



**DRAINAGE STRATEGY
ON
BLACKER GREEN LANE, SILKSTONE
BARNSELEY, S75 4NS**



**ON BEHALF OF
MR AND MRS P ENGLAND**

JUNE 2017 (INITIAL ISSUE)

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Flood Risk Assessment on Blacker Green Lane, Silkstone, Barnsley, S75 4NS

1640/01r1

Revision/Date	Initial Issue 2nd June 2017	Revision A	Revision B	Revision C
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CONTENTS

		Page
1.0	Introduction	4
2.0	Site Description	5 - 6
3.0	Consultations	7
4.0	Sources of Flooding other than from Rivers and the Sea	8
5.0	Drainage Strategy	
	Proposed Surface Water Drainage	5.1 - 5.7
	Foul Drainage	5.8
	Flood Mitigation	5.9
6.0	Summary	12

APPENDICES

Appendix A	Site Location Plan
Appendix B	Topographical Survey
Appendix C	Development Proposals
Appendix D	Water Authority Consultation
Appendix E	Indicative Surface Water Drainage Calculations



1.0 INTRODUCTION

- 1.1. Mr and Mrs P England are proposing to develop a site within Silkstone, Barnsley for the erection of a single dwelling with a hydro-turbine power plan for surface water drainage.
- 1.2. ARP Associates have been appointed to carry out an assessment of the site, implement appropriate consultations and prepare a Drainage Strategy, in accordance with NPPF, to satisfy the requirements of the Planning Authority.
- 1.3. The following Drainage Strategy is based on consultations and walkover undertaken in May 2017.
- 1.4. The report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.



2.0 SITE DESCRIPTION

- 2.1 The proposed development is centred on grid reference SE 286 046. The site is located in a rural area with only one nearby existing dwelling, located some 200m to the north with agricultural and small-scale farming land use. Access to the site is through Blacker Green Lane, an existing single lane bituminous surfaced track with occasional passing places. This terminates some 200m south with limited parking for private fishing at Blacker Dam. The track has overgrown trees overhanging and does not appear well-maintained.
- 2.2 The site is a disused playing field with evidence of a disused building equating to an area of approximately 0.055ha. A site location plan is presented in Appendix A.
- 2.3 The site is bounded by Blacker Green Lane to the west, Silkstone Beck to the west and south, with thick vegetation and trees to the east. Agricultural fields bound the other side of the carriageway, falling generally towards the road and southwards. The western and southern site boundaries also fall steeply away to Silkstone Beck, which is formed by an overflow from the adjacent dam. The banks of the beck are steep, rising up to a level approximately 3m lower on the opposite side from the site. The site entrance is off an existing tarmac track with a padlocked metal gate next to a large mature tree.
- 2.4 The site is a generally flat area of land with mature trees bounding the site on the western edge, which are part of a larger forest network. Semi-mature trees surround the other land boundaries. Vegetation is present throughout the site, predominately shrubs with juvenile trees towards the periphery. At the eastern boundary, there are remnants of a small demolished building with piles of concrete overgrown in thick vegetation. A topographical survey is presented at Appendix B.
- 2.5 The proposed development will overhang part of Silkstone Beck, which takes overflow from Blacker Dam, a large watercourse southwest of the site. The overflow steps down and drops into the lower level close to where the development is proposed. Development Proposals are presented at Appendix C.



2.6 There is no evidence of existing drainage at this site, although the site appears very well drained largely due to the steep slopes at the edges. No drainage connectivity or CCTV surveys have been carried out at this time. However, there are field drains collecting run-off from the fields to the west discharging through a culvert under the road to Silkstone Beck upstream of the Developments.



