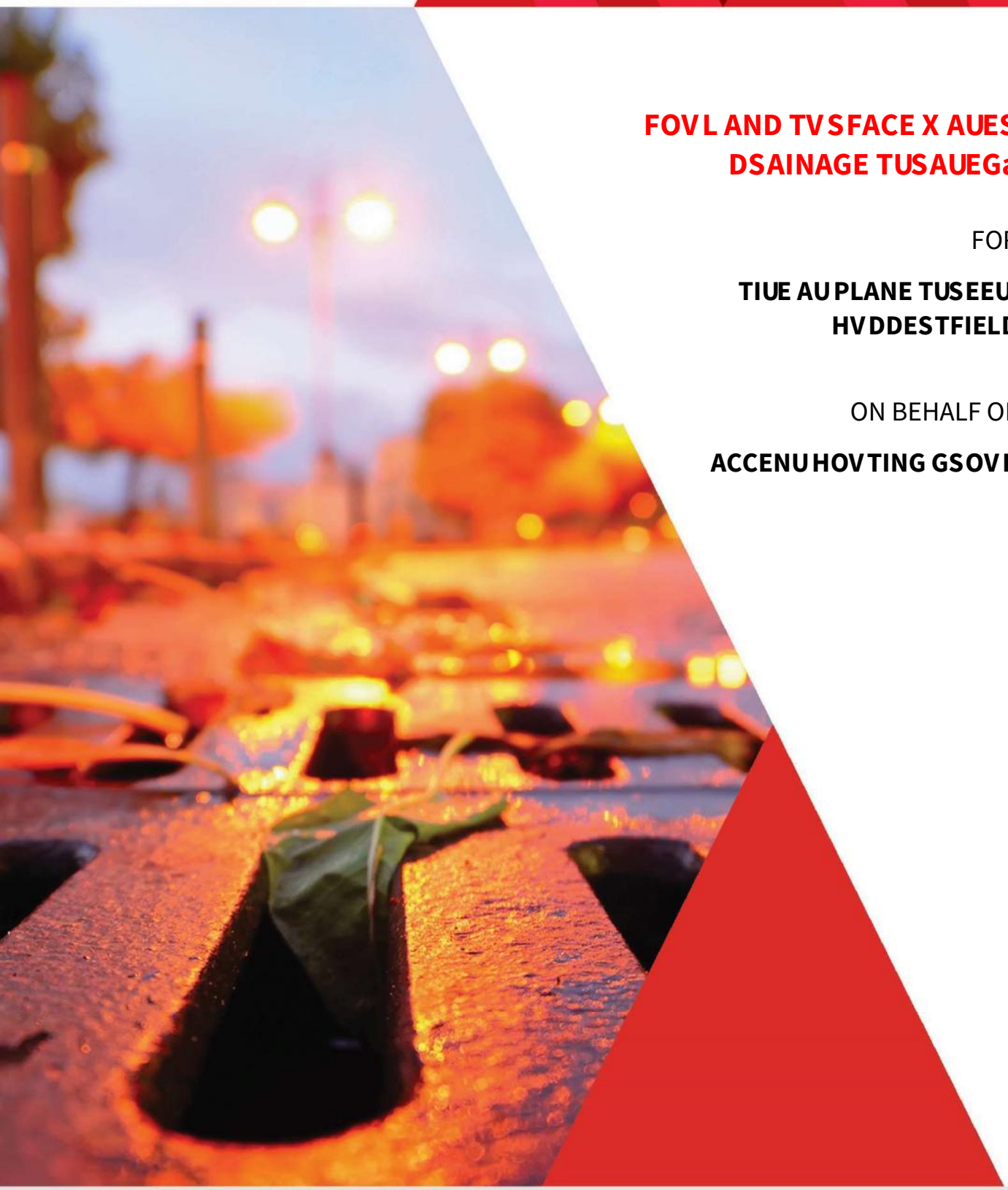

FOVL AND TVSFACE X AUES DSAINAGE TUSAUEGa

FOR

TIUE AUPLANE TUSEEU HVDDESTFIELD

ON BEHALF OF

ACCENUHOVTING GSOVP

ASP ATTOCIAUET

CHARTERED CONSULTING ENGINEERS

Npsui x ftuHpvtf Npsui x ftuBvtjoftt Pbsl Sfswjb Hjmm Lffet LS QH

rhf et bsqbttpdjbuft dp vl x x x bsqdpotvmjohfohjoffst dp vl

Fu2rdt g T2yidfh X d1hy Dydrt dkh T1yd1hk6 iuy Tr1h d1 Prdt h T1yhh1 H2gghy0irhrg y			
	It r1rdrI002h **[1] J2t h**	**Sh3r0rut A**	**Sh3r0rut B**
Pyhvdyhg B6	M Wjrtnpo BEoh Hpot MCIWEM		
Trkt d12yh			
Sh3rh4 hg B6	M Iohsbn MCIHT		
Trkt d12yh			
A21l uyr0hg B6	A Rbedrjggf BEoh Hpot CEoh MISusvduE		
Trkt d12yh			

CONUENUT

APPENDICET

INUSODVCUION

Addfou Hpvtjoh Gspvq bsf qspqptjoh b sftjefoujbmefwfmpqn fou po ui f tjuf pg b gpsn fs qsjn bsz tdi ppmbu Prhof Susff u Hveefstgifne Tp tvqqpsu ui f qrhoojoh bqqrjdbujpo boe bttjtux jui ui f bqqsbjtbmnpgui f tjuf b Fpvmhoe Svsgbdf Wbuf s Dsbjobhf Susbuf hz jt sf r vjsfe up pvujnf ui f qspqptfe n fbot pgtvtubjobcmz n bobhjoh gpvmfggmfou boe tvsgbdf x buf s svopggspn ui f efwfmpqn fou

ARP Attpdjbuft i bwf cff o bqqpjouf e up dbssz pvu b Fpvmboe Svsgbdf Wbuf s Dsbjobhf Susbuf hz gps ui f efwfmpqn fou jn qrhn fou bqqspqsjbuf dpotvmdujpot boe qsf qbsf b sf qpsu up tbujtgz ui f sf r vjsfn fout pgui f Prhoojoh Avui psjuz

Ti f dpotvmdujpot boe tjuf bqqsbjtbmgps ui jt bttfttn fou x fsf dbssjf e pvucfux f f o Aqsjmboe Jvof

Ti f sf qpsui bt cff o jojujbmz qsf qbsf e gps ui f vtf boe sfnjbodf pgui f Cnjfoupomz Ti f sf qpsu ti bmopucf sfnjf e vqpo ps usbotgssf e up boz pui f s qbsujft x jui pvuui f x sjuf o bhsf f n fou pgARP Attpdjbuft Fps ui f bwpjebodf pgboz epvcu x i fsf ARP Attpdjbuft fouf st joup b rnhuf s pgsfnjbodf gps ui f cf ofgiupgb ui jse qbsuz ui buui jse qbsuz x jmcf qf sn juf e up sfmz po ui f sf qpsu Np sf tqpotjcjnjuz x jmcf bddfquf e x i fsf ui jt sf qpsujt vtf e fjui f s jo jut f oujsfuz ps jo qbsu cz boz pui f s qbsuz x jui pvuARP Attpdjbuft dpotf ou

Auuf oujpo jt esbx o up ui f sf r vjsfn fout pg ui f Cpotusvdujpo Dftjho boe Mbobhf n f ou Rf hvnbujpot boe jo qbsujdvmbs ui f evujft boe pcnjhbujpot pgui f Cnjf ou

TIUE DETCSIPUION

Gf of sbm

Ti f tjuf jt bo jssf hvrbs ti bqf e qjf df pg rboe f yuf oejoh up bo bsf b pg bqqspyjn buf mz i f dubsf t i b Ti f tjuf jt mpdbuf e up ui f tpvui pgPrbof Susf f u Hveef st gjf mz HD DF Ti f tjuf jt df ousf e po Oseobodf Svswf z Gsje Rf gf sf odf boe jt dpotjef sf e up cf cspx ogjf mz

Sjuf Lpdbujpo Prbot bsf qsf tf ouf e jo Aqqf oejy A

Cvssf ouboe Psf wjpvt Utf

Ti f n blpsjuz pgui f tjuf f tujn buf e up cf bqqspyjn buf mz i b x bt gpsn f smz pddvqjf e cz b qsjn bsz tdi ppmx jui ui f cvjmejoh tvsspvoef e cz b qrbzhspvoe boe qbsl joh bsf b Ti f tjuf jt dvssf oumz ef sf mjdu x jui ui f tdi ppmcvjmejoht i bwjoh cf f o ef n pmjti f e cvu cf dpn joh wf hf ubuf e cz tf mgtf f ejoh qrbout

Ti f tpvui x f tu boe ejf btu pg ui f tjuf f tujn buf e up cf bqqspyjn buf mz i b x bt boe sf n bjot qsf epn jobounz bo bsf b pghsf f o tqbdf x jui i f bwz wf hf ubujpo bmi pvhi ui f sf bsf tpn f f yjtujoh hbsbhf t jo ui f gps opsui f btupgui f tjuf

Bpvoebsj f t

Ti f tjuf jt cpvoe po ui f opsui f btucz b sf ubjojoh x bmmx jui mfwf mtuf qqjoh epx o gspn ui f tjuf up ui f belbdf ou Prbof Susf f u Tp ui f opsui x f tu ui f tjuf cpvoet ui f sf bs hbsef ot pg f yjtujoh sf tjef oujbmqspqf sujf t jo Mbmwf so Rjtf Sujrh Cpn n po bo bsf b pgpqf o hsbttrboe mjf t up ui f tpvui f btuboe tpvui x f tupgui f tjuf

Tpqphsbqi z boe Vf hf ubujpo

A upqphsbqi jdbmtvswf z pgui f tjuf x bt voef subl f o cz Mf uGf p Eowjspon f oubmjo Odupcf s A dpqz jt jodmvef e jo Aqqf oejy B gps sf gf sf odf

Ti f tvswfz joejdbuf t ui buui f tjuf tnpqf t gspn tpvui x f tuup opsui fbtu x jui bo bwf sbhf gbnn pg bqqspyjn buf mz n Ti f voef wf mpqf e tpvui fbtu boe fbtu pg ui f tjuf i bt bo bwf sbhf tnpqf pgbqqspyjn buf mz jo x i jtuui f tnpqf bdsptt ui f gpsn f stdi ppmtjuf jt bqqspyjn buf mz jo

Lf wf mn bnpoh ui f opsui fbtuf so cpvoebsz pg ui f qsf wjpvtmz efwf mpqf e tdi ppmbsf b bsf pg ui f psef s pg n Acpwf Oseobodf Dbuvn n AOD Ti f opsui fbtupg ui f tjuf jt tnjhi uz mpx f s bu bspvoe n AOD Lf wf mn bnpoh Pnbof Susf f u bekbdf ou up ui f tjuf bsf pg ui f psef s pg n AOD cvutubsuup gbmmtnjhi uz upx bset b gppuqbui buui f fbtuf so f oe boe bnp gbmmbx bz gspn ui f tjuf jo ui f opsui Lf wf mn bnpoh ui f tpvui fbtuf so tjuf cpvoebsz bsf pg ui f psef s pg n AOD

Dsbjobhf

Zpsl ti jsf Wbuf s bttf uqnbot Aqqf oejy D ti px b n n ejbn f uf s dpn cjof e qvcnjdtf x f s mpdbuf e jo Pnbof Susf f uup ui f opsui pg ui f tjuf svoojoh upx bset ui f opsui x f tu ui f ouvsojoh bnpoh Pnbof Susf f uupx bset ui f opsui fbtu

Io ui f bctf odf pgboz pui f s qpuf oujbnqpjoupgejtdi bshf jujt sf btpobcmf up bttvn f ui buui f gpvmboe tvsgbdf x buf s esbjobhf gspn ui f tjuf x i f o jo vtf bt b qsjn bsz tdi ppmx bt ejtdi bshf e up ui f dpn cjof e tf x f s jo Pnbof Susf f u Ti f sf jt op f wjef odf up tvhhf tuui buui f esbjobhf tztuf n t x f sf sf n pwf e x i f o ui f cvjmejoht x f sf ef n pnjtti f e boe gspn ui f upqphsbqi jdbmtvswf z ju jt f wjef ou ui bu tpn f hvmjft boe n boi prft bsf qsf tf ou po tjuf Ti f sf gpsf jujt sf btpobcmf bttvn f e ui bub dpoof dujpo up ui f dpn cjof e tf x f s jo Pnbof Susf f u tujmfiyjtut x jui ui f sf n bjojoh jn qf sn f bcmf bsf bt esbjojoh wjb ui jt n f bot

