DRAINAGE IMACT ASSESSMENT

Barnsley West

Reference	**4848-JPG-XX-XX-RP-D-0621-S2-P01**
Date	**24 May 2021**
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APPENDICES

CONFIDENTIALITY STATEMENT

This report is addressed to and may be relied upon by the following:

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DOCUMENT HISTORY

Rev	Date	Revision Details	Status	Author(s)	Approved
P01	24.05.2021	First Issue	Preliminary	JDM	RMR

1.0 INTRODUCTION

JPG (Leeds) Limited has been instructed by Strata Sterling Barnsley West Limited to prepare a Drainage Impact Assessment for a proposed mixed-use development at Barnsley West.

The Drainage Impact Assessment (DIA) for the proposed development considers the drainage implications of the proposed development.

This report should be read in conjunction with the Flood Risk Assessment (FRA) which has been prepared for the development and covers the flood risk issues.

Flood Risk Assessment Report reference 4848-JPG-XX-XX-RP-0620-S2-P01.

2.0 THE SITE

The site is located approximately 3km to the west of Barnsley town centre. The approximate centre of the site is located at NGR 431800 407100.

The site is located between Higham and Gawber, with the M1 motorway located to the west and south of the site. The A635 Barugh Green Road is located to the north of the site.

A site location plan is provided in Appendix A.

The site predominantly consists of undulating arable and grazing farmland, which is separated into fields by hedgerows, fences, and small watercourses. Hermit Lane, aligned approximately east to west, bisects the site.

A steep sided valley with a watercourse at its base extends from the south-western boundary and trends towards Hermit Lane to the north. Another steep sided valley, with an associated watercourse, trends from the central-eastern half of the site to Redbrook Farm, north of Hermit Lane.

A raised plateau of arable farmland is present adjacent to the residential suburb of Pogmoor in the eastern extent of the site. To the west of this plateau, the topography falls steeply forming the valley in the centre east. Evidence of local landslide instability is noted in the central-eastern portion of the site, south of Hermit Lane, to the east of Hermit House Farm and alongside the steep sided valley.

The gradient of Hermit Lane undulates from west to east, with a steep gradient from the western boundary down into the valley bottom before rising steeply towards Hermit House Farm and again upwards to Gawber/Pogmoor to the east. The two watercourses within the two steep valleys are culverted below Hermit Lane and continue as streams and ponds to the north of Hermit Lane. The stream in the central part of the site is culverted in parts and joins the eastern stream close to Redbrook Farm. Both valleys are heavily wooded and overgrown to the north of Hermit Lane.

Adjacent to the culvert and a sharp bend in Hermit Lane, to the east of Hermit House Farm, an intact coal seam was noted within the watercourse.

Hermit House Farm is located to the south of Hermit Lane in the centre-east of the site. It consists of two single storey residential properties, several agricultural buildings and associated hard standing. The farm buildings are typically constructed with concrete blocks, timber and roofing of possible asbestos cement sheeting.

Redbrook farm is located adjacent to the north-eastern boundary, with access gained from Redbrook Road. The farm is made up of a large dilapidated agricultural barn, containing livestock, several outbuildings and a large silo.

The northern site boundary is formed by Barugh Green Road and, in part, adjacent grazing farmland, beyond which lies the Metro Trading Centre and Claycliffe Business Park. Redbrook Plantation and residential properties (Gawber and Pogmoor) are present beyond the eastern boundary. Residential properties (Hunters Farm and Cottages) are located adjacent to the southern tip of the site. The south-western boundary is formed by the M1 motorway, beyond which lies further farms and woodland. The residential areas of Higham and Barugh Green are located to the west and northwest, respectively.

A topographic survey is provided in Appendix B.

3.0 EXISTING DRAINAGE NETWORK

There are a number of visible existing water courses located within the site boundary or immediately outside the site adjacent to the boundary.

The nearest named water course is Silkstone Beck which is some 1.5km to the west of the site. This flows in a south to north direction out falling into Cawthorne Dike (located 2.2km north west) before combining with the River Dearne (located 1.75km north).

There is no direct access to any of the above watercourses from the site.