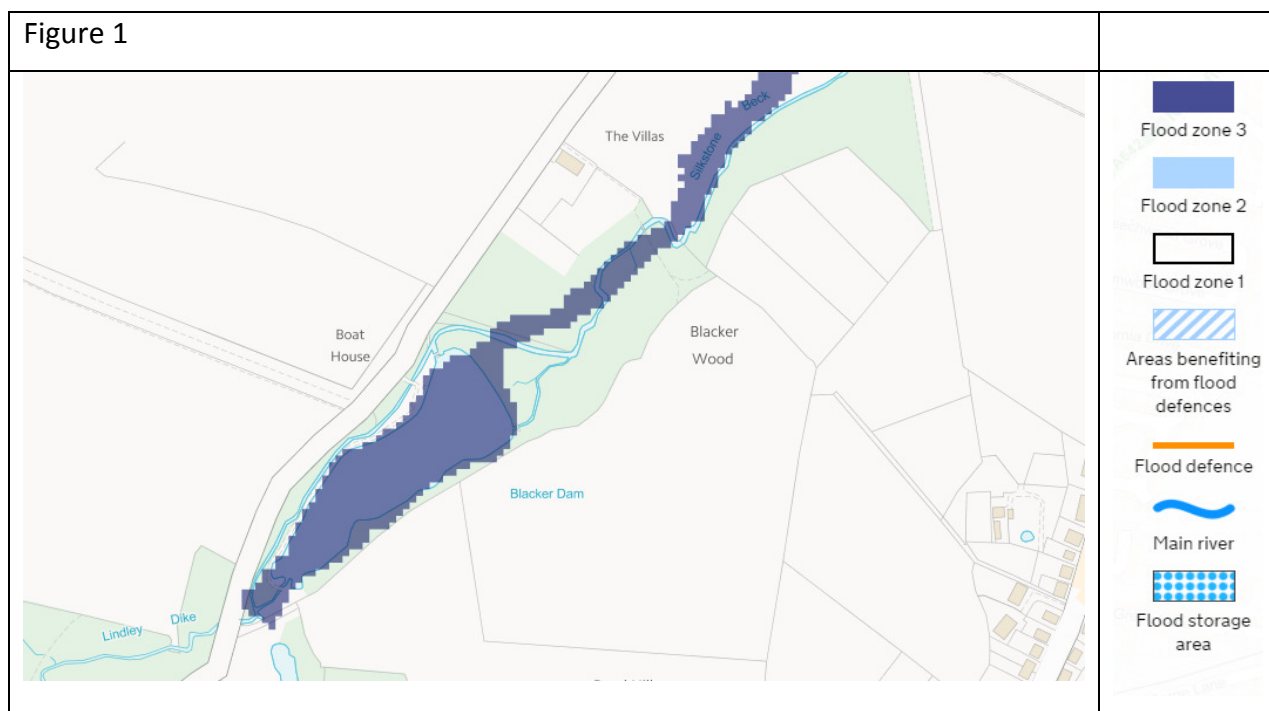
3.0 CONSULTATIONS

- 3.1 A consultation has been requested from Barnsley MDC, as Land Drainage Authority for this area, as it is apparent that the local watercourse is the most appropriate position for discharge from this site. However, at this time, a response has not yet been received.
- 3.2 A consultation was requested from Yorkshire Water and a copy of their response, under reference T006912 dated 9th May 2017, is presented in Appendix D. The site is remote from the public sewer network and there are no sewers which can be considered practical to receive foul or surface water discharge from the proposed development.
- 3.3 Foul water domestic waste may discharge to either the 150mm diameter public combined sewer recorded in Cone Lane at a point approximately 496m from the site, or alternatively to the 225mm diameter public combined sewer recorded on the junction of Cone Lane and Noblethorpe Lane at a point of approximately 776m from the site. It is considered that these two options are not appropriate or viable options, and the best means for drainage for this development would be by way of package treatment outfalling to Silkstone Beck after it has been treated. This may require an approval from the Environment Agency.



4.0 SOURCES OF FLOODING OTHER THAN FROM RIVERS AND THE SEA

- 4.1 The site is shown to be partially within an area that may be affected by river, coastal or estuarine flooding. An extract from the Environment Agencies online flood map is shown in Figure 1 below. However, as shown on the development proposals in Appendix C, the dwelling will only overhang the Flood Zone area and does not take up any area of flooding. The property will not flood in times of heavy storm.



- 4.2 Flooding from the watercourse adjacent to the western boundary of the site will need to be considered in the event that this becomes blocked, and, whilst it is known that the watercourse from Blacker Dam also floods, this is well below the level of the site and will not cause flooding on the development.
- 4.3 During the site survey, the weather was very dry, and no existing ponding, flooding or other problems associated with drainage was noted. Severe erosion has caused two metre deep ravines with tree roots and vegetation growing across it as a result of the culvert under the highway draining the fields to the west. Water was trickling out of the culvert during the site investigation, indicating the culvert is still functional.



5.0 DRAINAGE STRATEGY

Proposed Surface Water Drainage

- 5.1 Surface Water drainage for the development is considered in accordance with Requirement H3 of Building Regulations 2000. This establishes a hierarchy for surface water disposal, initially by soakaways or infiltration system, watercourse and only then finally to sewer.
- 5.2 Consideration of the proposed drainage should firstly be given to infiltration techniques (to ground). It will be necessary to carry out appropriate infiltration tests in accordance with BRE Digest 365 'Soakaway Design' prior to construction on site, and the results presented in a report for the approval of the Planning Authority. Review of the British Geological Survey and Soilscape mapping indicate the site is underlain by undifferentiated Mudstone, Siltstone and Sandstone, which, unless fractured, implies impeded drainage is likely on site and infiltration is very unlikely to be successful.
- 5.3 Furthermore, it should be noted there are space implications on site for inclusion of soakaways. As per building regulations, soakaways should not be sited within 5m of a building or road. Due to the confined nature of the development, there is limited space for a soakaway, with only the northern edge as a suitable location.
- 5.4 As the site is currently undeveloped, no surface water is known to have previously discharged into the public sewer network. If soakaways prove to be unsatisfactory, direct connection to watercourse is deemed the most practical solution due to the locality of the nearest watercourse and the constraints by distance to the public sewer system.
- 5.5 It is noted on the Planning Application that the existing site has been estimated to have an existing impermeable area of 0.055ha. Using the Rational Method of calculation, the existing discharge rate is 7.6l/s. Reducing this by 30% to meet the requirements of the Pitt Review, the proposed surface water discharge rate is 5.3l/s.