Fspn Eowjspon f ouAhf odz boe Oseobodf Svswf z n bqqjoh ui f dnptf tuuMbjo Rjwf s up ui f tjuf jt voef stuppe up cf ui f Rjwf s Hpm f mpdbuf e bqqspyjn buf mz n x f tupg ui f tjuf Oseobodf Svswf z n bqqjoh bnp joejdbuf t b tn bmmvoobn f e x buf s dpvstf mpdbuf e bqqspyjn buf mz n tpvui fbtupg ui f tjuf

logpsn bujpo qspwjefe cz ui f Lfbe LpdbmFnnpe Avui psjuz Aqqfoejy E brtp tvhhftut ui bu ui fsf jt b dvnnfsuf e x buf sdpvstf svoojoh bnpoh Nfx tpn f Rpbe bqqspyjn buf mz n up ui f fbtupgui f tjuf

CONTV LUAUION

<u>Eowjspon f ouAhf odz</u>

A dpotvmbujpo boe gmppe ebub sfr vf tux bt tvcn juf e up ui f Eowjspon f ouAhf odz boe b dpqz pg ui f js sf tqpotf sf gf sf odf RFI ebuf e ui Jvof jt qsf tf ouf e jo Aqqf oejy C gps sf gf sf odf Pvc jmdm bwbjmbcmf Eowjspon f ou Ahf odz ebub i bt bmtp cf f o sf wjf x f e

Ti f Eowjspon f ouAhf odz Fmppe Mbq gps Pmboojoh ti px t bsf bt pg mboe ui bun bz gmppe gspn sjwf st ps ui f tf b up cf ti bef e cmf Ti f tf bsf bt ep opuublf jouip bddpvouef gf odf t bt x buf s dbo pwf supq ui f n ps ui f ef gf odf t dbo gbjmjo f yusf n f dpoejujpot Ti f apof dmbttjgjdbujpot bsf

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Ti f Fmppe Mbq gps Pmboojoh dpogjsn t ui buui f tjuf jt x jui jo Fmppe apof

Fpmmpx joh ui f Fmppe boe Wbuf s Mbobhf n f ou Adu Lf be Lpdbm Fmppe Avui psjujf t bsf sf tqpotjcmf gps ui f n bobhf n f oupgghspvoex buf s boe tvsgbdf x buf s gmppejoh Hpx f wf s ui f

EA Rjtl pgFmppejoh gspn Svsgbdf Wbufs n bq x i jdi ti px t bsfbt x i f sf tvsgbdf x bufs pomz x pvme cf fyqfdufe up gmpx ps qpoe jt brtp bwbjmbcmf ponjof Ammboe jo Eohmboe boe Wbmft x jmmcf x jui jo pof pgb qpttjcmf gpvs dbufhpsjft Ti f gpvs dbufhpsjft ti px o po ui f n bq bsf

Vfsz mpx Ti jt bsfb i bt b di bodf pggmppejoh pgmftt ui bo jo jo boz hjwfo zfbs

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<u>Wbufs Avui psjuz</u>

Cpotvmbujpo x bt voefsubl fo x jui Zpsl ti jsf Wbufs ui f Wbufs Avui psjuz gps ui jt bsfb boe b dpqz pgui fjs sftqpotf sfgfsfodf W ebufe ui Mbz jt qsftfoufe jo Aqqfoejy D gps sfgfsfodf

Zpsl ti jsf Wbufs qspwjef e b dpqz pgui f qvcrjdtfx fs sfdpset gps ui f tjuf x i jdi ti px op tfx fst x jui jo ui f tjuf jutfmg Hpx fwfs Zpsl ti jsf Wbufs opuf ui bu evf up ui f di bohf jo rfhjtmbujpo jo Odupcfs ui fsf n bz cf qvcrjdtfx fst x jui jo ui f tjuf cpvoebsz x i jdi bsf opu sfdpsefe po ui f tubuvupsz tfx fs n bq ui f qsftfodf pg x i jdi ti pvme cf ubl fo joup bddpvoujo ui f eftjho pgui f tjuf Ti f mpdbmtfx fst bsf ejtdvttfe jo Sfdujpo

Iujt opuf e ui buefwfmpqn foupgui f tjuf ti pvme ubl f qrbdf x jui tfqbsbuf tztuf n t gps gpvnboe tvsgbdf x bufs esbjobhf fyuf oejoh up ui f qpjout pgejtdi bshf up cf bhsf fe

Iux bt dpogjsn fe ui bugpvmx bufs epn ftujd x btuf dbo ejtdi bshf up ui f dpn cjofe tfx fs up ui f opsui pgui f tjuf j f ui bujo Prbof Susf f u

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Zpsl ti jsf Wbufs dpogjsn fe ui bu tvclfduup tbujtgbdupsz fwjefodf pgx i z pui fs n fui pet pg tvsgbdf x bufs ejtqptbmi bwf cffo ejtdpvoufe tvsgbdf x bufs gspn ui jt tjuf n bz esbjo up ui f dpn cjofe qvcrjdtfx fs jo Prbof Susf f u Ti f n byjn vn sbuf pgtvsgbdf x bufs ejtdi bshf ti bmm cf sftusjduf e up mt

Lf be LpdbmFnppe Avui psjuz

Cpotvmbujpo x bt voefsubl fo x jui Kjsl rnft Cpvodjmx i jdi jt ui f Lf be LpdbmFnppe Avui psjuz LLFA gps ui jt bsf b boe b dpqz pgui f js sftqpotft ebufe ui Aqsjm boe ui Jvof bsf qsftfoufe jo Aqqfoejy D gps sfgsfodf

Ti f LLFA dpogjsn fe ui bujui pnet op sfdpset pggppejoh i bwjoh bggfduf e ui f tjuf Ti fsf jt b sfdpse pggppejoh i bwjoh bggfduf e ui f hbsefo pgb qspqfsuz jo Mbnmfso Rjtf up ui f x ftu bmi pvhi ui f dbvtf pgui jt jt opuhjwf o

Ti f LLFA dpogjsn f e ui bu ui f sf bsf op l opx o x buf sdpvstf t x jui jo ui f tjuf cvu opuf e b sf dpsef e dvnnf susvoojoh bnpoh Nf x tpn f Rpbe bqqspyjn buf nz n fbtupgui f tjuf Ti f LLFA opuf e ui bu ui f ejbn fuf s pgui f dvnnf sujt vol opx o boe x pvme offe up cf dpogjsn f e A qrbo pgui f bqqspyjn buf dvnnf sumpdbujpo x bt qspwjef e

Iux bt opuf e ui bu ti pvme jogimtsbujpo cf vogf btjcnh bt b n fbot pgesbjojoh ui f tjuf ui f LLFA x pvme fyqf du ui f gf btjcjnjuz pg ejtdi bshjoh tvsgbdf x buf s up ui f bcpwf dvnnf su up cf jowf tujhbuf e jf jo qsf gf sf odf up b ejtdi bshf up ui f dpn cjofe tf x f s Fvsui f s dpssf tqpoef odf x jui ui f LLFA dpogjsn f e ui bu mt x pvme cf dpotjef sf e bo bddf qubcnh sbuf pgtvsgbdf x buf s ejtdi bshf up ui f dvnnf su jgdpogjsn f e up cf uf di ojdbmmz gf btjcnh

CLIMAUE CHANGE

Ti f NPPF boe PPG i bwf joejdbuf e ui buui f Gmpc bmtf b mfwf mx jmmdpoujovf up sjtf ef qf oejoh po hsf f oi pvtf hbt f n jttjpot boe ui f tf otjujwjuz pgui f drjn buf tztuf n boe ui f sf x jmmcf bo jodsf btf jo sbjogbmmbdsptt ui f dpvousz Uojuf e Kjohepn drjn buf di bohf hvjebodf x bt sf wjtf e jo Ff csvbsz gps qf bl sjwf s gmpx t boe qf bl sbjogbmmjouf otjujf t

Io bddpsebodf x jui ui f sf wjtf e drjn buf di bohf ebub ui f qvcrjti f e gihvsf t ti px ui bugps bo f yqf duf e ef wf mpqn f oumjgf pghsf bufs ui bo zf bst ui f boujdjqbuf e jodsf btf jo sbjogbmmdpvme sbohf gspn up tvcklf duup ui f mpdbujpo x jui jo ui f dpvousz

Ti f pvumjof tvsgbdf x bufs esbjobhf tusbuf hz ejtdvttf e gvsui f s cf mpx i bt ui f sf gpsf cf f o ef gjof e x jui sf tqf duup b beejujpobmbmmpx bodf

DEWELOPMENU PSOPOTALT

Ti f efwfmpqn fou qspqptbmn gps uif tjuf dpn qsjtf ofx sftjefoujbmex fmjoht xjui bttpdjbuf bddftt Ti f i fbwjmz wfhfubuf e tpvui fbtupguif tjuf jt up sfn bjo voefwfmpqfe Ao joejdbujwf efwfmpqn foun btuf sqrbo jt qsftfouf e jo Aqqfoejy F gps sfgsfodf

TVSFACE X AUES DSAINAGE

Iu jt b sf r vjsf n f ou pg ui f NPPF up f otvsf ui bu tvsgbdf x buf s svo pgg gspn boz qspqptf e ef wf mpqn f oui bt of hmjhjc mf dpotf r vf odf po epx otusf bn bsf bt f jui f s jo uf sn t pg jn qbdu vqpo epx otusf bn tf x f s dbqbdjuz ps gmppe sjtl jn qbdut evf up ejtdi bshf up b x buf sdpvstf Ti f f yjtujoh boe qspqptf e tvsgbdf x buf s svo pggsf hjn f jt dpotjef sf e cf mpx

Ti jt tf dujpo ti pvme cf sf be jo dpokvodujpo x jui ui f ARP Ioejdbujwf Fpvmboe Svsgbdf Wbuf s Dsbjobhf Susbuf hz esbx joh x i jdi i bt cf f o qsf qbsf e up jmmvtusbuf ui f qspqptbmt

<u>Eyjtujoh Svsgbdf Wbuf s Rvo pgg</u>

Amui pvhi b esbjobhf tvswf z i bt opu cf f o voef subl f o bu ui jt tubhf ju dbo cf sf btpobcmz bttvn f e ui bu tvsgbdf x buf s gspn ui f gpsn f s tdi ppmtjuf jt mjl f mz up i bwf cf f o ejtdi bshf e up ui f dpn cjof e qvc mjd tf x f s jo Prbof Susf f u Hjtupsjdbmmz f sjbmjn bhjoh tvhhf tut ui f tdi ppmtjuf x bt bqqspyjn buf mz jn qf sn f bc mf x i f o jo vtf Utjoh ui f RbujpobmMf ui pe bo f tujn buf pg ui f mjl f mz svopgg gspn ui f gpsn f s tdi ppmtjuf i bt cf f o voef subl f o bttvn joh b sbjogbmm jouf otjuz pg n n i s Oo ui jt cbtjt jujt f tujn buf e ui f qsf wjpvt sbuf pg tvsgbdf x buf s svopgg n bz i bwf cf f o vq up mt

Hpx f wf s bmui pvhi ui f cvjmejohtt i bwf cf f o ef n pmjti f e up tmbc mf wf mju jt mjl f mz ui bu ui f esbjobhf tztuf n t sf n bjo jo qmbdf bmui pvhi ui f js dpoejujpo n bz cf qpps boe ui f tjhojgjdbou tf mgtf f ejoh wf hf ubujpo x i jdi i bt hspx o po ui f tjuf jt mjl f mz up buuf ovbuf n vdi pg ui f dvssf ou tvsgbdf x buf s svopgg Ti f svopgg sbuf n bz ui f sf gpsf dvssf oumz cf mftt ui bo mt

Svsgbdf x buf s gspn ui f qsf wjpvtmz voef wf mpqf e bsf bt jt mjl f mz up i bwf cf f o buuf ovbuf e x jui jo ui ptf bsf bt cz ui f ef otf wf hf ubujpo cf gpsf svoojoh pgg joup ui f tjuf ps joup ui f be kbdf oui jhi x bz

Iogjmusbujpo

At qfs uif ijfsbsdiz tfu pvu jo Bvjmejoh Rfhvmbujpot PbsuH potjefsbujpo pg uif qspqptfe nfbot pg tvsgbdf xbufs esbjobhf tipvme gjstumz cf hjwfo up jogjmusbujpo ufdiojrvft up hspvoe

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A Pibtf Sjuf Iowftujhbujpo sfqpsugpsuif tjuf qsfqbsfe Spmmfl Lue sfgfsfodf S SI ebufe Aqsjm jefoujgjft uibu uif hfofsbm hfpmphz pg uif tjuf dpnqsjtft nbef hspvoe pwfs bmufsobujoh cboet pgdmbz boe tjmu voefsmbjo cz b dpnqmfufmz xfbuifsfe nvetupof Tif nvetupof fodpvoufsfe bt tujggup wfsz tujggdpotjtufodz wfsz hsbwfmmz ijhi up wfsz ijhi tusfohui dmbz xbt sfdpsefe jo uif nbkpsjuz pgcpsfipmft boe usjbmqjut buefqui t pgcfuxffo n boe n