The Environment Agency data shows watercourses located within the site; these can be seen on the topographical survey also. A series of smaller ditches combine into two watercourses south of Hermit Lane before being culverted underneath the highway and combining around the Craven Wood area. The watercourse then runs in a north easterly direction towards Redbrook Road where it enters a series of weirs before being culverted under the highway. Based on discussion with BMBC LLFA it is understood that this culverted watercourse then runs under the highway and through Zenith Park industrial estate (the route of which is unknown) before out-falling into a ditch to north east of Zenith Park.

The exact route of this culvert is not known, and Barnsley LLFA highlighted that there are known issues with this culvert and suggested that the developer should carry out a survey of the culvert. A survey has been commissioned but at the time of writing this report the information was not available.

Watercourses/land drainage ditches are also indicated running parallel to the south of Barugh green Road within the hedge line. It is believed this ditch falls west to east before entering a chamber and then turning north in a culvert beneath Barugh Green Road just before Claycliffe Avenue. This culvert would appear to outfall at the rear of the Aldi supermarket into a ditch. There is limited access to this open ditch section.

From the culvert running in a westerly direction upstream the ditch looks to decrease in size and by the time this get to the garden centre and residential properties on Barugh Green Road it is pretty much non-existent. This in noted on the EA mapping as a drain.

This same ditch is also shown to exist to the west of the properties with a depression observed adjacent to the boundary wall of the last property. This was full of detritus and debris and there was no evidence of a culvert under the properties linking this with the ditch to the east of the properties.

Moving further west along the highway boundary the ditch has completely disappear by the time it gets to the next set of properties and the ground is higher than the back of highway.

Further investigation will be required into this land drainage ditch which will need to be cleaned out then a connectivity survey carried out.

In addition to the previously described drain/ditch there is a slight depression shown on the topographical survey running round the rear of the properties and the garden centre. This is also indicated as a drain on the EA mapping.

The upstream extent is unclear on the topographical survey, but it appears to extend beyond the first field boundary which is also the development site boundary.

While there are no public sewers shown within the site boundary, public sewer infrastructure and networks are indicated outside the site boundary and can be seen in an extract from the Yorkshire Water sewer record plan that is provided in Appendix C.

From consultation with the Barnsley Council Highways department, it is believed Highway drains are located within Higham Common Road and Barugh Green Road, however no records of these sewers were available at the time of consultation.

Some limited survey work had been carried out on the drain in the vicinity of the proposed roundabout on Barugh Green Road (note works to the roundabout are outside of this development and planning application). Due to difficulties with access and the poor state of repair of the drains limited information was gained. Further investigation into the drainage system would be recommended in this location.

4.0 DEVELOPMENT PROPOSALS

It is proposed to develop the site for a mixed end use, comprising residential with school in the northern two thirds of the site, industrial/commercial land use including a pub/hotel in the southern third and residential in the east (land adjacent to Pogmoor). The development also includes attenuation basins (SUDS), public open space landscaping zones and associated road infrastructure network.

A copy of the proposed development plan has been provided and referenced below, and a copy is containing in Appendix D.

- Bond Bryan Architects Proposed Site Plan drawing BWM-BBA-ZZ-XX-DR-A-1004 Revision P04 dated 10.05.2021.

5.0 PROPOSED SURFACE AND FOUL WATER DRAINAGE

5.1 Proposed Surface Water Drainage & Disposal Hierarchy

The proposed infrastructure drainage will be separate foul and surface water systems designed to CODES for adoption and the local Water Company specific requirement.
This will be put forward to the local Water Company (Yorkshire Water) for adoption via a Section 104 agreement should the developer what to go down this route and the design meets with the Water Company criteria.

The proposed-on site plot drainage to the commercial units and around individual dwellings will consist of a separate surface and foul water drainage system and will remain in private ownership.

Potentially adoptable drainage will be design and constructed between the private drainage and the site wide adoptable infrastructure drainage. Note this is outside the scope of this report and would for part of a separate planning application for the individual plots/developments.

SUDs features employed as part of the site wide drainage infrastructure will be maintained by either the Water Company, Local Authority or Private Management company.

Adoption of the site wide infrastructure drainage would ideally be by the Water Company where criteria allows.