- 5.6 Indicative calculations have been carried out using the WinDES Source Control Computer Program. The proposed surface water system should be designed to accommodate the 1 in 30 year storm event without flooding, and the 1 in 100 year storm plus climate change event should be retained within the site in an area which will not affect the new buildings or third parties from flooding.
- 5.7 Restricting the discharge rate to no greater than 5.3l/s, on-site storage of 12.3m³ will need to be provided for a 1 in 100 year storm plus 40% climate change event without causing flooding of property of third party land. Due to the space constraints in the site and the negligible storage needed (due to site size), either oversized pipes or a small storage tank is recommended under the proposed road or car parking areas, should infiltration not be possible. The indicative surface water calculations are presented in Appendix E. However, detailed calculations and proposals will need to be prepared and submitted to the Planning Authority for approval prior to construction.

Foul Drainage

- 5.8 As the nearest sewers are in the region of 500m from the development, foul water domestic waste should discharge to Silkstone Beck following on-site treatment through a Package Treatment Plant. This will require an application for a Permit through the Environment Agency with details of the proposed treatment, sampling procedure and maintenance procedures.

Flood Mitigation

- 5.9 Whilst the site falls outside Flood Zone 3, there are requirements for precautionary mitigation measures for this particular site. In the event of a catastrophic storm and blockage of the watercourse or the proposed drainage system, then it would be advisable to consider some precautionary mitigation measures, as follows:-



- 5.9.1 The ground floor level to the property shall be raised above external levels by a minimum of 150mm.
- 5.9.2 The property shall be designed without any basements and the ground floor shall comprise solid concrete slabs or beam and block with screed construction.
- 5.9.3 The Incoming electricity supply shall be raised above ground floor level and ground floor electric sockets shall be served by loops from first floor level.
- 5.9.4 It will be necessary to ensure that there is a route for floodwater through the site to the watercourse without causing flooding of buildings. To achieve this, external levels shall be designed to ensure there is a route through the site without causing ponding in the vicinity of buildings.



6.0 SUMMARY

- 6.1 Infiltration measures for surface water discharge are likely to be unsuitable. However, this will be confirmed to infiltration testing at detailed design stage in accordance with BRE Digest 365 'Soakaway Design', and a report submitted to the Planning Authority for approval prior to construction on site.
- 6.2 Discharge to the existing public sewer network has been discounted as unfeasible due to the distance across third party land.
- 6.3 Surface water will need to be attenuated on the site for a 1 in 100 year plus 40% allowance for climate change, with discharge at a proposed rate of 5.3l/s and outfall to Silkstone Beck.
- 6.4 Detailed calculations and proposals will need to be submitted to the Planning Authority for approval prior to construction on site.
- 6.5 Foul water domestic waste should discharge to the watercourse after on-site treatment via a Package Treatment Plant. A Permit will be required from the Environment Agency.



A P P E N D I X A

S I T E L O C A T I O N P L A N



All levels to GPS

OS Grid Reference: SE 286 046

Rev	By	Date	Amendment	Chk
/	PSC	02.06.17	Issued for approval	ARP

Title	SITE LOCATION PLAN
Project/Client	BLACKER GREEN LANE, SILKSTONE BARNSELEY MR & MRS P. ENGLAND

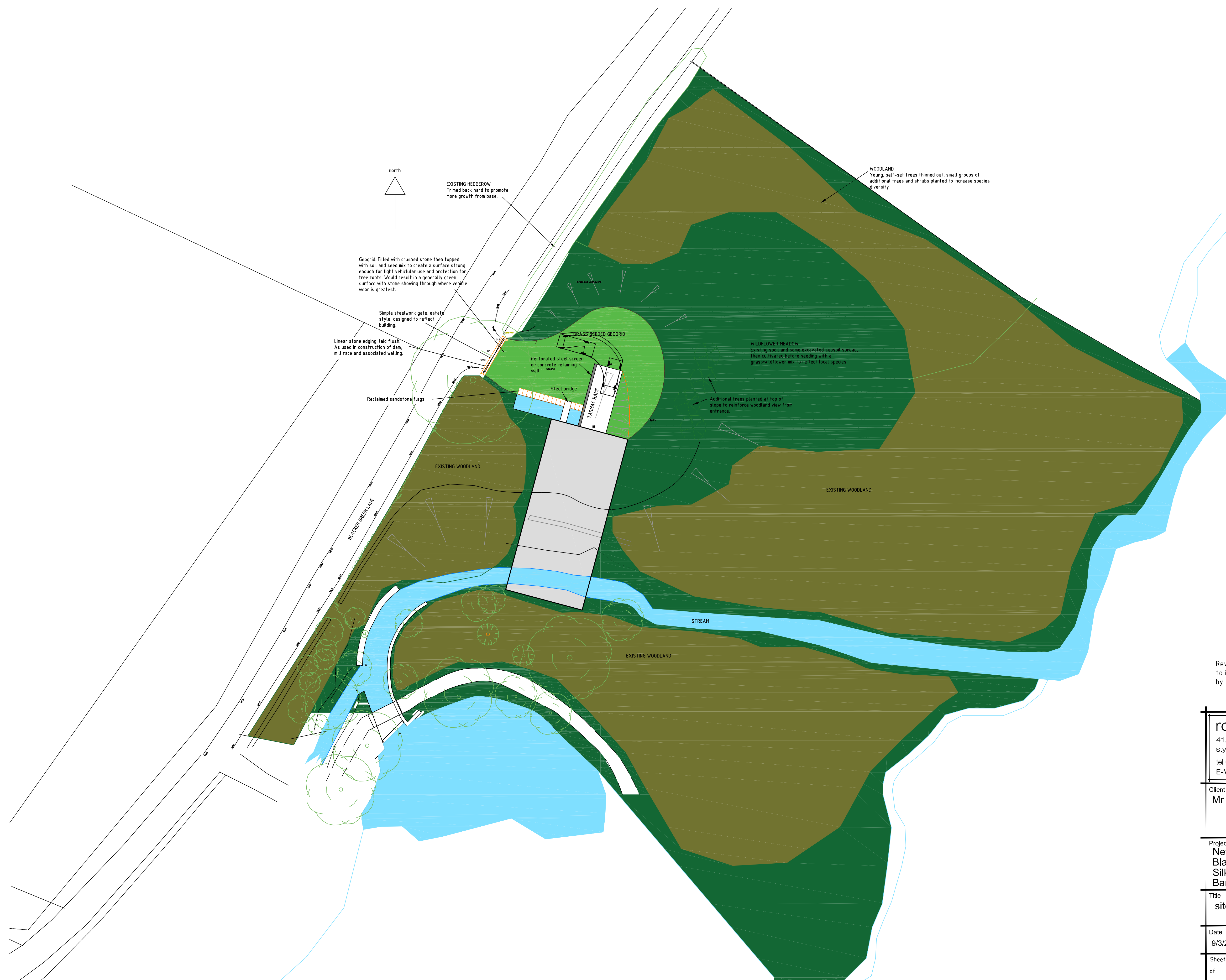
 ARP ASSOCIATES CHARTERED CONSULTING ENGINEERS Northwest House • 5/6 Northwest Business Park Servia Hill • Leeds LS6 2QH Telephone : 0113 245 8498 • Fax : 0113 244 3864 E-Mail : leeds@arpassociates.co.uk	Scale	1:5000 @ A4	Drawn	PSC
	Date	JUN 17	Chk.	ARP
	Drg. No.	1640/01/NA	Rev	/