Bbtfe po uif bcpwf hspvoe dpoejujpot uif vtf pgjogjmusbujpo up gbdjmjubuf esbjobhf pgtvsgbdf xbufs gspn uif tjuf jt opudpotjefsfe gfbtjcmf

Pspqptfe Svsgbdf Wbufs Dsbjobhf

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At dpogjsnfe cz dpotvmubujpo xjui uif LLFA uifsf jt voefstuppe up cf b dvmwfsufe xbufsdpvstf xjuijo Nfxtpnf Rpbe bqqspyjnbufmz n fbtu pg uif tjuf boe uif LLFA xpvme fyqfdu uijt up cf dpotjefsfe bt b qpjoupgejtdibshf Oo uijt cbtjt jujt qspqptfe uibu tvsgbdf xbufs gspn uif qspqptfe efwfmpqnfou tibmm cf ejtdibshfe up uif dvmwfsufe xbufsdpvstf jo Nfxtpnf Rpbe tvckfdu up gvsuifs bttfttnfou up dpogjsn ufdiojdbm

gf btjcjmjuz Ti f mjlf mz spvuf pgui f pvugbmmbmpoh ui f qvcmjd gppuqbui up ui f fbtupgui f tjuf jt joejdbuf e po ui f ARP Ioejdbujwf Fpvmboe Svsgbdf Wbuf s Dsbjobhf Susbufhz esbxjoh

Au ui jt tubhf cbtf e po hf of sbmhspvoe mfwf mt jo ui f bsf b ju jt dpotjefsf e mjlf mz ui bu b ejtdi bshf pg tvsgbdf x buf s up ui f dvmwf suf e x bufsdpvstf x jmmcf bdi jf wbcmf cz hsbwjuz Hpx f wf s gvsui f s upqphsbqi jdbmtvswf z boe tvswf z pgui f dvmwf sujutf mgjt sf r vjsf e up dpogjsn ui f sf mbujwf mz mfwf mt boe up dpogjsn ef ubjmt pgui f fybdu mpdbujpo boe tj&f pgui f dvmwf su Df ubjmt pgui f qpjoupgui f qspqptf e dpoof dujpo up ui f dvmwf sux jmmcf bhsf f e x jui ui f LLFA buui f ef ubjmfe ef tjho tubhf

At ui f qspqptbmtx jmmcf ef wf mpqf e jo b tvtubjobcmf n boof s ui f sf jt ui f pqqpsuvojuz up qspwjef cf uuf sn f ouui spvhi ef wf mpqn f oucz jn qmfn f oujoh b tvsgbdf x buf s ejtdi bshf mjn ju x i jdi sf evdf t ui f sbuf pgsvopggsgspn ui f tjuf At tf upvubc pwf jujt boujdjqbuf e ui buui f sbuf pgsvopggsgspn ui f qsf wjpvtmz ef wf mpqf e bsf b pgui f tjuf voef s jut gpsn f s vtf dpvme i bwf cf f o vq up mt n ptumjlf mz ejtdi bshjoh up ui f dpn cjof e qvcmjd tf x f s jo Pmbof Susf f u Hpx f wf s jujt sf dphojtf e ui buui f sbuf n bz cf mftt ui bo ui jt dvssf oumz evf up wf hf ubujpo boe ejmbqjebujpo pg ui f esbjobhf tztuf n boe ui f dvssf ou qspqptbmjt up ejtdi bshf up ui f dvmwf suf e x bufsdpvstf

Oo ui jt cbtjt opujoh ui buZpsl ti jsf Wbuf s i bt dpogjsn f e ui buboz ejtdi bshf gspn ui f tjuf up ui f qvcmjd tf x f s x pvme cf mjn juf e up mt ju i bt cf f o bhsf f e x jui ui f LLFA ui bu boz ejtdi bshf up ui f dvmwf suf e x bufsdpvstf x jmmcf bub n byjn vn sbuf pg mt Ti jt jt mjlf mz up qspwjef b tjhojgjdbou sf evdujpo jo ui f sbuf pgsvopggsgspn ui f tjuf ui f sf cz cf of gjujoh ui f mpdbmdpn cjof e tf x f s tztuf n dbqbdjuz x i jmtun bjoubjojoh bo bqqspqsjbuf mz mpx sbuf tvdi ui bugmppe sjtl gspn ui f dvmwf suf e x bufsdpvstf jo Nf x tpn f Rpbe x pvme opucf fyqf dufe up cf jodsf btf e bt b sf tvmupgui f ef wf mpqn f ou

Ti f qspqptf e ef wf mpqn f oumbzpvui bt cf f o bttf ttf e bt i bwjoh b qspqptf e jn qf sn f bcmf bsf b pg i b cbtf e po ui f joejdbujwf n btufsqmbo Aqqf oejy F

Ioejdbujwf esbjobhf dbrdvrbujpot i bwf cffo dbssjfe pvuvtjoh ui f Mjdsp Dsbjobhf Spvsdf CpouspmCpn qvufs Psphsbn Ti f qspqptfe tvsgbdf x bufs tztufn ti pvmf cf eftjhofe up bddpn n pebuf b jo zfbstupsn fwfoux jui pvugppejoh boe ui f jo zfbstupsn qmt drjn buf di bohf fwfouti pvmf cf sfubjofe x jui jo ui f tjuf jo bo bsfb x i jdi x jmmopubggfduui f ofx cvjmejoht psui jse qbsuz rboe gspn gppejoh

Tp bddpse x jui ui f sfrvjsfn fout pg ui f LLFA ui f esbjobhf tztufn x jmmoffe up bddpn n pebuf ui f jo zfbs qmt drjn buf di bohf fwfou x jui pvu dbvtjoh gppejoh pg qspqfsuz psui jse qbsuz rboe Rftusjdujoh ui f ejtdi bshf sbuf up op hsfbufs ui bo mt sfrvjsft bqqspyjn bufmz n pgpo tjuf tupsbhf up cf qspwjefe gps b jo zfbs qmt drjn buf di bohf fwfou Iujt fowjtbhfe ui buui jt wpmvn f dbo cf bddpn n pebufe po tjuf cz n fbot pgb cfmpx hspvoe tupsbhf ubol x jui jo ui f tvsgbdf x bufs esbjobhf tztufn bt joejdbufe jo ui f ARP Ioejdbujwf Fpvmboe Svsgbdf Wbufs Dsbjobhf Susbufhz esbx joh

Ioejdbujwf tvsgbdf x bufs dbrdvrbujpot bsf qsftfouf e jo Aqqfoejy F boe ui f joejdbujwf tvsgbdf x bufs esbjobhf tusbufhz jt ti px o jo ARP esbx joh Hpx fwfs efubjmfe dbrdvrbujpot boe qspqptbrn x jmmoffe up cf qsfqbsfe boe tvcn juufe up ui f Prboojoh Avui psjuz gps bqqspwbmqsjps up dpotusvdujpo gpmpx joh gvsui fs bttfttn fou pg jogjmusbujpo qpufoujbm

Ti f tusbufhz bcpwf jt tvclfduup bhsff n foux jui ui f Rfhvrbupsz Avui psjujft

Amfsobujwf Fbmmbdl Svsgbdf Wbufs Djtdi bshf Susbufhz

Io ui f fwfou ui bu ui f gvsui fs jowftujhbujpot efn potusbuf ui bu ejtdi bshf up ui f dvmwfsufe x bufsdpvstf jo Nfx tpn f Rpbe jt ufdi ojdbmm vogfbtjcmf tvsgbdf x bufs ti bmmcf ejtdi bshfe up ui f n n ejbn fufsdpn cjofe tfx fsjo Prboof Susff ubub n byjn vn sbuf pg mt Ti jt jt jo bddpsebodf x jui ui f bewjdf qspwjefe cz Zpsk ti jsf Wbufs jo ui f fwfou ui bupui fs n fbot pg ejtdi bshf bsf gpvoe up cf vogfbtjcmf Pspqptfe po tjuf esbjobhf jodmvejoh tupsbhf qspwjtjpo x pvmf cf fyqfduf e up sfn bjo cspbemz jo mjof x jui ui butfupvubcpwf

Eydffebodf Fmpx Rpvuft

Fps sbjogbmmfwfout jo fydfttpguif eftjho tuboebse jf hsfbufs uibo jo zfbs qmt drjn buf di bohf fwfou uif dbqbdjuz pguif esbjobhf tztufn jt njlfmz up cf fydffefe Tifsf brtp sfn bjot b sftjevbmsjtl pggpx t rnhbwjoh uif tvsgbdf x bufs esbjobhf tztufn jo uif fwfou pgb cmpdl bhf

Spui bufydffebodf gpx t ep opubewfstfmz bggduqspqfsujft po ps pggtjuf tjuf rnfwfmnti pvre cf eftjhofe up ejsfdugpx t bx bz gspn uif cvjmejoh fousbodft x ifsf qpttjcmf tp ui buboz gppejoh sfn bjot jo mboetdbqfe bsfbt dbs qbslt ps spbet x ifsf uif dpotfrvfodft pg tvsgbdf x bufs gppejoh x pvre cf rnttt jhojgjdbou

Eydffebodf gpx spvuft x jmmcf sfwjfx fe bt qbsupguif efubjmfe esbjobhf boe rnfwfmneftjho x jui efubjmnqspwjefe up uif LLFA gpssfwjfx

Svtubjobcmf Dsbjobhf Sztufnt SvDS

NPPF sfrvjsft ui buSvDS bsf jn qmfn fouf jo n bkps efwfmpqn fou jggfbtjcmf lun vtucf sfdphojtfe ui buopubmmzqft pgSvDS bsf gfbtjcmf ps bqqspqsjbuf gps bmefwfmpqn foutjuft x jui gpdupst tvdi bt bwbjmbcmf tqbdf hspvoe dpoejujpot boe tjuf hsbejfoujogwfodjoh uif gfbtjcjmjuz pguif fjsvtf

At opuf e bcpwf jogjmsbujpo esbjobhf tztufnt bsf dpotjefsfe votvjubcmf gps uif tjuf i px fwfs SvDS jo uif gpsn pgbuf ovbujpo pgtvsgbdf x bufs gpx t boe uif vtf pgcfmpx hspvoe tupsbhf bsf qspqptfe bt qbsupguif esbjobhf tusbufhz

Svsgbdf Wbufs Qvbmjuz

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A tjhojgjdbou qspqpsujpo pg svo pgg gspn ui f qspqptfe efwfmpqn fou x jmmcf gspn cvjmejoh sppgt boe gppuqbui t x i jdi jt dpotjefsfe up cf drfnbo tvsgbdf x bufs svo pgg boe x pvme cf fyqfdufe up i bwf b wfsz mpx rfwfmpg qpufoujbmdpoubn jobujpo Oo ui jt cbtjt op tqfdjgjd usfbun fougps ui jt svo pggjt qspqptfe fydfqugps tvjubcrfnrfnbgefcsjt usbqt boe tjmusbqt

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Iu jt sfdpn n foefe ui bu ui f sfrvjsfn fout gps tvsgbdf x bufs qpmmvujpo qsfwfoujpo bsf sfwjfx fe buui f efubjrfe eftjho tubhf x jui beejujpobmusfbun foudpn qpofout qspwjefe jg sfrvjsfe jodmvejoh dpotjefsbujpo pgbeejujpobmSvDS n fbtvsft ps beejujpobmqspqsjfubsz dpn qpofout tvdi bt pjmtfqbsbupst boe pswpsufy tfqbsbujpo efwjdft jgofdfttbsz

Ti f gjobmtusbufhz gps n bobhfn foupgtvsgbdf x bufs rvbrjuz x jmmcf dpogjsn fe buui f efubjrfe eftjho tubhf boe bhsffe x jui Zpsl ti jsf Wbufs boe ui f LLFA

FOVL DSAINAGE

Ti jt tf dujpo tfut pvu uif qspqptfe n fbot pg n bobhjoh gpvmejtdi bshf gspn uif efwfmpqn fou Iuti pvme cf sfbe jo dpokvodujpo x jui uif Ioejdbujwf Fpvmboe Svsgbdf Wbufs Dsbjobhf Susbuf hz qrbo cz ARP sfgfsfodf

At bewjtfe cz Zpsl ti jsf Wbufs epn ftujdgpvnx bufsgspn uif qspqptfe efwfmpqn fouti pvme cf ejtdi bshfe up uif n n ejbn fufsdpn cjofe tfx fsjo Prbof Susff u

Dvf up uif sfnbujwf mfwfmn pguif tjuf boe uif qvcmjd tfx fs jo psefs up bdijfwf b hsbwjuz ejtdi bshf jujt njhfmz up cf ofdfttbsz up dpoofduup uif qvcmjd tfx fs jo Prbof Susff ugvsui fs epx otusfbn sbui fs ui bo b qpjouejsfdumz bekbdfouup uif tjuf Ti f gjobmqpjoupgdpoofdujpo ti bmcf bhsffe buui f efubjmfe eftjho tubhf boe efubjmx jmcf tvcnjuufe up gpsn bnbhsff n fou x jui Zpsl ti jsf Wbufs

