

GRAY ENVIRONMENTAL LTD

Flood Risk Assessment Report for Residential
Redevelopment of 53 Hart Plain Avenue,
Waterlooville, PO8 8RG

CY Developments Ltd

14th July 2014

Document Control

JOB NUMBER: 207			DOCUMENT REF: Flood Risk Assessment Report for Residential Redevelopment of 53 Hart Plain Avenue, Waterloooville, PO8 8RG		
Revision	Description	Originated	Checked	Authorised	Date
0	Flood Risk Assessment Report	CG	CG	CG	14/07/2014

Administrative Contact

Mr Chris Gray
Gray Environmental Ltd
35 Newtown Street
Duns
Berwickshire
TD11 3AS

Tel: 01361 882635

Fax:

Email: chris.gray@grayenvironmental.co.uk

Table of Contents

Table of Contents.....	3
1.0 INTRODUCTION	4
2.0 PROPOSED DEVELOPMENT	5
3.0 SUMMARY OF SITE CHARACTERISTICS AND SETTING	6
4.0 FLOOD RISK ASSESSMENT	8
4.1 Flooding from Rivers and Sea.....	8
4.2 Flooding from Land.....	8
4.3 Flooding from Groundwater	9
4.4 Flooding from Sewers	9
4.5 Flooding from Reservoirs, Canals and Other Artificial Sources	9
4.6 Conclusion	10
FIGURES	11

1.0 INTRODUCTION

This document has been produced by Gray Environmental Ltd (Gray Environmental). The aim of the document is to prepare a site specific Flood Risk Assessment (FRA) for the Proposed Residential Redevelopment of 53 Hart Plain Avenue, Waterloooville showing either that there is a low risk of flooding from all sources or that the development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed. Please see Figure 1 for the Site Location Plan.

2.0 PROPOSED DEVELOPMENT

Planning application APP/13/00576 was granted with conditions by Havant Borough Council on the 27/11/2013 for the demolition of the existing 3 bed bungalow and construction of 4No. 4 bed detached houses, 3 with integral garages and 1 detached garage and associated parking and landscaping with access from Wedgewood Way.

Planning application APP/13/00576 was accompanied by a Flood Risk Assessment (FRA)¹.

CY Developments Ltd (CY Developments) are in the process of updating the planning permission and an updated FRA is required in line with the proposed scheme.

Please see Figures 1-3 for details of the pre and post development site.

¹ Martin J. Harvey, 53 Hart Plain Avenue, Waterlooville, POS SRG - Flood Risk Assessment, 19 July 2013.

3.0 SUMMARY OF SITE CHARACTERISTICS AND SETTING

The site is located in Waterlooville, Hampshire. The site is approximately 55m long by 35m wide, the site area circa 0.24ha and the National Ordnance Survey (OS) Grid Reference for the site is 468016, 110925. The Site Location Plan is included as Figure 1.

The existing bungalow and associated outbuildings are to be demolished and the site developed to become 4 no. two storey detached dwellings with access/drive/parking areas. Please see Figures 2 and 3 for details of the pre and post development site.

The site is bounded to the north, east, south and west by similar residential development. A ditch is located adjacent to the northern boundary of the site and Wedgewood Way is located close to the northern boundary of the site (Figure 2).

Figure 2 indicates the site has a gentle fall towards the west southwest.

It is currently unknown how surface water runoff from the existing bungalow and outbuildings is disposed of.

The BGS Geoindex website provides information on the geology underlying the site:

- 'Polymict deposit' comprising of 'gravel, sand and clay depending on upslope source and distance from source'²;
- 'London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay'³; and,
- 'Vertically and laterally variable sequences mainly of clay, some silty or sandy, with some sands and gravels, minor limestones and lignites and occasional sandstone and conglomerate'⁴.

The nearest available borehole log shown on the BGS Geoindex website is approximately 160m east of the site. SU61SE76⁵ recorded approximately 0.30m Madeground overlying CLAY to around 1.80m bgl; SAND to around 2.40m bgl; and SILT to circa 7.30m bgl. Groundwater was encountered at approximately 3.00m bgl.