A P P E N D I X B

TOPOGRAPHICAL SURVEY

A P P E N D I X C

D E V E L O P M E N T P R O P O S A L S



Rev A 6/10/ 2016 amended
to include details requested
by N King inc

roy harrison architects

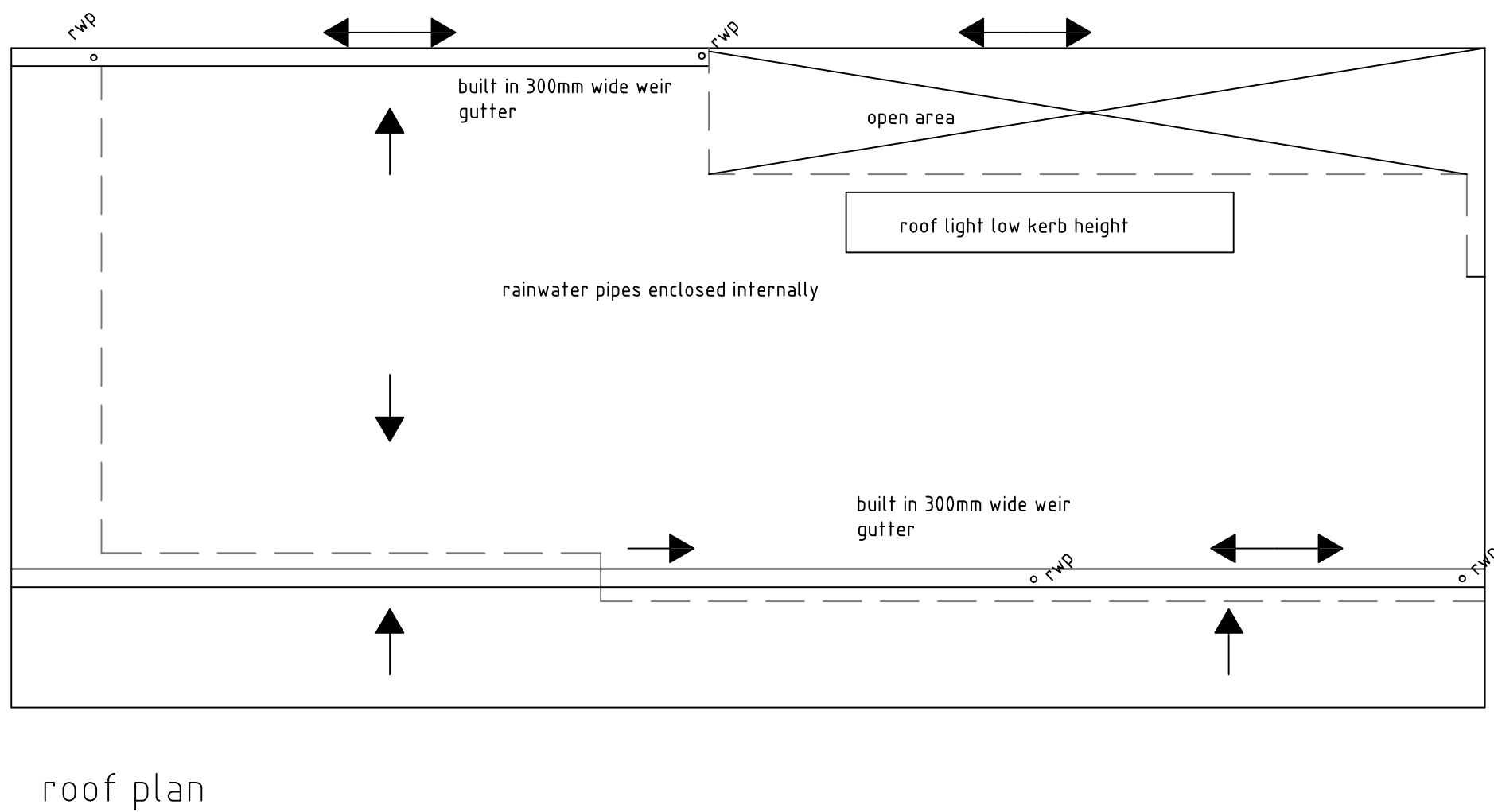