MAINUENANCE

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Iujt fowjtbhfe ui bu ui f n blpsjuz pgui f qspqptfe esbjobhf tztufn t x jmmcf eftjhofe up bepqubcmf tuboebset gps bepqujpo cz Zpsl ti jsf Wbufs x i p x jmmcfdpn f sftqpotjcmf gps jotqfdujpo boe n bjoufobodf pgui ptf tztufn t

Ti f jotqfdujpo boe n bjoufobodf pgboz esbjobhf jogsbtusvduvsf tfswjoh b tjohmf qspqfsuz boe mpdbufe x jui jo ui f dvsujmbhf pgui bu qspqfsuz x jmmsfn bjo ui f sftqpotjcjmjuz pgui f sfnwbouqspqfsuz px ofs

Ti fsf n bz cf qpufoujbmgps tpn f SvDS dpn qpofout up cf bepquf cz ui f Lfbe LpdbmFnqpe Avui psjuz ui f Hjhi x bzt Avui psjuz ps Zpsl ti jsf Wbufs boe ui jt ti pvme cf ejtdvttfe boe bhsff buui f efubjmfe eftjho tubhf

Ti f pohpjoh jotqfdujpo boe n bjoufobodf pgboz pui fs esbjobhf tztufn t jt fyqfdufe up sfn bjo ui f sftqpotjcjmjuz pgui f tjuf cvjmejoh px ofs ps up cf usbotgfssfe up bo bqqspqsjbuf Mbobhfn fouCpn qboz Ao bqqspqsjbuf jotqfdujpo boe n bjoufobodf qmbo x jmmf efwfmpqfe buui f efubjmfe eftjho tubhf boe jn qmfn fouf ui fsfbgufs cz ui f tjuf cvjmejoh px ofs vtjoh tvjubcmf vbmjgjfe qspgfttjpobmt

TVMMASa

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Ti f tvsgbdf x buf s ejtdi bshf x jmmcf buf ovbuf e up b n byjn vn sbuf pg mt x i jdi qspwjef t b tjhojgjdbou sf evdujpo pwf s ui f njl f mf yjtujoh sbuf pgejtdi bshf Supsbhf x jmmcf qspwjef e po tjuf up n bobhf tvsgbdf x buf s vq up ui f jo zf bs qnvt drjn buf di bohf f wf ou cf gpsf ejtdi bshf up ui f x buf sdpvstf A jodsf btf jo sbjogbmjou ot juz i bt cf f o jodpsqpsbuf e joup ui f qspqptbmnup bddpvougps ui f qsplf duf e jn qbdut pgdrjm buf di bohf

Eydf f ebodf gnpx spvuf t ti pvme cf sf wjf x f e buui f ef ubjmf e eftjho tubhf up n jujhbuf boz qpuf ou jbmbewf stf pggtjuf jn qbdut

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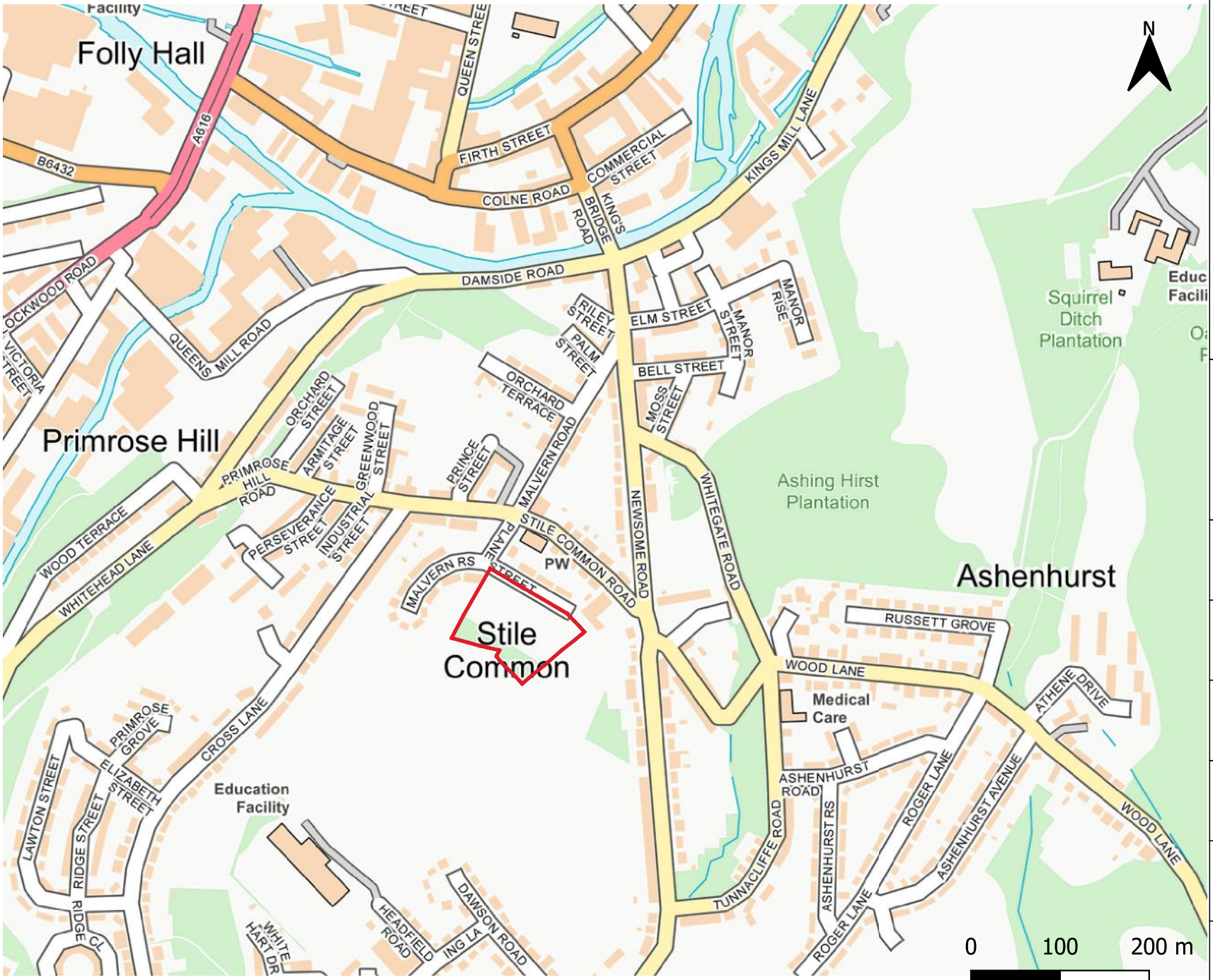
A P P E N D I Y A

TIUE LOCAUION PLANT



Key

Site Boundary

ARP ASSOCIATES
Chartered Consulting Engineers
Northwest House, 5-6 Northwest Business Park, Servia Hill, Leeds LS6 2QH
Telephone: 0113 245 8498 E-Mail: leeds@arpassociates.co.uk
www.arpassociates.co.uk