The hydrological characteristics of the area are:

² <http://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=HEAD>

³ <http://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=LC>

⁴ <http://www.bgs.ac.uk/lexicon/lexicon.cfm?pub=LMBE>

⁵ http://scans.bgs.ac.uk/sobi_scans/boreholes/421430/images/10755470.html

Average annual rainfall (AAR) mm	792
Soil runoff coefficient (SPR)	0.47
M5-60 mm	20
Rainfall ratio (r)	0.3
Hydrological region (R)	6 ⁶ .

The groundwater beneath the site is associated with a source protection zone⁷.

⁶ http://www.uksuds.com/surfacewaterstorage_js.htm

⁷ http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=PO8+8RG&lang=_e&ep=map&topic=groundwater&layerGroups=default&scale=9&textonly=off&submit.x=20&submit.y=9

4.0 FLOOD RISK ASSESSMENT

4.1 Flooding from Rivers and Sea

The site is approximately 45m At Ordnance Datum (AOD).

A review of the Environment Agency (EA) Flood Map for Planning (from Rivers and the Sea)⁸ indicates the site lies within Flood Zone 2 i.e. land assessed as having between a 1 per cent (1 in 100) and 0.1 per cent (1 in 1,000) annual probability of river flooding.

For the purposes of the Flood Risk Regulations 2009 and the EU Directive 2007/60/EC on the assessment and management of flood risk, the EA's Risk of Flooding from Rivers and the Sea Map (Flood Hazard Map)⁹ assesses that the chance of flooding from rivers at the site location is low.

The highest EA JFLOW derived 0.1 % Annual Probability/1 in 1000 Year (Flood Zone 2) Water Surface Level presented in the FRA that accompanied Planning application APP/13/00576 was 42.74m AOD¹⁰.

4.2 Flooding from Land

Information collection indicates the site is located in a predominantly residential setting; a ditch is located adjacent to the northern boundary of the site; the site has a gentle fall towards the west south-west; and the site is underlain by low permeability soil.

The PUSH EA Surface Water Flood Map indicates the site has a medium susceptibility to surface water flooding and the PUSH SFRA indicates the site is located in an area where land use change will have a low Impact on surface water runoff¹¹.

⁸ http://maps.environment-agency.gov.uk/wiyby/wiybyController?value=PO8+8RG&lang=_e&ep=map&topic=floodmap&layerGroups=default&scale=9&textonly=off&submit.x=24&submit.y=6#x=468034&y=111077&lq=1.&scale=11

⁹ http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?layerGroups=default&lang=_e&topic=floodmap&scale=9&ep=map&y=111077&x=468034#x=468031&y=111077&scale=11

¹⁰ Martin J. Harvey, 53 Hart Plain Avenue, Waterlooville, POS SRG - Flood Risk Assessment, 19 July 2013.

¹¹ <http://maps.hants.gov.uk/push/Map.aspx>

The PUSH SFRA does however indicate the site is located in an area which is a very high potential source of overland flow¹².

A review of the EA's risk of flooding from surface water map indicates a high risk - greater than 1 in 30 (3.3%) chance of flooding each year - in the site location¹³.

The estimated surface water depth when there is a high chance of flooding occurring in the site location is below 300mm¹⁴; the estimated direction of water towards the south-west; and the estimated surface water velocity is over 0.25 m/s¹⁵.

4.3 Flooding from Groundwater

The PUSH EA Groundwater Flood Map indicates the site is located in an area that is susceptible to superficial deposits groundwater flooding and the PUSH SFRA indicates moderate bedrock permeability¹⁶.

4.4 Flooding from Sewers

The PUSH SFRA EA Surface Water Sewer Flood Map indicates the nearest location where Southern Water has previously observed surface water sewer flooding is approximately 550m east northeast of the site¹⁷.

4.5 Flooding from Reservoirs, Canals and Other Artificial Sources

The site is not located in an area that could be flooded if a large reservoir were to fail and release the water it holds¹⁸.

¹² <http://maps.hants.gov.uk/push/Map.aspx>

¹³ <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=ufmfs&layer=0&x=468034&y=111077&scale=10&location=PO8+8RG#x=468033&y=111076&scale=11>

¹⁴ <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=ufmfs&layer=3&x=468033&y=111076&scale=11#x=468033&y=111076&scale=11>

¹⁵ <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=ufmfs&layer=6&x=523110&y=169107&scale=11#x=523110&y=169107&scale=11>

¹⁶ <http://maps.hants.gov.uk/push/Map.aspx>

¹⁷ <http://maps.hants.gov.uk/push/Map.aspx>

¹⁸ <http://watermaps.environment-agency.gov.uk/wiyby/wiyby.aspx?lang=e&topic=reservoir&layer=default&scale=10&x=468034&y=111077#x=468031&y=111077&scale=8>

4.6 Conclusion

1. The development is situated in Flood Zone 2 - i.e. land assessed as having between a 1 per cent (1 in 100) and 0.1 per cent (1 in 1,000) annual probability of river flooding, as defined in Planning Policy Guidance (PPG) Flood Risk and Coastal Change¹⁹.