However, features could be either adopted by other bodies or remain private and further discussion as part of the detailed design will be required with the various stakeholders to agree and establish what can be considered for adopted and by which bodies.

Detailed design of all drain and levels including adoption/maintenance of SuDS features is outside the scope of this report.

The following assessment summarises the disposal of surface from the site.

As detailed in Building regulation Document H the hierarchy for surface water drainage disposal is as follows:

- Discharge to ground (infiltration).
- Discharge to a surface water body (Land drainage Ditch, Water Body or Watercourse).
- Discharge to a surface water sewer.
- Discharge to a combined water sewer.
- Discharge to a foul water sewer.

All options for the disposal of the surface water have been considered in accordance with current legislation, recommendation, and good practice.

5.2 Sustainable Urban Drainage Systems (SUDS)

On site ground investigation has been carried out and confirm the site is mixed underlaying material consisting of rock, cohesive and fill material and would be unsuitable for infiltration drainage methods on this site.

For further details of the underlaying ground conditions which are complex and varied refer to the JPG Preliminary Geo-Environmental Ground Investigation "4848-JPG-SW-XX-RP-G-0603".

For the purposes of this report infiltration has been discounted and further investigation at detailed design stage may provide sufficient evidence that infiltration drainage would be a viable option in some locations.

The locate Water Company Yorkshire Water current requirements state that where attenuation basins are proposed these should not be lined to allow some partial infiltration. This will is subject to site specific factors for example the location of the basins to existing properties.

Thus, the SUDS audit reflects this approach and as such does not completely discount infiltration.

The following audit has been carried out relating to suitability of SuDS features/systems:

Drainage Method	Description/Suitability	Proposal/Feasibility
1. Infiltration.	Methods may be suitable subject to further infiltration testing and investigation and adoption strategy at detailed design stage.	May be suitable subject to further infiltration testing at detailed design stage.
2. Ponds and wetlands.	Suitable – subject to design and adoption strategy.	Applicable.
3. Infiltration Basins.	Methods may be suitable subject to further infiltration testing and investigation and adoption strategy at detailed design stage	Maybe suitable subject to further infiltration testing at detailed design stage.
4. Detention Basins.	Suitable – subject to design and adoption strategy.	Applicable.
5. Swale.	Suitable – subject to detailed design.	Applicable.
6. French/Filter drain.	May be utilised to convey water.	Applicable.
7. Pervious/Permeable Pavement.	May be utilised - subject to detailed design.	Applicable non infiltration method. For infiltration method further infiltration testing required at detailed design stage.
8. Geocellular Systems/Tank systems.	May be utilised – subject to detailed design.	Applicable.
9. Oversized pipes.	May be used as surface water attenuation.	Applicable.
10. Box culverts.	May be used as surface water attenuation.	Applicable.
11. Purpose designed tanks.	May be used as surface water attenuation.	Applicable.

Sustainable Urban Drainage System (SUDS) may be used in conjunction with conventional drainage systems to improve water quality as well as manage surface water discharge. This should be considered at the detailed design stage of the project.

Basins will provide the main treatment feature for the site wide drainage infrastructure.

However, further primary treatment may need to be consider on plot by the developer. On plot treatment falls outside the scope of this report and would be part of the detailed planning application for the plots.

5.3 Surface Water Drainage

Requirement H3 of the Building Regulations establishes a preferred hierarchy for the disposal of surface water. Consideration should firstly be given to soakaway/infiltration, watercourse, and sewer in that priority order.

On site ground investigation has been carried out and confirm the site is mixed underlaying material consisting of rock, cohesive and fill material and would be unsuitable for infiltration drainage methods on this site.

For further details of the underlaying ground conditions which are complex and varied refer to the JPG Preliminary Geo Environmental Ground Investigation “4848-JPG-SW-XX-RP-G-0603”.

Based on the above statement and drainage hierarchy connection to watercourse or land drainage ditch should be consider next.

There are a number of existing water courses located within the development site toward the east and existing greenfield run off from the south and middle of the site would generally discharge into these watercourses.

Some area to north falls towards Barugh Green Road and a suggested land drainage ditch/drain located to the south of the highway and running parallel.