Project
SITE AT PLANE STREET, HUDDERSFIELD

Client
ACCENT HOUSING GROUP

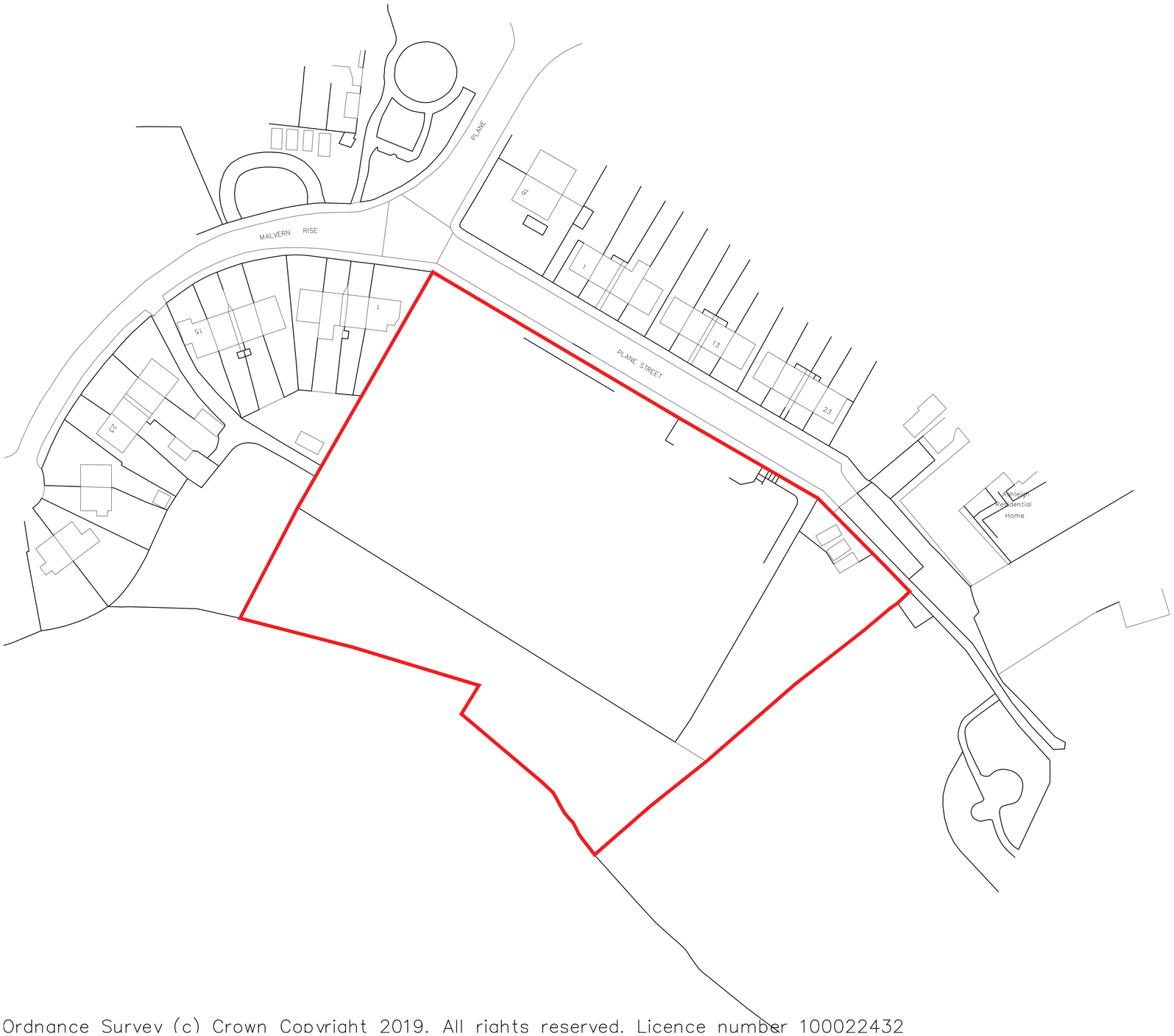
Title
LOCATION PLAN

Date
JUNE 2020

Drawn
MGW

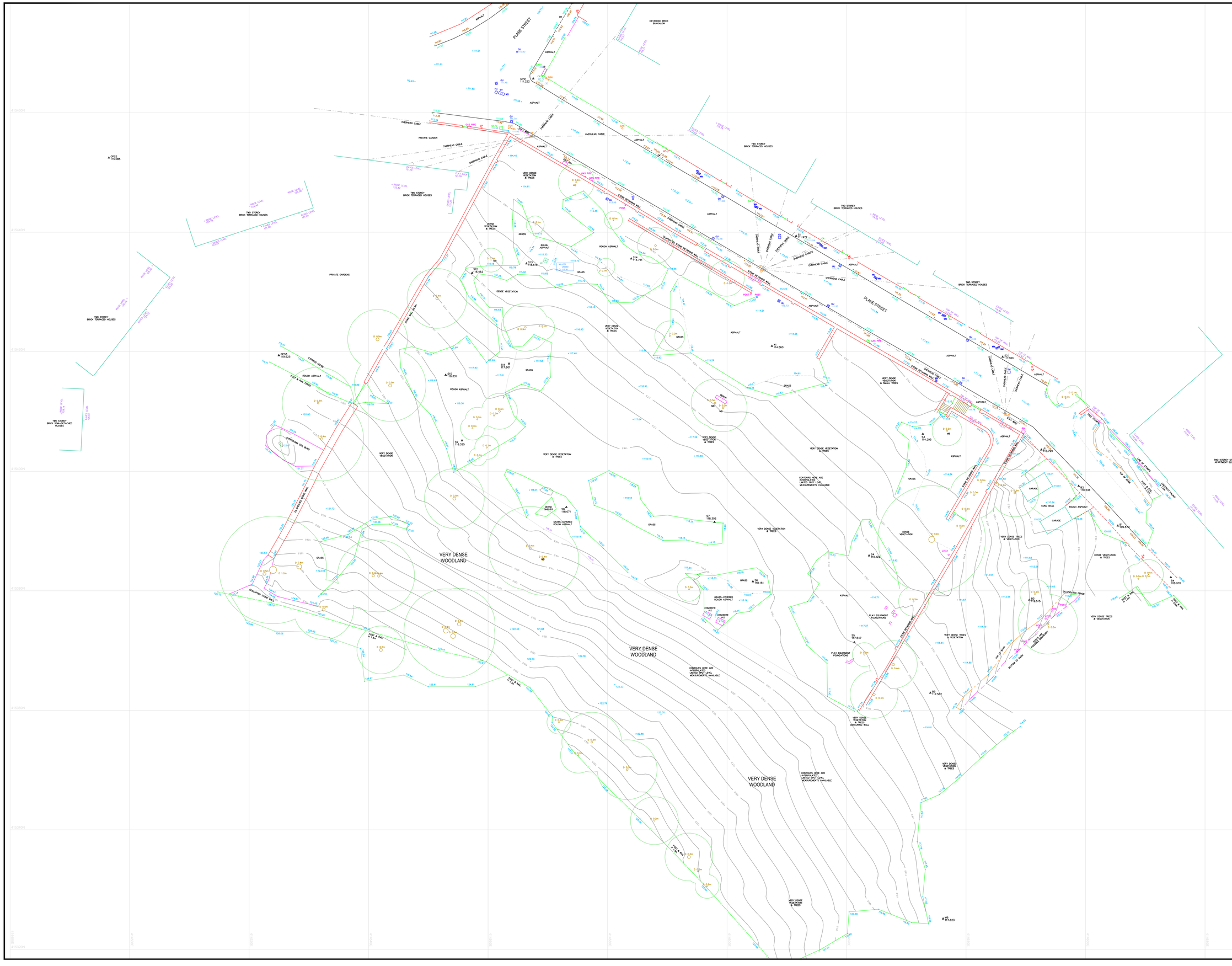
AS SHOWN

Job No.
1375/02



APPENDIY B

UOPOGSAPHICAL TVSWEa



Notes
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N
Direction of North

Grid : OS National Grid.
Using the OS GPS Network and applying OSTN15 transformation and then removing the scale factor for true distances with a one-step transformation centred on GPS1

Datum : OS Level Datum.
Using the OS GPS Network and applying OSGM15 National Geoid Model to obtain local area corrections.

Station Listing

Station	Easting	Northing	Level
B1	414665.397	415390.882	109.573
B2	414658.848	415397.546	110.236
B3	414650.595	415378.488	112.515
B4	414674.282	415382.253	108.976
B5	414634.028	415362.923	117.562
GPS1	414567.564	415465.701	111.222
GPS2	414496.531	415452.470	115.085
GPS3	414524.978	415419.390	119.625
J1	414652.599	415403.601	110.799
M6	414636.156	415325.121	117.623
S1	414611.559	415439.384	111.972
S2	414646.124	415419.149	111.180
S3	414632.772	415406.255	114.295
S4	414623.771	415385.879	116.122
S5	414621.303	415371.356	117.547
S6	414604.323	415381.545	118.151
S7	414597.897	415391.480	118.302
S8	414573.098	415394.009	118.071
S9	414555.637	415405.142	118.325
S10	414552.904	415416.115	118.331
S11	414563.505	415417.999	117.601
S12	414557.338	415433.182	116.462
S13	414566.417	415434.753	115.616
S14	414583.962	415435.581	114.751

KEY

AIR VALVE	AV ☐	KERB OUTLET	KO ▣
BENCH MARK	BM ^	LAMP POST	LP ○
BIN	BIN ○	MANHOLE (CIRCULAR)	MH ○
BOLLARD	BOL ○	MANHOLE (RECTANGULAR)	MH ☒
BORE HOLE	BH ⊕	MANHOLE (TRIANGULAR)	MH ▽
BRITISH TELECOM COVER	BT ☒	MARKER POST	MKR ▫
BUS STOP	BUS	GULLY	GU ▣
CABLE TV COVER	CATV ☐	RODDING EYE	RE ○
CABLE TV SUPPLY	CA ▾	SIGN POST	SIGN ○
COLUMN	COL ▫	TELECOM COVER	TEL ☒
DROPPED KERB	DK	TELEGRAPH POLE	TP
EARTHING POINT	ER ○	THRESHOLD LEVEL	THL △
ELECTRICITY COVER	ELEC ⊞	TRAFFIC LIGHT	TL ○
ELECTRICITY POLE	EP ○	TRIAL PIT	PIT ⊕
FIRE HYDRANT	FH ☐	WASH OUT	WO ☐
GAS VALVE	GAS ◇	WATER METER	WM ▣
GATE		WATER STOP COCK	SC ☐
INSPECTION COVER (CIRCULAR)	IC ○	WATER STOP VALVE	SV ☐
INSPECTION COVER (RECTANGULAR)	IC ☐		
COVER LEVEL	CL	CHAMBER BASE LEVEL	Ch.L
INVERT LEVEL	IL	WATER SURFACE LEVEL	WL
UNABLE TO RAISE	UTR	UNABLE TO MEASURE	UTM
GIRTH OF TREE TRUNK	G	DIAMETER OF TREE TRUNK	D
HEIGHT TO TOP OF TREE CANOPY	H	MULTI BOLE TREE	MB

Rev	Date	Drawn	Description	Check
-	--/--/----	--	--	--

GEO ENVIRONMENTAL

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Pontefract Road T: +44 [0] 1132 008 900
Stourton F: +44 [0] 1132 008 901
Leeds E: admin@metgeoenvironmental.com
West Yorkshire W: www.metgeoenvironmental.com
LS10 1SW

Client
WATSON BATTY ARCHITECTS LTD

Site
LAND OFF PLANE STREET
HUDDERSFIELD, HD4 6DF

Title
TOPOGRAPHICAL
SURVEY

Surveyed	JM, MR, SB	Drawn	JM
Check	DBS	Date	29/10/2019

Scale	Job No	Sheet Size	Rev
1:200	P19-01316	A0	01

DWG Ref

Project Number	Origin	Zone	Level	Desc	Type	Role	Sheet
P19-01316	MET	EXT	XX	TOP	M2	G	001

APPENDIY C

ENWISONMENUAGENCa CONTVLUAUION

RFI/2020/169751

The Flood Map for Planning

The Flood Map for Planning (Rivers and Sea) can be viewed and downloaded as a PDF file on GOV.UK by following this link: https://flood-map-for-planning.service.gov.uk **or downloaded in GIS format under an open data licence from the following address**: https://data.gov.uk/publisher/environment-agency
Please type Flood Map for Planning in the search box.

What is the Flood Map for Planning?

The Flood Map for Planning provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map for Planning shows the following:

1. Flood Zone 3 (dark blue area on the enclosed map): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences
    - For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year;
    - For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year.

2. Flood Zone 2 (light blue area): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences. Flood Zone 2:
    - indicates the extent of a flood with a 0.1% (1 in 1000) chance of happening each year.
    - and/or indicates the greatest recorded historic flood, whichever is greater.

3. Flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, together with some natural or constructed entities which retain, store or channel water and which may protect against smaller floods.

4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

Flood History

Flood History – None available

To the best of our knowledge there is no known flood history for this site. The extent of flooding, and/or flood level information is only shown for those watercourses surveyed after the flood. Other flooding may have occurred which is not shown. This is the best information currently available. For local drainage information please contact your water utility company and your local council.

Water causing flooding can come from different places, for example from rivers or the sea; surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system); overflowing or backing up of sewers or drainage systems which have been overwhelmed or from groundwater rising up from underground aquifers.

Please note that this record doesn't include any flood extents that may have occurred since October 2019. Given the process of recording, verifying and updating our record from major floods is extensive and may take a considerable amount of time.

Assets

Asset Location Map
Please find attached asset map(s) showing location of all (Agency and non Agency maintained) flood defences and channels.

Description of Works
See attached table with description of the defences and structures shown on the above drawing, including condition ratings, upstream and downstream crest levels, where available.

Risk of Flooding – Environment Agency Defences
The risk of flooding in this area is now reduced by the presence of flood defences that we maintain, but there still is a residual risk of flooding if these were to breach or be overtopped by a flood greater than that for which they were designed.

Risk of Flooding – Privately Maintained Defences
You will see that the Environment Agency does not maintain any of those defences. However we undertake regular risk based visual inspections. We do not hold design levels and have no height information on these defences or structures.

Asset Condition Ratings
The performance of a flood defence asset is recorded as the condition of the asset. Our asset inspectors subjectively assess the conditions of assets (during visual inspection site visits) with reference to a national standard template. Each asset is given a rating between one and five with one being very good condition and five being very poor. A condition rating of 3, or 'fair' is the minimal acceptable standard for a critical asset, such as a defence wall that protects properties. We are striving to improve all assets below 'fair' to an acceptable standard.

Asset inspections are done on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

Asset Standard of Protection
Please note that the provided Design Standard of Protection is an estimate and should not be relied on. Please note that where available the defended flood extents provide more reliable information relating to the protection offered by the defence (i.e. at which return period the water levels are likely to overtop the defence). If available and required the defended flood extents can be provided on request.

Modelling

Modelling Information
We do not have any modelling information at this location.

Climate Change

Updated guidance on how climate change could affect flood risk to new development - 'Flood risk assessments: climate change allowances' was published on gov.uk on 19 February 2016. You should confirm the flood risk vulnerability classification and lifetime of your proposed development in line with NPPF and apply the appropriate climate change allowances.

Bespoke Flood Risk Assessment (FRA) advice:

If the pre-application advice is required with regards the preparation of a site-specific Flood Risk Assessment, this can be requested via the Yorkshire Sustainable Places team (email: sp-yorkshire@environment-agency.gov.uk). Charges may apply for any advice that is provided, this currently stands at £100 per hour per person. The.gov.uk pages provide a good starting point on what to include within a site-specific Flood Risk Assessment and can be accessed via https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications. A site-specific Flood Risk Assessment will need to consider flood risks from all sources, including those associated with defence failure (e.g. breach) and accounting for the predicted impacts as a result of climate change. Please contact the Sustainable Places team if you require advice on how to include these within a Flood Risk Assessment.

Other

Surface Water Map

Lead Local Flood Authorities (LLFA) are responsible for managing local flood risk from surface water flooding and groundwater flooding. You should check with the LLFA as they may have more up to date information regarding this type of flooding.

The Risk of Flooding from Surface Water Flood Map can be viewed and downloaded as a PDF file on GOV.UK by following this link: https://flood-warning-information.service.gov.uk/long-term-flood-risk

Surface Water Drainage

The Lead Local Flood Authority is the statutory consultee for planning matters relating to surface water drainage, therefore it is recommended they should be consulted separately regarding this.

Surface water discharge from new development should ideally ‘mimic’ the pre-development situation using a sustainable drainage system so that the flow and volume of water in watercourses is not increased.

A permit may be required, under the Environmental Permitting Regulations 2016 from the Environment Agency for any proposed works or structures in, under, over or within eight metres of a ‘main river’ (e.g. a new outfall). A permit is separate to and in addition

to any planning permission granted. Further details and guidance are available on the GOV.UK website: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

Risk of Flooding from Reservoirs Map

Outlines and simplified depth and velocity maps can be viewed on our website:

https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2

Please, zoom into the location of interest, and then click on the inundated location for details. As a result a list of reservoirs will be provided with supporting information and a links to other data, such as estimated depths and speed of flooding, at the bottom of the result page.

A map showing the outlines can also be provided on request.

Flood Warning

The site is not covered by a Flood Warning.

LIDAR Data

Please note that our LiDAR data is now available free of charge (Open Data) from http://environment.data.gov.uk/ds/survey/index.jsp#/survey (once zoomed to the relevant location the available LiDAR products will be listed below the map).

Two LIDAR products are available:

1. Tiled LIDAR data - The full tiled dataset consists of historic LIDAR data which has been gathered since 1998. For some areas we have carried out repeat surveys and data is available in a range of resolutions.
2. Composite LIDAR data - The composite dataset is derived from a combination of our full tiled dataset which has been merged and re-sampled to give the best possible spatial coverage.

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments.

The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

The Rights & Responsibilities of a Riverside Owner

The owner of property adjacent to a watercourse is usually deemed to be the riparian owner and, as such, has both riparian rights and responsibilities with regard to the watercourse within their ownership.