The highest EA JFLOW derived 0.1 % Annual Probability/1 in 1000 Year (Flood Zone 2) Water Surface Level presented in the FRA that accompanied Planning application APP/13/00576 of 42.74m AOD plus a 30% allowance for climate change (0.10m) indicates the proposed dwelling ground floor levels should be set at a minimum of 42.84m AOD - subject to obtaining updated Product 4 Flood Data from the EA.

2. A review of the EA's risk of flooding from surface water map indicates a high risk - greater than 1 in 30 (3.3%) chance of flooding each year - in the site location with an estimated depth below 300mm; an estimated direction of water towards the south-west; and an estimated surface water velocity of over 0.25 m/s.

Please see proposed dwelling ground floor levels above.

A formal application for connection to the public surface water sewerage system that runs west southwest - east northeast across the site will be submitted to Southern Water for the proposed development. This application will detail proposals ensuring all surface water runoff from the post development impermeable areas will be treated, attenuated - for the 100 year critical event with 30% uplift for extreme rainfall intensities - and discharged to the public surface water sewerage system via a hydraulic flow control.

3. The PUSH EA Groundwater Flood Map indicates the site is located in an area that is susceptible to superficial deposits groundwater flooding.

Site specific information on ground conditions will be obtained to confirm this assessment, informing foundation and attenuation storage design.

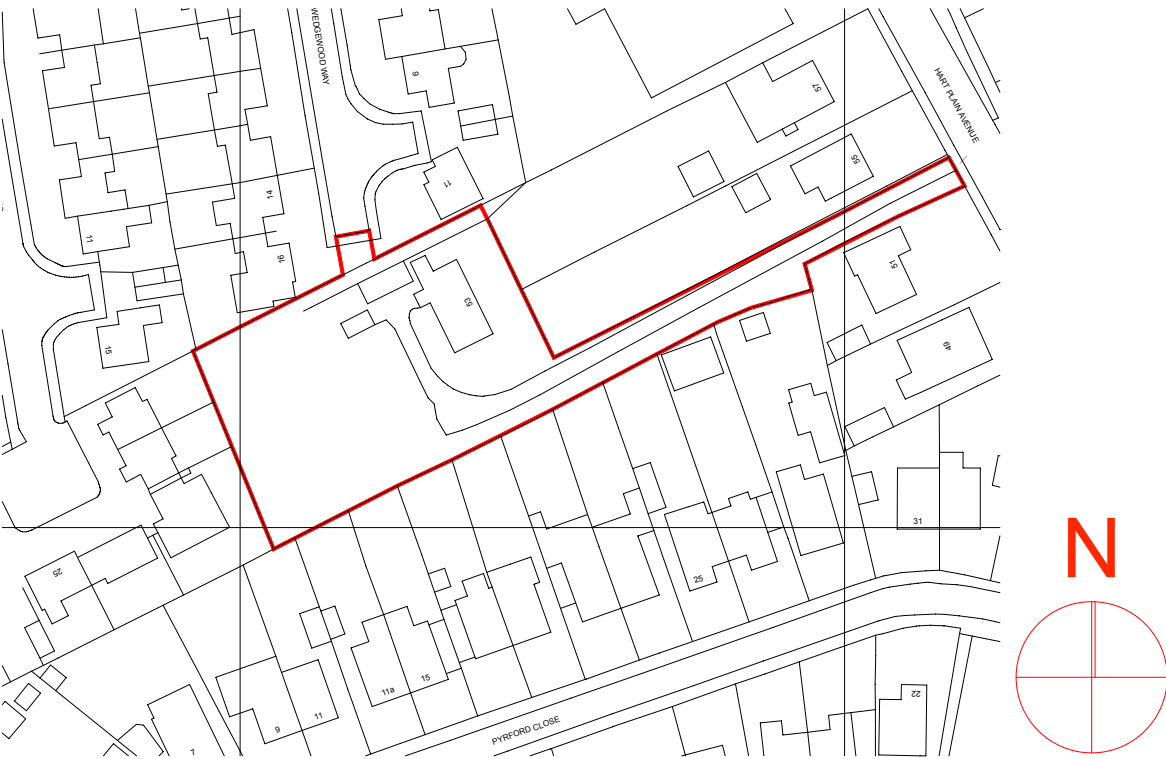
¹⁹ <http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