This ditch is not well defined, but it may be possible to discharge limited areas into this ditch from the early stages of the development and prior to constructing the large attenuation basins to the east. This would also potentially avoid pumping of surface water from these northern areas.

Based on drainage hierarchy the most logical place for disposal of surface water from the development is into the existing land drainage/water course network.

Preplanning enquiry and predevelopment discussions have been carried out with both the LLFA Barnsley MBC and Yorkshire Water the local water company.

Responses from the LLFA are located in Appendix E.

The LLFA have confirmed that the site can drain into the existing watercourse/land drainage network at a restricted rate equivalent to current greenfield run off levels.

Some off-site flooding issues on the existing drainage network have been highlighted by the LLFA in the Redbrook Road area. Here the site drainage catchment enters an existing culvert.

The approximate route of the culvert is shown on the sketch provided by the LLFA and is between points A and B. This sketch can be found in Appendix E.

The LLFA stated that should the development look to utilise the existing off-site culvert from Redbrook Road to the out fall to the north of Zenith Park a CCTV survey of the culvert from point Redbrook Road to the outfall point would need to be carried out at the developer's expense. This is so that its condition can be assess and agree any necessary repairs or up sizing of existing assets and any developer contributions. Refer to LLFA correspondence in Appendix E.

A survey of the culvert has been commissioned by the developer however, at the time of writing this report the results of the survey were not available.

The site surface water drainage principles were also discussed with Yorkshire Water the local Water Company and pre planning enquiry submitted. Response to this can be found in Appendix F.

Greenfield run off rates should be calculated using a recognised method such as IH124 or ICPSUDs. Greenfield run off calculations are located in Appendix G and rates are detailed below.

Agreed greenfield run off rate is 3.900l/s/ha. Based on the preliminary calculations the total greenfield run for the entire development site would be in the order of 233.404 l/s subject to finalised plot impermeable areas.

Should the catchment areas change as the development progress then the restricted discharge shall be revised accordingly in line with the agreed discharge parameters and revised areas.

As a result of the restricted discharge, surface water attenuation would be required on site and this is to be provide in attenuation basins and the piped network. The basins will generally be located adjacent to the existing watercourses and to the east of the development.

The proposed on-site drainage system shall be designed in accordance with the requirements of Sewers for Adoption and national non-statutory technical SuDS standards and shall demonstrate that:

- No surcharge of pipes occurs in the 1 in 2-year rainfall event.
- No surface flooding occurs in 1 in 30-year rainfall event.
- No flooding to buildings and adjacent properties occurs in 1 in 100-year rainfall event (including an allowance of for the effects of future climate change), as defined in NPPF Technical Guidance. The climate change allowance shall be 40%.

Preliminary run off and volume calculations for each catchment are shown on the FW and SW Drainage strategy Calculations Plan 4848-JPG-SW-00-DR-D-1410 and is located in Appendix H.

Exceedance routing from the attenuation basins will be provide for storm events above the design storm event of 1 in 100-year event plus climate change. Any flows generated above this event will be directed into the existing water course system at unrestricted rate but in a controlled manor.

For new developments, an additional allowance for climate change resulting from global warming must be applied.

The proposed allowance for climate change for this development is 40% for the 1 in 100-year event.

Where levels dictate the surface water infrastructure drainage will be a gravity system. However, some areas may need to be pumped due to proposed levels.

The area which may require surface water pumping are to the north. This would be if a gravity connection is not feasible or agreeable with the LLFA into the existing land drainage ditch/drain running parallel with Barugh Green Road.

The proposed drainage infrastructure will be put forward for adoption via a Section 104 agreement where local Water Company criteria is met.

Principles for adoption have been discussed with YW in a pre-design discussion meeting and minutes from this are located in Appendix F.

Note that the proposed drainage is subject to detailed design of both site levels and the drainage itself.

Preliminary proposed surface water drainage strategy drawings are located in Appendix I.

Land Drainage
A large proportion of the site will remain permeable, in the form of unsurfaced landscaping and will not be positive drained.

A land drainage system is proposed to control the runoff from these areas and also pick up any existing land drainage encountered during construction of the development plateaus.

