>2</sup><br>0.62m depth of flooding<br><br>Commercial Building = GEA of 150.30m <sup>2</sup><br>0.62m depth of flooding<br><br><b>= 276.10m<sup>3</sup></b><br>((125.8m <sup>2</sup> + 150.30m <sup>2</sup> ) x 0.62m) | No habitable below the design flood level<br>Total building elements below the design flood level calculated using CAD i.e. void walls (foundations), stairs = 121.33m <sup>2</sup><br>0.62m depth of flooding<br><br><b>= 75.23m<sup>3</sup></b><br>(121.33m <sup>2</sup> x 0.62m) | (The existing footprint displacing floodwaters is greater than the proposed)<br><br><br><br><br><br><br><br><br><br><b>= 200.87m<sup>3</sup></b> |

The scheme will increase flood storage by 200.87m<sup>3</sup>.

This is a significant betterment.

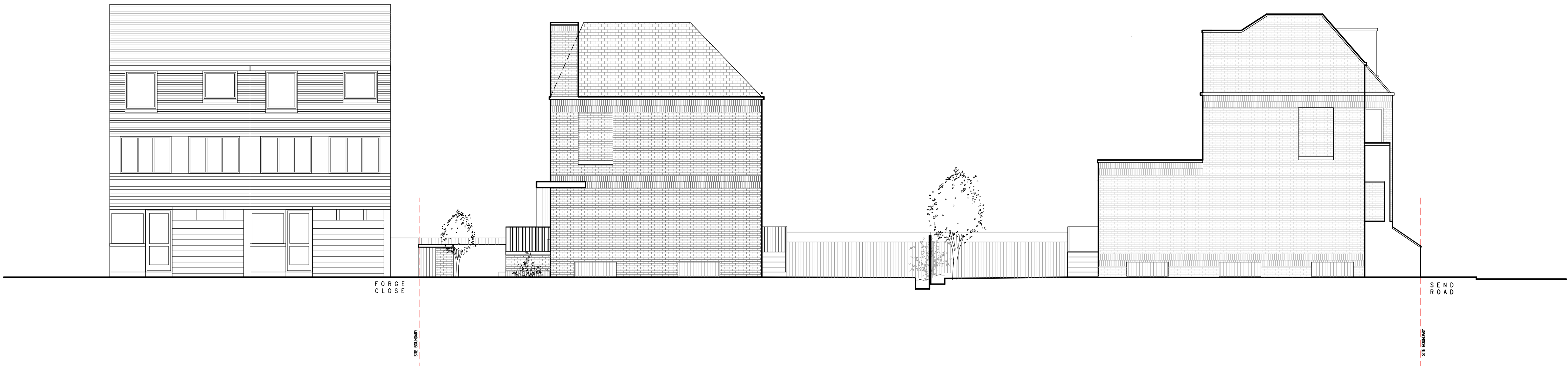
**Appendix A**



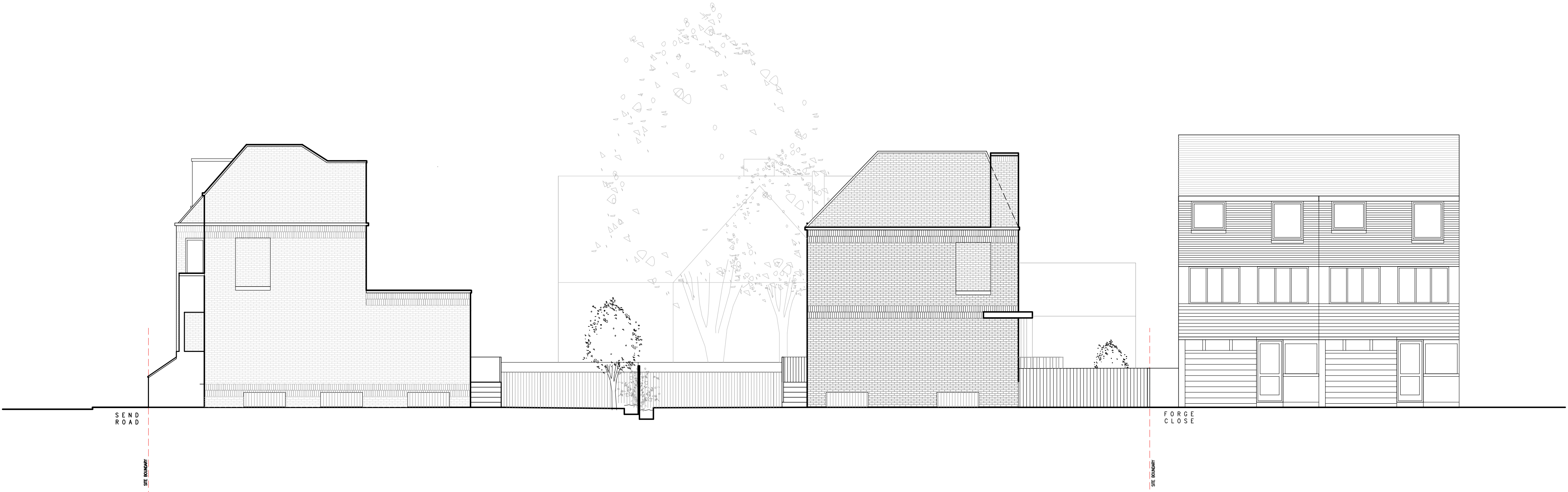
## Appendix B



ELEVATION 01

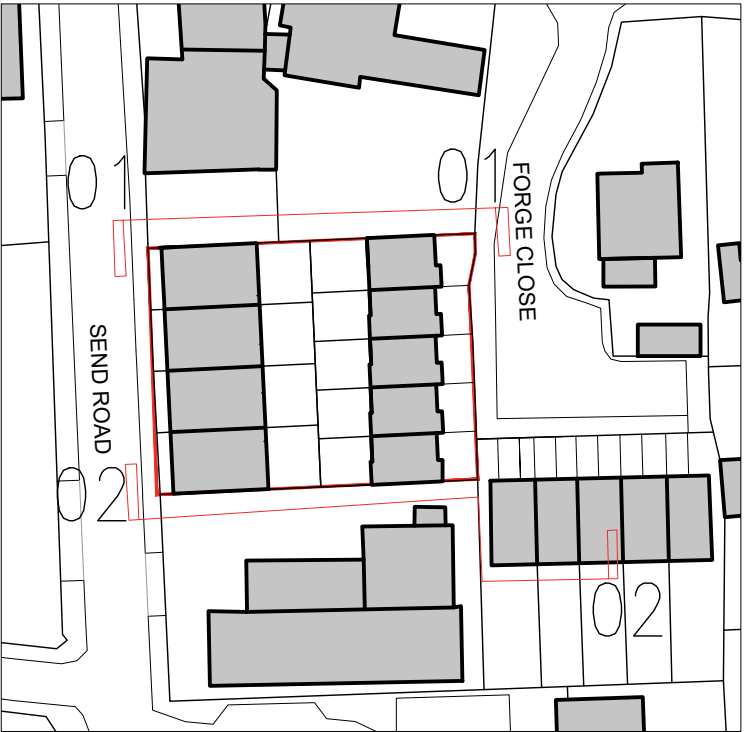
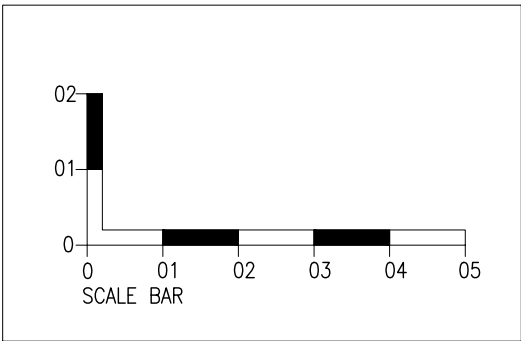


ELEVATION 02



ALL DIMENSIONS MUST BE CHECKED ON SITE. INFORM THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. INTERNAL LAYOUTS INDICATIVE.