FIGURES

Figure 1: Site Location Plan

Figure 2: Existing Survey

Figure 3: Proposed Block Plan



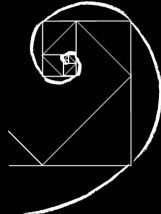
Ordnance Survey (c) Crown Copyright 2014. All rights reserved. Licence number 100022432

Location Plan
Scale 1:1250@A3

SHEET INDEX			
No.	Name	Scales	Size
01	Location Plan	1:1250, 1:1	
02	Existing Block Plan	1:500	
03	Approved Block Plan	1:500	
04	Proposed Block Plan	1:500	
05	Plot 1 House Plans	1:100	
06	Plot 1 House Elevations	1:100	
07	Plot 1 Roof Plan and Section	1:100	
08	Plot 2 House Plans	1:100	
09	Plot 2 Elevations	1:100	
10	Plot 2 Roof Plan and Section	1:100	
11	Plot 3 House Plans	1:100	
12	Plot 3 Elevations	1:100	
13	Plot 3 Roof Plan and Section	1:100	
14	Plot 4 House Plans	1:100	
15	Plot 4 Elevations	1:100	
16	Plot 4 Roof Plan and Section	1:100	

Drawing Issue Sheet
Scale 1:1@A3

job no.048drawing no.01



Inside Out
architectural consultants ltd

clientC.Y. Developments

jobCowplain

drawing titleLocation Plan & Drawing Issue Sheet

scale1:1250@A3

drawn

date

© Inside Out Architectural Consultants Ltd 2011

job no.048drawing no.01

P STUBBINGTON LAND SURVEYS LTD

THE MEAD
DURLEY BROOK ROAD
DURLEY
SOUTHAMPTON
HAMPSHIRE
SO32 2AR
TEL : 023 8060 1876
MOBILE :
07973 348165
EMAIL :
PAUL.STUBBINGTON@BTINTERNET.COM