There also appears to be a number of springs located in the southern area of the site. These will be investigated further as part of the earthwork strategy and design and connected up into the land drainage system, as necessary.

It was agreed with the LLFA that discharge from the proposed land drainage system could be unrestricted into the existing water course system on the assumption it was spread out around the catchment and not all directed to one location where possible to do so.

Preliminary proposed land drainage strategy drawings are located in Appendix J.

It was also agreed with the LLFA that once development plateaus have been formed a system of temporary drainage would need to be installed to deal with run off from undeveloped plateaus. This system should remain in place until such a time they are developed, and a permanent positive drainage system is installed.

Controlling the runoff and suitable silt collection would be required with final discharge connected into the proposed land drainage system or directly into the water course.

The appointed contractor would need to produce the detailed temporary plateau drainage design in conjunction with his proposed earthworks strategy, phasing and method of working.

Pollution Control
The developer should consider water quality of any receiving water body and that it is not adversely affected by the development.

SuDs guidance advocates the use of SuDs drainage features which can capture pollutants.

The simple index approach in SuDs manual can be used to determine the pollution loading from various development types.

This is detailed in the SuDs manual table 26.2 pollution hazard indices for different land uses/classification and is shown below:

Table 26.2 – Pollution hazard indices for different land use classifications

Land Use	**Pollution Hazard Level**	**Total Suspended Solids (TSS)**	**Metals**	**Hydrocarbons**
Residential Roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof.	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day.	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except for low traffic roads and trunk roads/motorways[1].	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1].	High	0.8[2]	0.8[2]	$0.^{92}$

Notes

1 Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

2 These should only be used if considered appropriate as part of detailed risk assessment – required for all these land use types. When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.

Where a site land use falls outside the defined categories, the indices should be adapted (and agreed with the drainage approving body) or else the more detailed risk assessment method should be adopted.

Where nutrient or bacteria and pathogen removal is important for a particular receiving water, equivalent indices should be developed for these pollutants (if acceptable to the drainage approving body) or the risk assessment method adopted.

Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required, where:

- Total SuDS mitigation index – mitigation index, +0.5 (mitigation index$_2$).

Table 26.3 of the SuDs manual give the indicative SuDs mitigation indices for different SuDs features in order to mitigate the various pollution types and is shown below:

Table 26.3 – Indicative SuDS mitigation indices for discharges to surface waters.

	Mitigation indices1		
Type of SuDS component	**TSS**	**Metals**	**Hydrocarbons**
Filter strip	0.4	0.4	0.5
Filter drain	0.42	0.42	0.42
Swale	0.5	0.6	0.6
Bioretention system	0.8	0.8	0.8
Permeable pavement	0.7	0.6	0.7
Detention basin	0.5	0.5	0.6
Pond4	0.73	0.7.	0.5
Wetland	0.83	0.8	0.8
Proprietary treatment systems 5,6	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

Notes

1 SuDS components only deliver these indices if they follow design guidance with respect to hydraulics and treatment set out in the relevant technical component chapters.

2 Filter drains can remove coarse sediments, but their use for this purpose will have significant implications with respect to maintenance requirements, and this should be taken into account in the design and Maintenance Plan.

3 Ponds and wetlands can remove coarse sediments, but their use for this purpose will have significant implications with respect to the maintenance requirements and amenity value of the system. Sediment should normally be removed upstream, unless they are specifically designed to retain sediment in a separate part of the component, where it cannot easily migrate to the main body of water.

4 Where a wetland is not specifically designed to provide significantly enhanced treatment, it should be considered as having the same mitigation indices as a pond.

5 See Chapter 14 for approaches to demonstrate product performance. A British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: http://tinyurl.com/qf7yuj7.

6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution where there is a requirement to retrofit treatment. SEPA (2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

Correctly designed and sized SuDs feature as well as providing treatment can also enhance a development by providing source control and amenity/green infrastructure.

Where possible and practical to do so SuDs features shall be incorporated into the design.

Volume Control

SuDs guidance advises that the run-off volume from the development site for the 1 in 100year, 6-hour rainfall event should not exceed the greenfield run-off volume for the same event where practical to do so. This will be reviewed as part of the detailed design and whether this can be achieved.