For more information on Rights and Responsibilities of a riverside owner, you can visit our website at:

https://www.gov.uk/guidance/owning-a-watercourse

Ordnance Survey Data

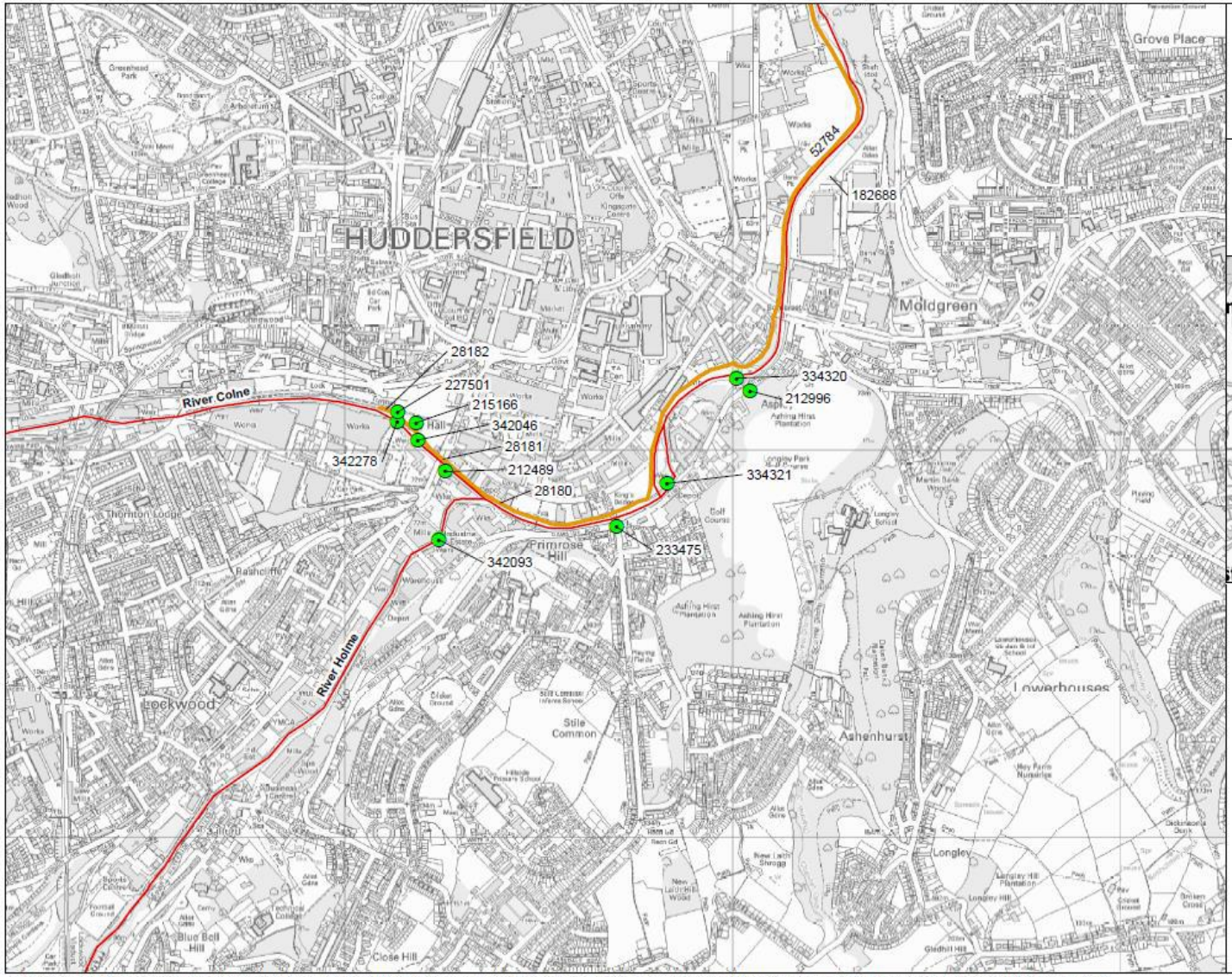
Under the terms of our licence agreement with the Ordnance Survey, we are unable to supply the OS data. Under this agreement we can only supply OS data to consultants/contractors carrying out work on our behalf.

Flood Portal

It's a new 'one-stop shop' web portal providing guidance and information on flood risk management in the UK. Arup have written and designed the site, in conjunction with CIRIA, the Local Government Association, the EA and Defra, primarily as a resource for local authority officers, flood risk management professionals, and others with an interest in flood risk. It's a part of the Capacity Building Strategy.http://www.local.gov.uk/floodportal

ASSET_ID	DESCRIPTIO	ASSET_MAIN	AIMS_SUB_T	LENGTH	ACTUAL_DCL	ACTUAL_UCL	PROTECTION	TARGET_CON	OVERALL_CO	DESIGN_SOP
28181		private	high_ground	32.08			fluvial	3	2	20
28182		private	high_ground	211.62			fluvial	3	2	20
52784		private	high_ground	2274.28			fluvial	3	3	20
28180		private	high_ground	288.91			fluvial	3	3	20

RFI/169751 Flood Defence Asset Location Map



Environment Agency

www.environment-agency.gov.uk

Scale: 1:10,000

N W E S

when reproduced @ A3

LEGEND

- Structures
- Main River
- Defences

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

ASSET_ID	AIMS_SUB_T	DESCRIPTION	DESIGN_SOP	ASSET_MAIN	PROTECTION	TARGET_CON	OVERALL_CO
233475	outfall			private	fluvial	9	3
334321	weir			private	fluvial	9	5
334320	weir			private	fluvial	9	3
212996	outfall			private	fluvial	9	2
342093	weir			private	fluvial	9	3
212489	outfall			private	fluvial	9	3
342046	weir			private	fluvial	9	3
215166	outfall			private	fluvial	9	
342278	weir			private	fluvial	9	3
227501	outfall			private	fluvial	9	2

Planning advice for developers – FAQs

Introduction

Local planning authorities (LPAs) across Yorkshire are required to consult us on certain planning applications which affect flood risk, groundwater, waste, or water quality.

If your development falls into one of these categories, we'll be invited to comment on your planning application. Your LPA, when considering your application, will take our comments into account.

We've produced this guidance to summarise the environmental issues we're responsible for. The guidance forms part of our free advice service; if you require site-specific or face-to-face advice, we'll need to recover our costs through our charged advice service. Engaging with us early can help you identify the big issues, reduce the chances of subsequent delays and help you design a more sustainable and attractive development.

Development and flood risk

Is my development proposal at risk of flooding?

The flood map for planning shows where flooding from rivers and the sea may occur. Whilst this map isn't suitable for a detailed flood risk assessment, it'll show which flood zone your development is located within and therefore will indicate whether further assessment is needed. You should also refer to your LPA's strategic flood risk assessment which will provide additional local information on flood risk, including the location of functional floodplain and areas which are susceptible to other sources of flooding such as from surface water or reservoirs.

Will my application need to pass the sequential and exception tests?

Local planning authorities apply the sequential test to steer development towards areas at the lowest risk of flooding. If your proposal is located within flood zones 2 or 3, you should contact your LPA to discuss the sequential test **before** submitting your application. The LPA may require you to submit information with your application in support of the sequential test.

If the LPA confirm that the sequential test has ruled out steering the development to lower risk sites, the development may also need to pass the exception test by demonstrating that its sustainability benefits outweigh flood risk and that it can be made safe for its lifetime, through the production of a site-specific flood risk assessment. Planning practice guidance advises when an exception test will be required, which will depend on the vulnerability of the development and the flood zone it lies within.

Do I need to submit a flood risk assessment with my planning application?

You'll need to submit a flood risk assessment if your application lies within flood zones 2 or 3 or is over 1 hectare within flood zone 1. You'll also need to submit an assessment if your proposal could be affected by sources of flooding other than from rivers or the sea. For certain lower risk applications, we've provided 'flood risk standing advice' which enables local planning authorities to assess flood risk assessments without the need to consult us.

What information should I include in my flood risk assessment?

We recommend that you refer to the checklist for a site-specific flood risk assessment for detailed advice on what to include in your flood risk assessment. Alongside referring to your LPA's strategic flood risk assessment, you should contact your LPA to find out whether there are any development guidelines which are specific to your locality.

Can I undertake my own flood risk assessment?

Your FRA must be appropriate to the scale, nature and location of the development whilst being credible and fit-for-purpose. Whilst it's possible to undertake your own assessment, most applicants employ suitably experienced professionals. We're not able to recommend specific consultants, but a simple web search should help you source a competent individual or company.

Do I need to consider how climate change will affect my proposal's flood risk?

Yes, you should demonstrate how flood risk will be managed now and over the development's lifetime, taking climate change into account. Please refer to the following guidance when undertaking your flood risk assessment. In some cases we'll hold the climate change flood data you need. In others you'll need to undertake your own analysis to understand the impacts.

Where can I get modelled or historic flood levels from?

Email our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) to find out whether we have any modelled or historic flood levels available for your development site. A list of the packages of information we're able to provide can be found under the 'get information to complete an assessment' section of the planning practice guidance. They'll aim to provide this information within 20 days. We no longer charge for providing this information.

The risk portrayed by your flood map doesn't seem to reflect the site's actual risk. How do I 'challenge' your flood map?

If you have evidence suggesting that our flood map is inaccurate, please contact our Customers and Engagement team (neyorkshire@environment-agency.gov.uk) who will provide you with any existing data we hold. To formally contest our flood zones, you'll need to submit supporting evidence, such as digital copies of a topographic survey or modelling for quality assurance purposes. Digital files of the proposed new flood zones in ArcMap or MapInfo format should also be supplied. Any new outline data you submit must conform to our flood zones policy, copies of which are available on request.

Whilst we'll usually be happy to review any topographical survey or model prior to the application being submitted, we would have to recover our costs for this work. In some cases where work to review and update our existing models is already underway, we may decline to consider a challenge.

As we have to be certain that the data which informs our flood map is fit-for-purpose, any revisions will need to meet stringent quality checks.

SURFACE WATER AND DRAINAGE

Who's responsible for managing surface water?

Lead local flood authorities are responsible for providing advice on the management of surface water resulting from new major development. Internal drainage boards, where established, have permissive powers to manage water levels within their drainage districts, so also play a key role in managing surface water.

Will I need to provide surface water storage and limit the discharge rate?

You should contact your lead local flood authority to discuss surface water discharge rates and storage requirements. Typically, they'll ask that your development does not increase run-off and limits the discharge to the existing greenfield run-off rate (usually 1.4l/s/ha if not calculated).

Do I need to install sustainable drainage systems?

Sustainable Drainage Systems (SuDS) should always be carefully considered in discussion with your lead local flood authority. A SuDS scheme can reduce flood risk, improve water quality, create better habitats for wildlife, and produce pleasant, more amenable places for people.

Infiltration drainage must not, however, pose a risk to groundwater quality. All infiltration SuDS must:

- Meet the groundwater protection criteria set out on GOV.UK
- Not be constructed in ground affected by contamination

Who should I contact about connecting my development to the mains sewer?

Talk to your water company about connecting to their sewerage system. Here are some contact details for water companies operating in the Yorkshire Environment Agency area:

Yorkshire Water	planningconsultation@yorkshirewater.co.uk
Northumbrian Water	developmentenquiries@nwl.co.uk
Severn Trent Water	new.connections@severntrent.co.uk

My development is a long way from the mains sewer. Can I install a 'non-mains' drainage system, such as a package treatment plant?

New development should connect to the public mains sewer wherever possible. Individual treatment plants can deteriorate local water quality and are more challenging to monitor and regulate. If you can't connect to the mains sewer, your planning submission should outline how you will deal with foul drainage discharge. You should include evidence as to why it is not possible to connect to the mains system, including details of any prohibitive costs. Please note that some 'non-mains' foul water drainage systems will require an environmental permit, irrespective of any planning approval.

OTHER ENVIRONMENTAL CONSIDERATIONS

What other environmental issues will you consider with my planning application?

Your planning application will need to demonstrate that any environmental risks can be managed, through design and construction, for the development's lifetime. Alongside flood risk, the key environmental risks we'll consider are:

- **Land Contamination**
  We're mainly interested in those sites where there is a risk of pollution to controlled waters. You should investigate any contamination to see whether the environmental risk or cost of clean-up (remediation) would hinder your proposal. If contamination is known or suspected, a desktop study, investigation, remediation and other works may be required to enable safe development. Our model procedures for the management of land contamination provide further information.

- **Pollution prevention**
  Your application should demonstrate how you'll minimise the risk of pollution from all aspects of your development, including construction and

operation phases. Groundwater can be vulnerable to pollution, as well as rivers and streams. Some areas (source protection zones and aquifers) are especially sensitive to pollutants as they typically supply public drinking water. To find out whether your development is located in an area sensitive to groundwater pollution, visit our interactive maps. Advice on groundwater protection can be found on GOV.UK

- **Fisheries, biodiversity, geomorphology and protected species**
  If your proposal is likely to affect the ecology of a main river, you'll need to carry out a risk assessment. This assessment should show that your development can proceed without demonstrable harm, and should propose mitigation, compensation or enhancements where required. A survey should be carried out if any protected species are thought to be nearby. If this survey confirms the presence of protected species or their habitat, measures should be taken to manage the development's risks. Natural England are the statutory consultee for other biodiversity-related matters. Further information on their remit can be found on GOV.UK

- **Water framework directive**
  If your proposal affects ground or surface waterbodies, you'll need to consider the Water Framework Directive (WFD) and the actions set out in the Humber River Basin Management Plan. You'll also need to submit a WFD Assessment demonstrating how the development will prevent deterioration and improve the waterbody's ecological status.