- NOTES
1. WINDOW MULLION / PATIO GLAZING ARRANGEMENT INDICATIVE. SUBJECT TO DETAIL DESIGN.
  2. SITE FOOTPRINT TAKEN FROM SURVEY. REST OF EXISTING PLAN, ELEVATION RIDGE AND EAVES HEIGHT OF IMMEDIATE NEIGHBOURING BUILDINGS FROM OS & APPROXIMATE.
  3. DO NOT SCALE OFF THIS DRAWING. FOR CONSTRUCTION ALL DIMENSIONS TO BE CHECKED ON SITE.
  4. PROPOSED TREE LOCATIONS SHOWN INDICATIVELY.
  5. INFORM ARCHITECT OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

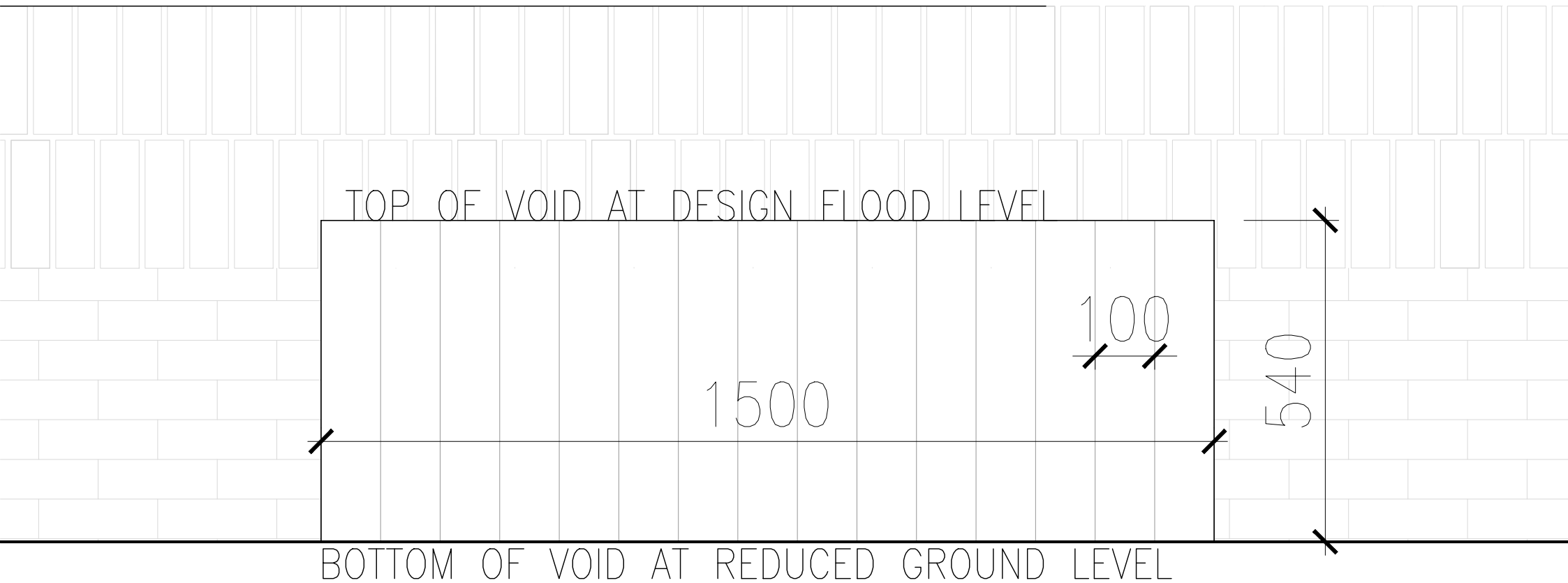


| REV | DATE     | DESCRIPTION                              | DRAWN BY |
|-----|----------|------------------------------------------|----------|
| P01 | 20.08.21 | FIRST ISSUE FOR REVIEW                   | DG       |
| P02 | 23.09.21 | GRAPHICS UPDATE                          | DG       |
| P03 | 17.06.22 | FLOOD VIDS ADDED TO THE FLANK ELEVATIONS | DG       |

Gouldstone  
and Co.

CLIENT  
RAYWOOD DEVELOPLMENTS LTD  
PROJECT  
2-4 SEND ROAD  
CAVERSHAM, READING  
DRAWING TITLE  
PROPOSED FLANK ELEVATIONS

SCALE 1:1000A1 / 1:2000A3  
STATUS  
PLANNING  
DRAWING NO  
SR\_P\_304  
REV  
P03  
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TYPICAL VOID