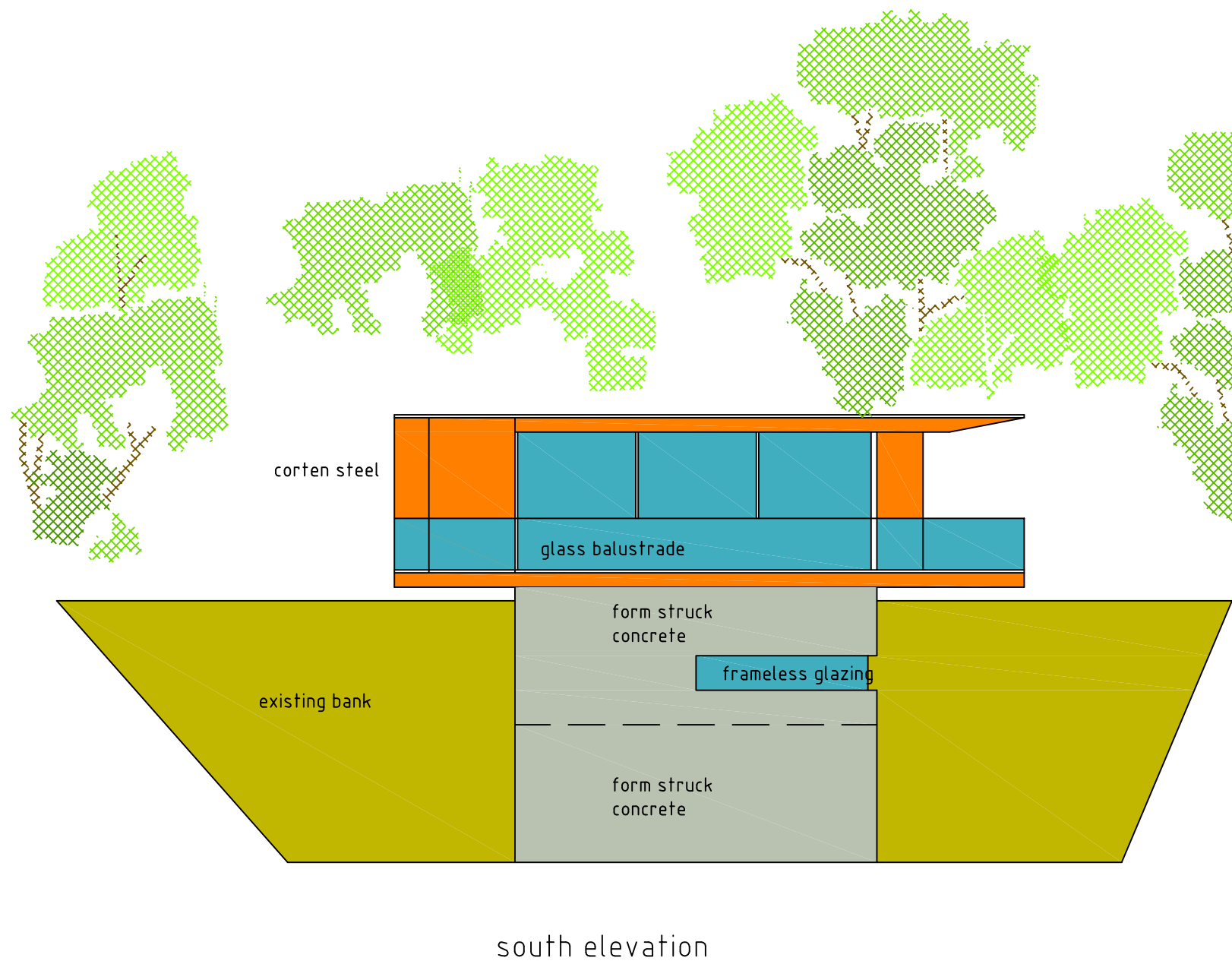
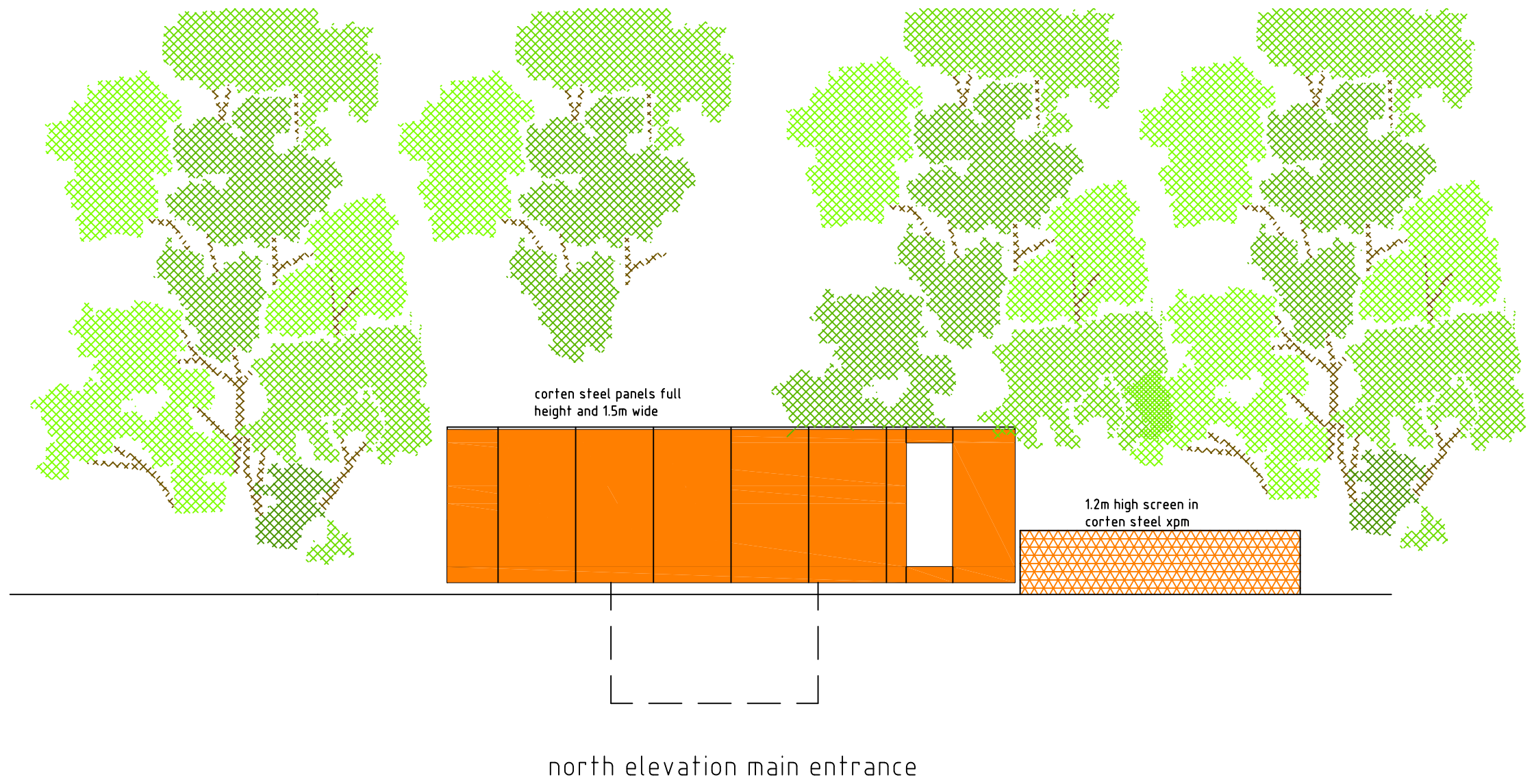
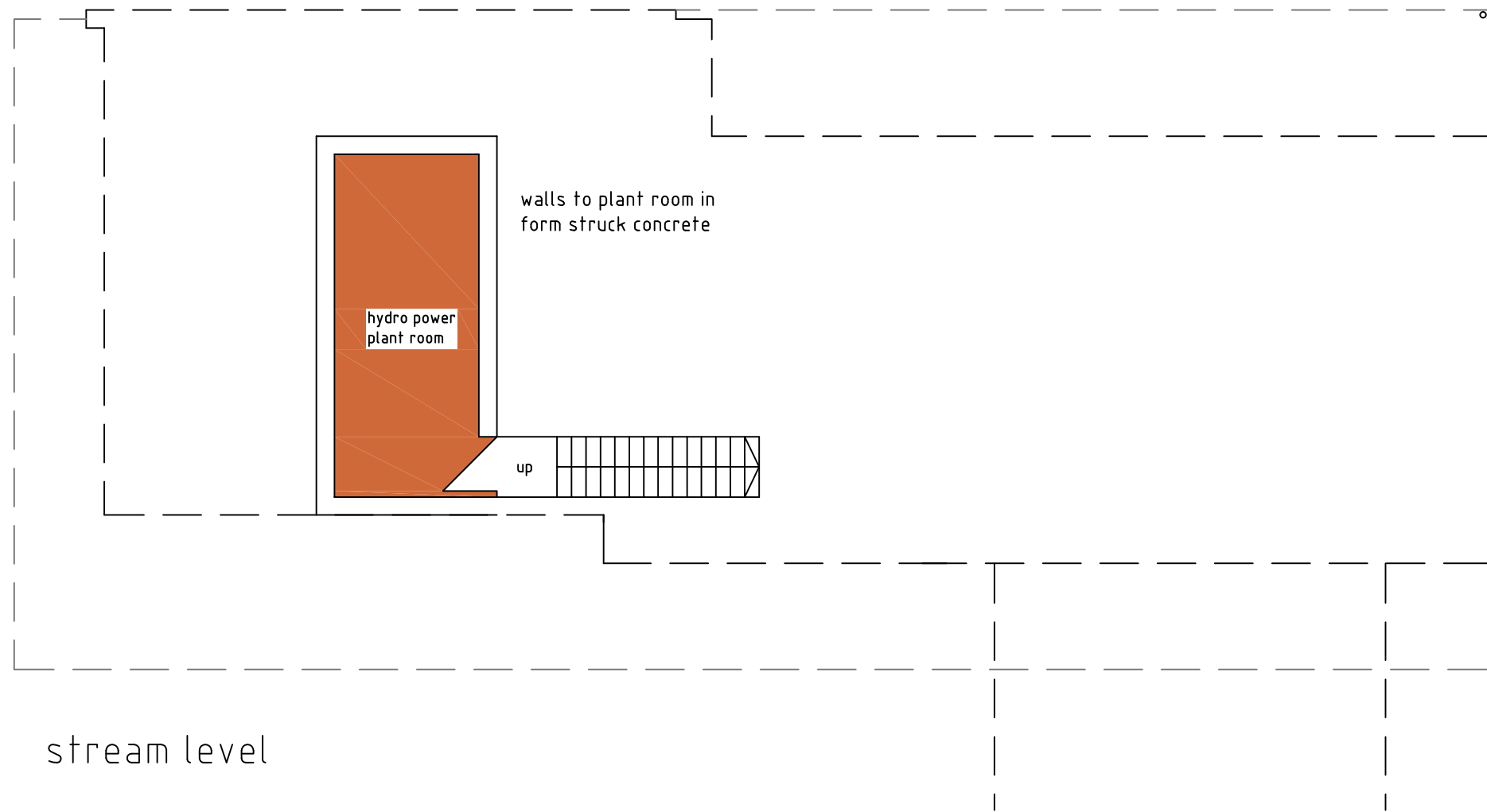
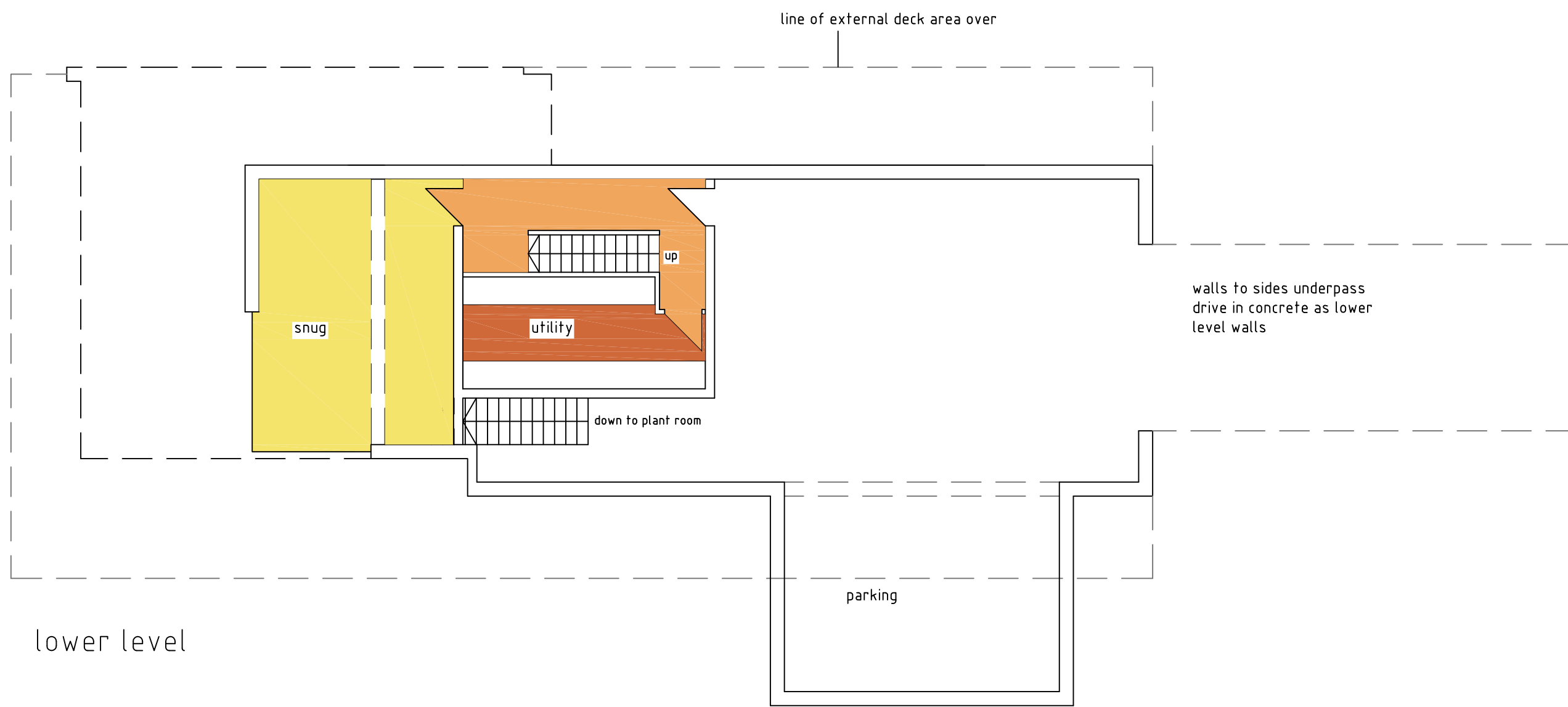
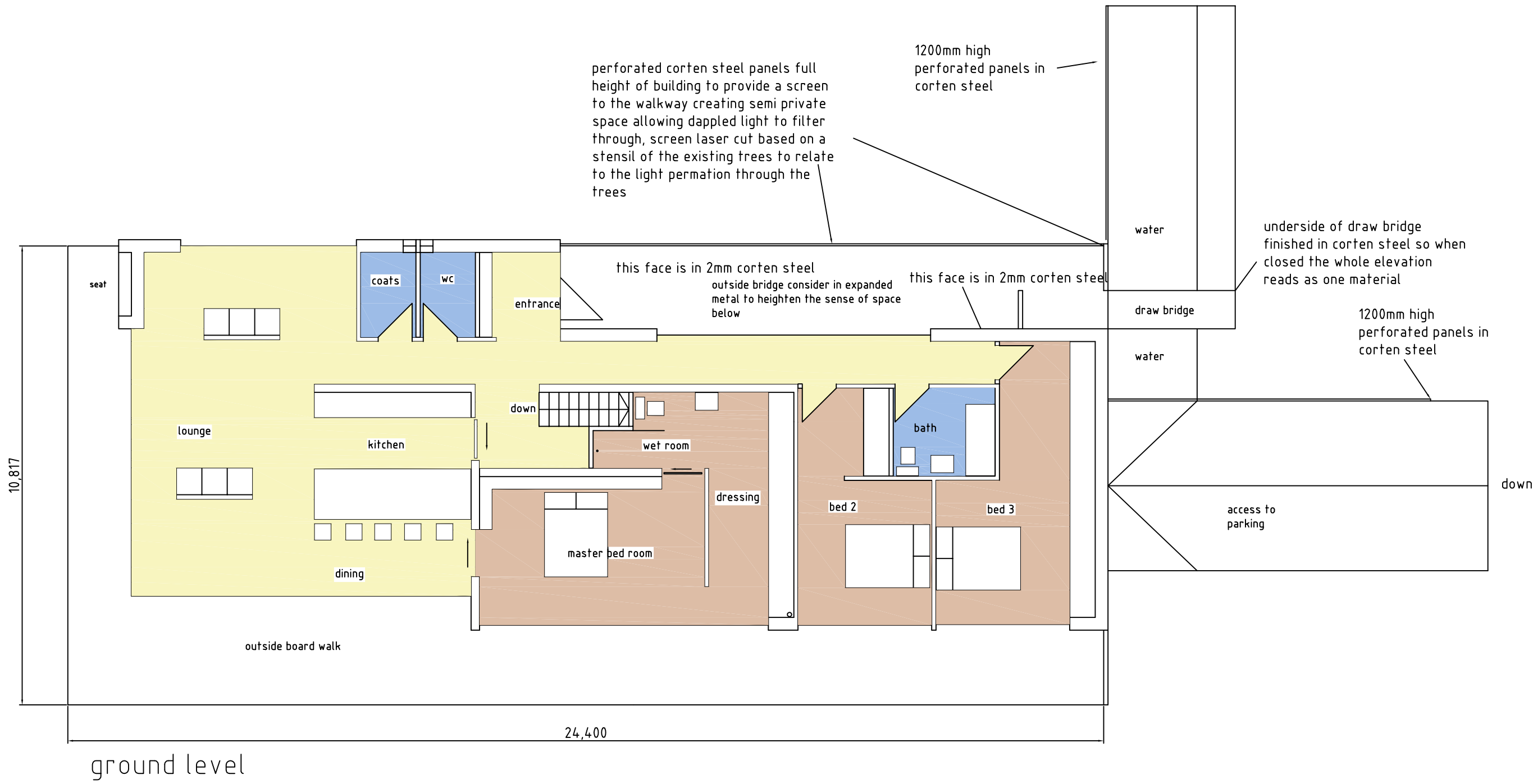
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Client	Mr & Mrs P England
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Project
New Dwelling
Blacker green Lane
Silkstone
Barnsley S75 4NF

Title	site plan
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Date 9/3/2016	Drawing No. rh/pe/4 A	Scale 1:100
Sheet 1 of 1	Revision A	Drawn rh



Rev A 6/10/ 2016 amended to include details requested by N King inc roof plan

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Client
Mr & Mrs P England

Project
New Dwelling
Blacker green Lane
Silkstone
Barnsley S75 4NF

Title
Plans ,elevations

Date	Drawing No.	Scale
9/3/2016	rh/pe/1 A	1:100
Sheet 1 of 1	Revision A	Drawn rh