- **River buffer zone**
  Your development should ensure that an 8m strip of land (planted with locally appropriate, native species) is left undisturbed next to the bank of any main river. This 'river corridor' will improve habitat connectivity and will ensure we're able to access the bank for any future flood defence construction and maintenance.

- **Culverting**
  We're opposed to culverting. Culverts degrade watercourses' ecology and prevent the movement of wildlife and fish. As culverts can easily become blocked, they increase flood risk. They're also difficult to inspect and maintain. We may object to any planning applications involving culverting on a main river and may refuse to grant an environmental permit. Existing culverts should be removed and the river channel and bankside habitat reinstated to restore the ecological continuity of the river channel and its corridor.

Will I need any other Environment Agency permits for my development?

You might need an environmental permit if your development manages or produces waste or emissions that pollute the air, water or land or is work that affects a main river or a sea defence. The lead local flood authority is responsible for any consents relating to ordinary watercourses.

The Environmental Permitting Regulations (England and Wales) 2015 cover water discharges, groundwater activities, flood risk activities, radioactive substances, waste, mining waste and installations. They also include provision for a number of directives including batteries. Further information, including contact details for further permitting related enquiries, can be found here.

As planning and permitting decisions are often closely linked, we have issued detailed guidance for developments requiring planning permission and environmental permits. This guidance explains how, when responding to planning consultations that require environmental permits, we will advise of three possible positions:

- No major permitting concerns
- More detailed consideration is required and parallel tracking is recommended
- Don't proceed – unlikely to grant a permit.

PRE-APPLICATION ADVICE

Can you provide site-specific advice, review a submission document, or attend a site meeting before I submit my planning application?

We encourage you to seek pre-application advice as it can help you solve key environmental issues early, reduce the chance of an objection and help you design a more sustainable development. If you'd like to take advantage of this service, please email our Sustainable Places team so that we can provide further details and estimated costs.

Please note that any pre-application guidance we provide doesn't represent our final view in relation to any future planning application. We recommend that you seek your own expert advice prior to submitting your application.

Who should I contact for further information?

Yorkshire planning enquiries: sp-yorkshire@environment-agency.gov.uk

General enquiries: 03708 506 506

Environment Agency, Lateral, 8 City Walk, Leeds LS11 9AT
https://www.gov.uk/government/organisations/environment-agency

A P P E N D I Y D

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YorkshireWater

Mr M Wilson
Arp Associates
Unit 5/6 Northwest Business Pk
1ST FLR Servia Hill
Woodhouse
Leeds
LS6 2QH

Yorkshire Water Services
Developer Services
Sewerage Technical Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax: (01274) 372 834

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref: ARP013
Our Ref: W005630

13th May 2020

Dear Mr Wilson,

Land to South of Plane Street, Huddersfield, HD4 6DF - Pre-Planning Sewerage-Enquiry-Residential T815008

Thank you for your recent enquiry. Our charge of £157.00 will be added to your account with us, reference ARP013. You will receive an invoice for your account in due course.

Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months.

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

Foul Water

Foul water domestic waste can discharge to the public combined sewer recorded to the north of the site.

Surface Water

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As a last resort and subject to providing satisfactory evidence as to why the other methods of surface water disposal have been discounted, curtilage surface water may discharge to the public combined sewer recorded in Plane Street, at a point to the north of the site.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

The surface water discharge from the site to be restricted to not greater than 5 (five) litres/second. This permission is not an acceptance in respect to any planning conditions imposed under the Grant of Planning Permission.

Other Observations

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may apply on line or obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0345 120 84 82.

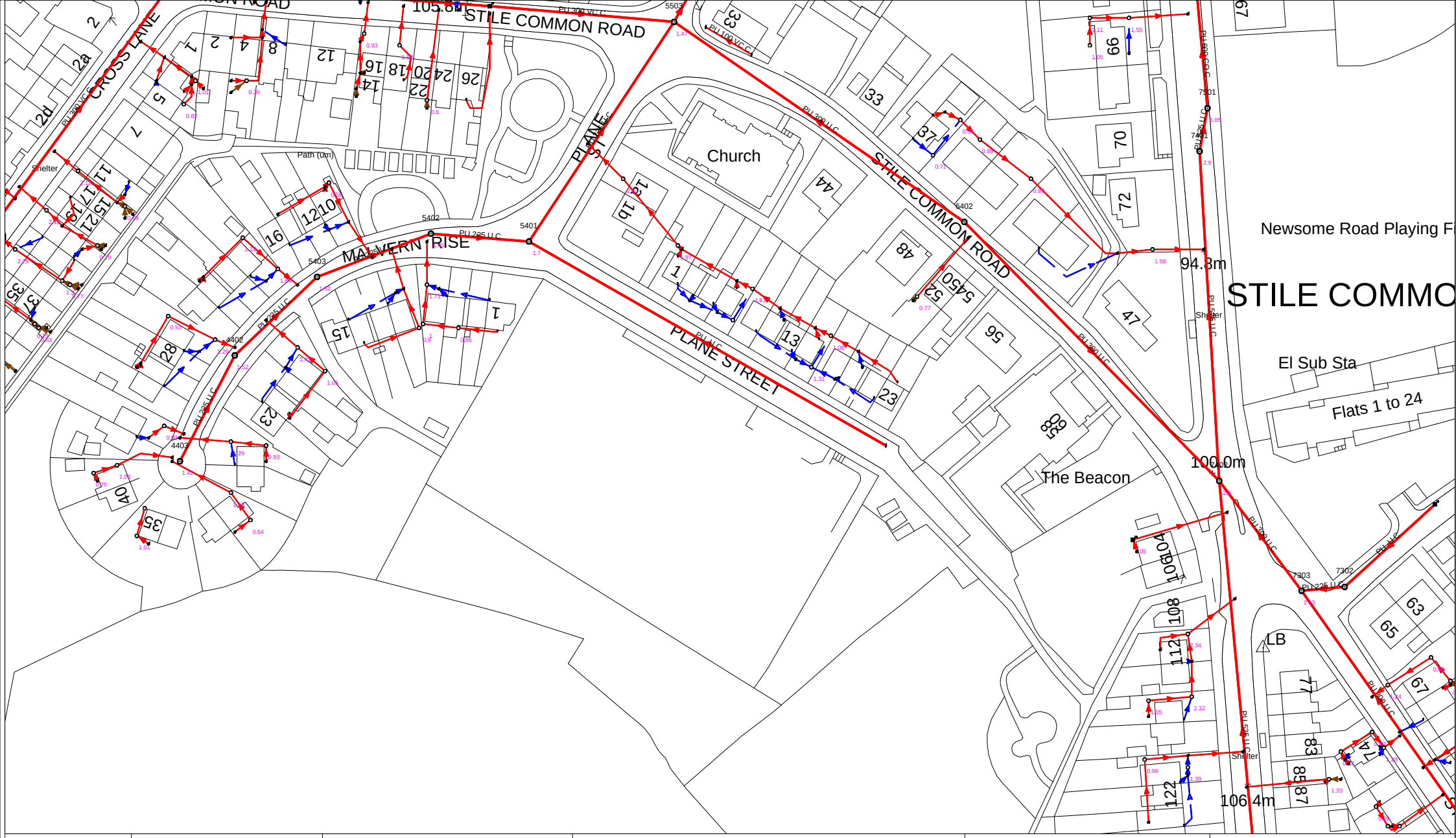
An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

All the above comments are based upon the information and records available at the present time and is subject to formal planning approval agreement. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

Chris Roberts
Pre-Development Technician
Developer Services
Yorkshire Water Services Limited



414441 : 415323	Map Name : SE1415SW	Title	Partial Key	This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.
	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : YorMap Advisor C ROBERTS Contact Tel : 87 2582	Notes	Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS	
			Date Req : 13/05/2020, 09:17:36	Date Gen : 13/05/2020, 09:18:00
			Source : Sewer Network Enquiry	

UPN: Undefined Originator: C ROBERTS, YorMap, 87 2582

APPENDIY E

LEAD LOCAL FLOOD AVUHOSIUa CONTVLUAUION

Matthew Wilson

To: Leon Murgatroyd
Subject: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Friday 24 April, 2020 11:10am
To: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Subject: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hello Mathew,

There are no known flood incidents recorded on this site. It is worth mentioning however that as the site is currently undeveloped a surface water flood may not have been reported. There is recorded incident that effected the garden of a property on Malvern Rise to west. This may have been the result of surface water run-off from the hills behind the site however the cause is unclear.

The site is within flood zone 1 with no surface water flood risk predicted.

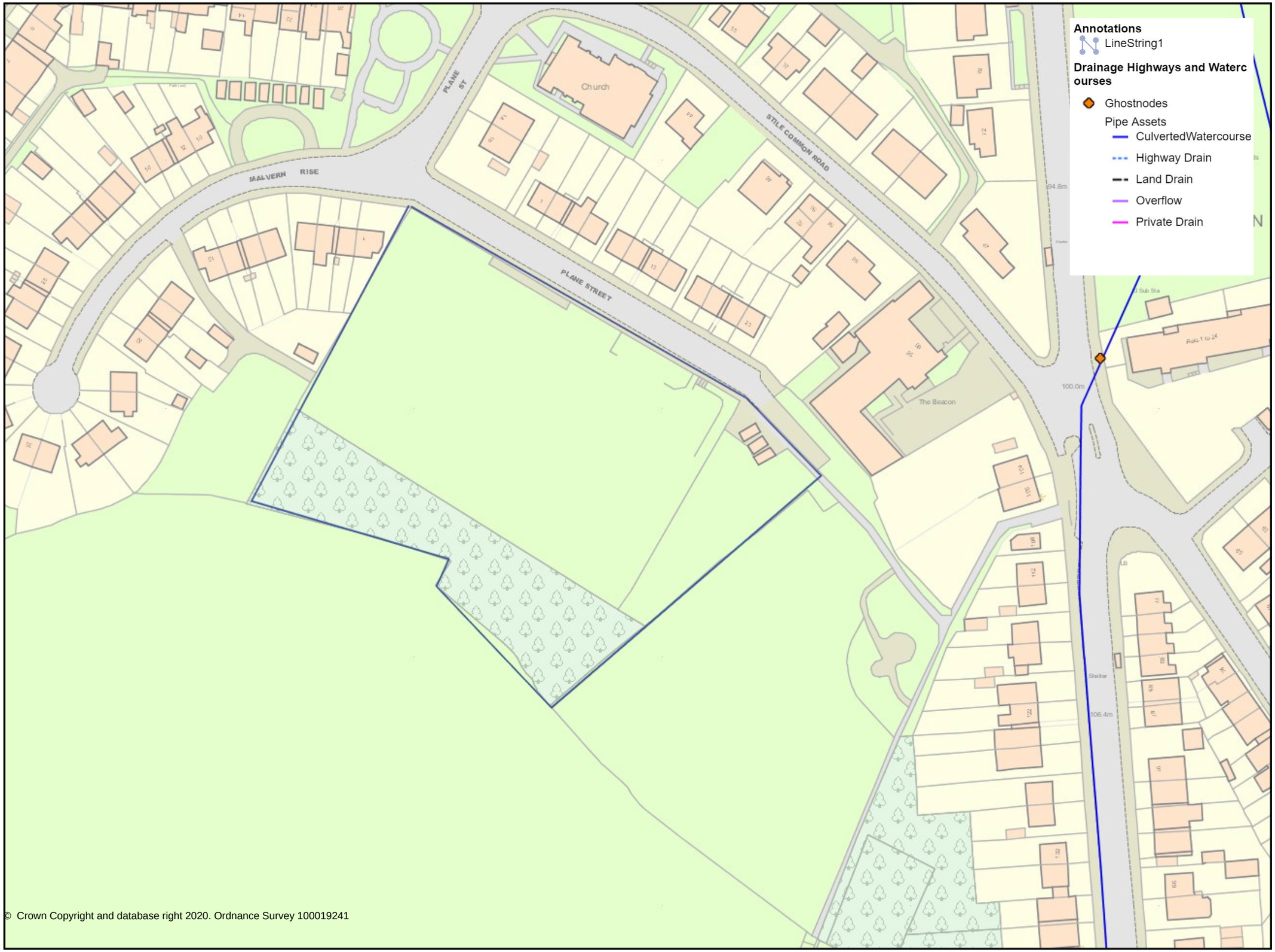
There are no recorded watercourses running through or under the site. There is however a recorded culvert running along Newsome Road to the east. The culvert's diameter is unknown and would need to be investigated. Providing infiltration based drainage is proven to be infeasible, Kirklees would expect the feasibility of using this culvert to drain the site be investigated. Please find attached a plan of the culvert for reference.

There is a Yorkshire Water Combined Sewer recorded on Plane Street with a diameter of 225mm.

If you require any further information feel free to ask.