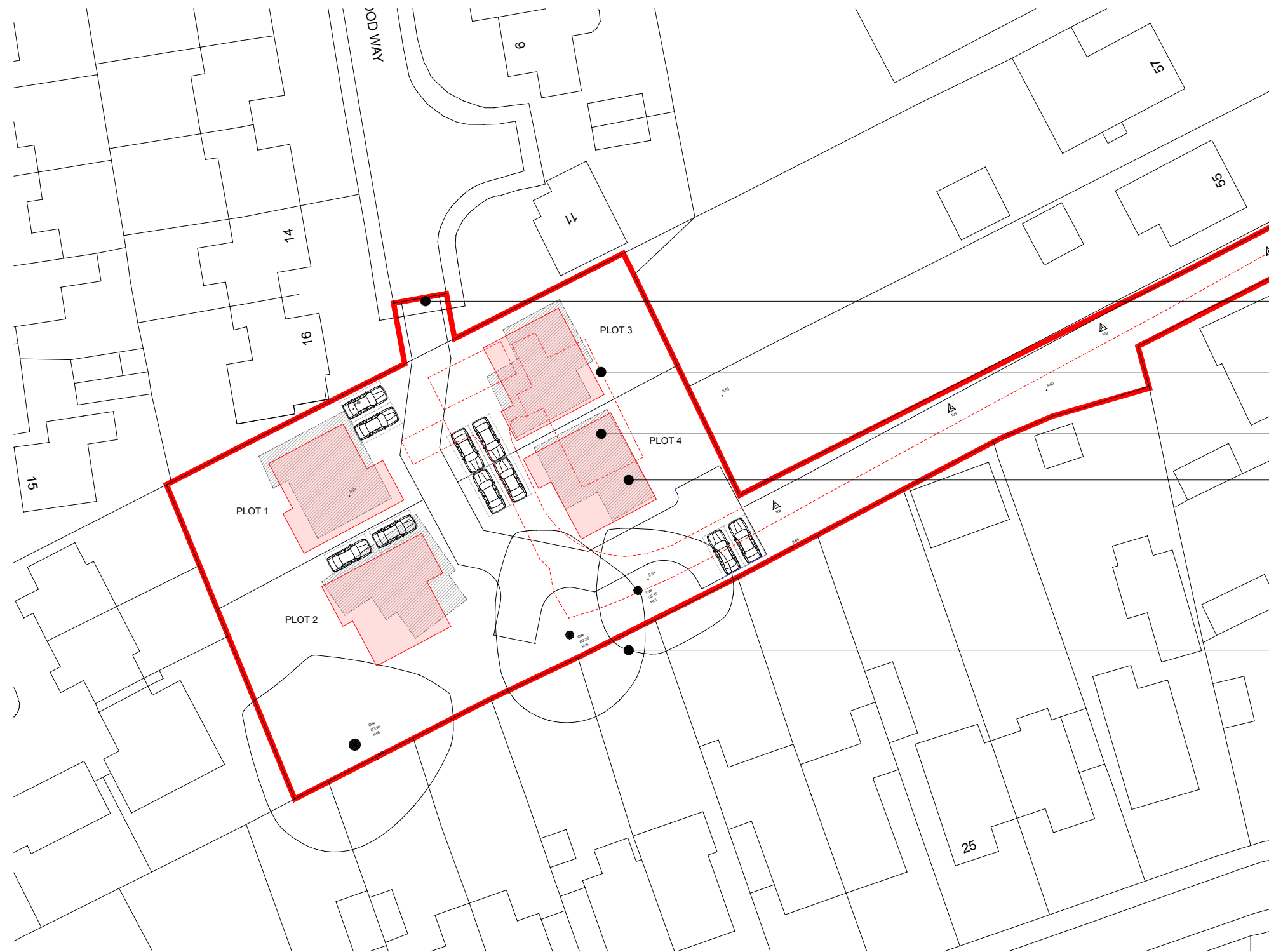
CLIENT - PEAK QUALITY HOMES
CONTRACT - 53 HARTPLAIN AVENUE
COMPLAIN
TITLE - EXISTING SURVEY
SCALE - 1:200 @A1
DRAWING NO. 1569/01
DATE - APRIL 2012
SURVEYOR - PS

NOTES
LEVELS RELATE TO O.S. DATUM
TREE SPECIES SHOULD BE VERIFIED WHERE OF
CRITICAL IMPORTANCE
THE ARCHITECT SHOULD SATISFY HIMSELF THAT ALL TREES
LIKELY TO AFFECT HIS DESIGN HAVE BEEN SHOWN
INTER CORRECTION OF HANDLES SHOULD BE VERIFIED
WHERE OF CRITICAL IMPORTANCE USING CCTV
PIPE SIZES & DEVERTS DETERMINED WITHOUT
ENTRY INTO MANHOLE

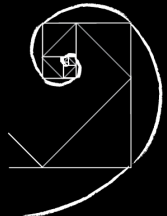
HARTPLAIN AVENUE
13 JUN 2013
RECEIVED



- KEY:
- bt British Telecom
 - cb Control Box
 - cl Cover Level
 - ctv Cable Television
 - sk Strip Keros
 - el Electric
 - ep Electricity Pole
 - fh Fire Hydrant
 - gully Gully
 - gav Gas Stop Valve
 - ht Height
 - ic Inspection Cover
 - il Invert Level
 - lp Lamp Post
 - man Manhole
 - oh Overhead
 - pb Post Box
 - pc Pylon Crossing
 - np Name Plate
 - rd Road Sign
 - sv Stop Valve
 - tb Telephone Box
 - tl Traffic Light
 - tt Top of Tree
 - th Threshold
 - tw Top of Wall
 - ul Unable to Lift
 - vp Vent Pipe
 - wm Water Meter
 - wsr Water Stop Valve



Proposed Block Plan

job no.	048	drawing no.	04
 Inside Out architectural consultants ltd			
client C.Y. Developments			
job Cowplain			
drawing title Proposed Block Plan			
scale 1:500@A3	drawn	date	
© Inside Out Architectural Consultants Ltd 2011			
job no.	048	drawing no.	04