Kind Regards,

Leon Murgatroyd



Kirklees COUNCIL

Kompass
Kirklees Mapping Service

Scale = 476.28

maps@kirklees.gov.uk

N

Matthew Wilson

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Wednesday 24 June, 2020 1:45 pm
To: Matthew Wilson
Subject: RE: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF (1375/02)

Hello Mathew,

Apologies for the late response.

We've reviewed the proposed run-off rate and 5l/s would result in a sufficient reduction and is therefore suitable for this development.

Many Thanks,

Leon

From: Matthew Wilson [mailto:MatthewWilson@arpnorthwest.co.uk]
Sent: 11 June 2020 12:12
To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: RE: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF (1375/02)

Gppe n psojoh Lf po

Fvsui f sup ui f jogpsn bujpo zpv qspwjef e cf mpx sf hbsejoh ui f tjuf bc pwf tjuf bt sf r vf tufe x f bsf sf wjf x joh ui f qpuf oujbmup ejtdi bshf tvsgbdf x buf s up ui f dvnwf sujo Nf x tpn f Rpbe Wf jojujbmm qnbo up voef subl f b tvswf z pg ui f dvnwf suup dpogisn ui f tj&f boe ef qui pgui f sf bdi up ui f f btupgui f tjuf Io boujdjqbujpo pgui jt tvswf z joejdbujoh ui bub dpoof dujpo jt uf di ojdbmm gf btjcnh x f x pvre mjf up bhsf f jo qsjodjqnh po bo bddf qubcnh sbuf pg ejtdi bshf x jui zpvstf mwf t

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From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: Friday 24 April, 2020 11:10am
To: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Subject: 375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hello Mathew,

There are no known flood incidents recorded on this site. It is worth mentioning however that as the site is currently undeveloped a surface water flood may not have been reported. There is recorded incident that effected the garden of a property on Malvern Rise to west. This may have been the result of surface water run-off from the hills behind the site however the cause is unclear.

The site is within flood zone 1 with no surface water flood risk predicted.

There are no recorded watercourses running through or under the site. There is however a recorded culvert running along Newsome Road to the east. The culvert's diameter is unknown and would need to be investigated. Providing infiltration based drainage is proven to be infeasible, Kirklees would expect the feasibility of using this culvert to drain the site be investigated. Please find attached a plan of the culvert for reference.

There is a Yorkshire Water Combined Sewer recorded on Plane Street with a diameter of 225mm.

If you require any further information feel free to ask.

Kind Regards,

Leon Murgatroyd

From: Jason Hanks
Sent: 24 April 2020 10:39
To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: RE: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Morning Leon,

We try and put as much onus on the developer to do their own calculations. At this stage I wouldn't look at fact checking their calculations. We can confirm with them that we require a minimum reduction of 30% to the sites surface water discharge rate in the 1:1 year event. This sounds applicable to this site as they have confirmed its brownfield.

You can go down a few routes when looking into calculations that drainage consultants provide.

Tom's method – Basically if the developer has gone through the trouble to produce detailed hydraulic calculations then we should not waste our time picking it apart. It would be the developers responsibility if anything goes wrong.

Paul's Method – Which is to scrutinize everything. While it is the developers responsibility to get it right, we don't want flooding to Kirklees residents. If flooding occurred to a new development we would be asked why we approved it.

My current rule of thumb – As you've probably worked out by now drainage can be a dark art. If you are sensible around flood risk but also reasonable with developers you can strike a good balance between both methods. Being new to it I have tended to err on the side of caution and lean over to Paul's way of thinking. When looking at calculations I usually make sure all the parameters put into their calculations are ball park. Then with most micro-drainage calculations we look for surcharging/flood risk/flooding in their outputs. If you start completing responses on a more regular basis you'll find your own way of doing things.

Once we have go a few new full applications in, I'll set some aside for us to work through. Paul is the man for planning but his way of teaching for me has been at arm's length and let me make mistakes. It doesn't always fill you with confidence early on.

I still think we're a few weeks off getting a steady stream of new applications.

Thanks,

Jason

From: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Sent: 23 April 2020 15:26
To: Jason Hanks <Jason.Hanks@kirklees.gov.uk>
Subject: RE: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Hi Jason,

I've gathered the standard pre-app information about this site. I'm unsure if to comment on the developers calculations for the sites surface water run-off. I've used the rational method for the site and their results seem accurate providing their data is correct. Don't know if Kirklees usually comments on this.

Thanks,

Leon

From: Jason Hanks
Sent: 23 April 2020 08:41

To: Leon Murgatroyd <Leon.Murgatroyd@kirklees.gov.uk>
Subject: FW: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Morning Leon,

We have had a pre-app style request from a drainage consultant working for a developer. Could you have a look at his queries and see what we can offer?

I wouldn't bother going all out and using the pre-app template. This should be a paid service really, but having developers and consultants who involve us from an early stage is really beneficial. Yu can run it by me if you want before sending it off.

Thanks,

Jason

From: Matthew Wilson <MatthewWilson@arpnorthwest.co.uk>
Sent: 22 April 2020 18:02
To: Paul Farndale <Paul.Farndale@kirklees.gov.uk>; Jason Hanks <Jason.Hanks@kirklees.gov.uk>
Subject: 1375/02 - Flood risk and surface water management enquiry - Plane Street, Huddersfield, HD4 6DF

Gppe Agf soppo Pbvmjbtpo

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Website | News | Email Updates | Facebook | Twitter

APPENDIY F

DEWELOPMENU PSOPOTALT

0m 10m 20m 30m 40m 50m

VISUAL SCALE 1:500

N

Schedule of Accommodation

2B4P HOUSE_79sq.m	09no.
3B5P HOUSE_93sq.m	6no.
3B5P UP-SPLITTER HOUSE_99sq.m	15no.
TOTAL	30no.

LEVELS SHOWN ON PLAN ARE SUBJECT TO FURTHER DETAILED DESIGN

Site Key

- EXISTING TREES
- REMOVED TREES (TO BE CONFIRMED)
- PROPOSED LOW LEVEL/MAINTENANCE HEDGE
- RETAINING WALL LOCATIONS (TO BE CONFIRMED)
- BANKING / PLANTING AREA
- PLOT ENTRANCES
- FENCES AND GATES
- LOW LEVEL RETAINING WALL (TO BE CONFIRMED)
- GARDEN SHED
- BINS
- ATTENUATION TANK LOCATION + EASEMENT

Rev:	Date:	Drawn:	Checked:	Description:
P1	05.06.20	MAI	RPM	Layout revised to incorporate attenuation tank. 1no. plot lost.

Suitability: PL Planning

PLANE STREET

SITE PLAN

Location:
PLANE STREET
HUDDERSFIELD

Client:
ACCENT HOUSING GROUP

UPRN Originator Zone Level Type Role Series/Number — PLNST-WBA-XX-ZZ-DR-A-PL02 — Revision: P1

Date:	Drawn:	Checked:	Scale: @A2	Int Job No:
10/22/19	MAI	RPM	1 : 500	4039_06

WATSON BATTY ARCHITECTS

Shires House, Shires Road
Guiseley, Leeds LS20 8EU
Leeds | Loughborough

T: 01943 876 665
E: enquiries@watsonbatty.com
W: www.watsonbatty.com

FUTURE BUILT

Note: Do not Scale from this drawing. All dimensions to be checked on site

A P P E N D I Y G

INDICAUIWE TV S FACE X AUES DSAINAGE CALCV LAUIONT

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	108.967	0.767	4.1	80.5	O K
30 min Summer	109.239	1.039	4.1	109.1	O K
60 min Summer	109.517	1.317	4.1	138.2	O K
120 min Summer	109.763	1.563	4.5	164.1	O K
180 min Summer	109.862	1.662	4.6	174.5	O K
240 min Summer	109.894	1.694	4.6	177.9	O K
360 min Summer	109.900	1.700	4.6	178.5	O K
480 min Summer	109.884	1.684	4.6	176.8	O K
600 min Summer	109.859	1.659	4.6	174.2	O K
720 min Summer	109.831	1.631	4.5	171.3	O K
960 min Summer	109.770	1.570	4.5	164.8	O K
1440 min Summer	109.642	1.442	4.3	151.4	O K
2160 min Summer	109.455	1.255	4.1	131.8	O K
2880 min Summer	109.277	1.077	4.1	113.1	O K
4320 min Summer	108.873	0.673	4.1	70.6	O K
5760 min Summer	108.607	0.407	4.1	42.7	O K
7200 min Summer	108.466	0.266	4.0	27.9	O K
8640 min Summer	108.389	0.189	3.8	19.8	O K
10080 min Summer	108.345	0.145	3.5	15.2	O K
15 min Winter	109.064	0.864	4.1	90.7	O K
30 min Winter	109.370	1.170	4.1	122.8	O K
60 min Winter	109.687	1.487	4.4	156.1	O K
120 min Winter	109.978	1.778	4.7	186.6	O K
180 min Winter	110.102	1.902	4.9	199.7	O K
240 min Winter	110.152	1.952	4.9	204.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	112.032	0.0	84.6	26
30 min Summer	76.515	0.0	115.6	40
60 min Summer	49.937	0.0	151.2	68
120 min Summer	31.438	0.0	190.4	126
180 min Summer	23.589	0.0	214.3	184
240 min Summer	19.078	0.0	231.1	242
360 min Summer	14.159	0.0	257.2	318
480 min Summer	11.440	0.0	277.1	382
600 min Summer	9.687	0.0	293.3	446
720 min Summer	8.450	0.0	307.0	514
960 min Summer	6.805	0.0	329.7	654
1440 min Summer	5.004	0.0	363.6	930
2160 min Summer	3.670	0.0	400.3	1344
2880 min Summer	2.941	0.0	427.6	1756
4320 min Summer	2.148	0.0	468.3	2472
5760 min Summer	1.718	0.0	499.6	3120
7200 min Summer	1.446	0.0	525.7	3760
8640 min Summer	1.256	0.0	548.1	4488
10080 min Summer	1.116	0.0	567.7	5144
15 min Winter	112.032	0.0	94.7	26
30 min Winter	76.515	0.0	129.5	40
60 min Winter	49.937	0.0	169.3	68
120 min Winter	31.438	0.0	213.2	124
180 min Winter	23.589	0.0	240.0	180
240 min Winter	19.078	0.0	258.8	236

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
360 min Winter	110.176	1.976	5.0	207.4	O K
480 min Winter	110.149	1.949	4.9	204.7	O K
600 min Winter	110.120	1.920	4.9	201.6	O K
720 min Winter	110.082	1.882	4.9	197.6	O K
960 min Winter	109.991	1.791	4.7	188.0	O K
1440 min Winter	109.795	1.595	4.5	167.4	O K
2160 min Winter	109.508	1.308	4.1	137.4	O K
2880 min Winter	109.236	1.036	4.1	108.7	O K
4320 min Winter	108.631	0.431	4.1	45.3	O K
5760 min Winter	108.409	0.209	3.9	21.9	O K
7200 min Winter	108.328	0.128	3.4	13.4	O K
8640 min Winter	108.304	0.104	3.0	10.9	O K
10080 min Winter	108.292	0.092	2.7	9.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
360 min Winter	14.159	0.0	288.1	344
480 min Winter	11.440	0.0	310.4	400
600 min Winter	9.687	0.0	328.5	472
720 min Winter	8.450	0.0	343.9	550
960 min Winter	6.805	0.0	369.2	704
1440 min Winter	5.004	0.0	407.2	1008
2160 min Winter	3.670	0.0	448.3	1448
2880 min Winter	2.941	0.0	478.9	1880
4320 min Winter	2.148	0.0	524.5	2508
5760 min Winter	1.718	0.0	559.6	3112
7200 min Winter	1.446	0.0	588.8	3744
8640 min Winter	1.256	0.0	613.9	4408
10080 min Winter	1.116	0.0	635.8	5096

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Shortest Storm (mins)	15
Ratio R	0.319	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.404

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.135	4	8	0.135	8	12	0.135

Model Details

Storage is Online Cover Level (m) 110.800

Tank or Pond Structure

Invert Level (m) 108.200

Depth (m)	Area (m²)	Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	105.0	2.000	105.0	2.001	0.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0092-5000-2000-5000
Design Head (m)	2.000
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	92
Invert Level (m)	108.200
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	2.000	5.0	Kick-Flo®	0.816	3.3
Flush-Flo™	0.398	4.1	Mean Flow over Head Range	-	3.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.9	0.800	3.4	2.000	5.0	4.000	6.9	7.000	9.0
0.200	3.8	1.000	3.6	2.200	5.2	4.500	7.3	7.500	9.3
0.300	4.1	1.200	3.9	2.400	5.4	5.000	7.7	8.000	9.6
0.400	4.1	1.400	4.2	2.600	5.6	5.500	8.0	8.500	9.9
0.500	4.1	1.600	4.5	3.000	6.0	6.000	8.4	9.000	10.2
0.600	4.0	1.800	4.8	3.500	6.5	6.500	8.7	9.500	10.4