In summary, if surface water discharges are limited to greenfield runoff rates and excess flows balanced in line with the above principles, flood risk from surface water flows from the proposed scheme can be taken as low.

5.4 Foul Water Drainage

Preplanning enquiry and predevelopment discussions have been carried out with Yorkshire Water.

The responses from Yorkshire Water are located in Appendix F.

YW confirm the closest practicable point of discharge for foul will be the 600dia. combined public sewer in Barugh Green Road. At present this system does not have adequate capacity available to accommodate the anticipated foul water discharge from the proposed site.

Subject to the submission of a Formal Planning Application Yorkshire Water will look to carry out a feasibility study to determine, any available capacity in the public sewer network, together with timescales for any potential upgrading works required. All cost will be borne by Yorkshire Water up-front and recouped via the Infrastructure Charges at a later date.

Response from Yorkshire Water regarding the capacity study can be found in Appendix G.

A detailed schedule of the build out programme including time scales and start dates when various element would come online will need to be provide by the developer when submitting the formal planning statement.

Based on Yorkshire Water comments discharge for the foul water from the site would be unrestricted into the 600dia. combined public sewer.

Where levels dictate the foul water infrastructure drainage will be a gravity system. However, some areas will need to be pumped due to the proposed levels.

The proposed foul infrastructure drainage will be put forward for adoption via a Section 104 agreement where local Water Company criteria is met.

Principles for adoption have been discussed with YW in a pre-design discussion meeting and minutes from this are located in Appendix F.

On plot drainage will remain under private ownership for the commercial elements.

For the residential units plot drainage around the dwelling will remain private and maintained by the homeowner.

Additional adoptable infrastructure will be constructed by the residential developer to connect from the plot drainage to the site wide adoptable infrastructure drainage.

The private plot drainage and residential developer infrastructure are outside of the scope of this report and would be detailed under separate planning application covering the detailed design of the individual development plots.

Preliminary foul water drainage calculations for each catchment are shown on the FW and SW Drainage Strategy Calculations Plan 4848-JPG-SW-00-DR-D-1410 and is located in Appendix H.

These calculations are based upon 1760 dwellings and up to 43 hectares of employment land understood to equate to 127,091 sqm of employment floorspace plus a new primary school. Note final numbers of dwelling and floor space will be subject to detailed planning application for the individual phases or elements.

A summary of the anticipated flow rate is detailed below.

Residential development = 81.483 l/s design foul flow.
Commercial development = 14.814 l/s design foul flow.
Schools = 2.567 l/s design foul flow.

Total design foul water flow = **98.864 l/s** design foul flow.

The calculations are based upon Sewer for Adoption methodology and design foul water flow 6xDWF+10%. Thus, 1xDWF would be **14.830 l/s**.

Preliminary foul water drainage strategy drawings have been produced based on the above criteria and proposed levels and are located in Appendix K.

It is considered that the proposed foul water discharge would not have minimal impact on the existing off-site foul drain/sewer network as Yorkshire Water will upgrade the system to accommodate the anticipated flows.

6.0 CONCLUSIONS

This assessment has looked at the detailed drainage strategy to support a planning application for a proposed mixed-use development at Barnsley West.

This report should be read in conjunction with the Flood Risk Assessment report 4848-JPG-XX-XX-RP-D-0620-S2.

As confirmed by the accompanying Flood Risk Assessment (ref. 4848-JPG-XX-XX-RP-D-0620-S2) the site falls in Flood Zone 1 (low flood risk) and is considered to be at a low and acceptable flood risk.

On site ground investigation has been carried out and confirm the site is mixed underlaying material consisting of rock, cohesive and fill material which would be unsuitable for infiltration drainage methods on this site.

Based on drainage hierarchy the most appropriate location for discharge of surface water from the development would be into an onsite watercourse and land drainage ditch system.

The LLFA have confirmed that should the development look to utilise the existing off-site culvert from Redbrook Road to the out fall to the north of Zenith Park a CCTV survey of the culvert from point Redbrook Road to the outfall point would need to be carried out at the developer’s expense. This is so that its condition can be assess and agree any necessary repairs or up sizing of existing assets and any developer contributions.

A survey of the culvert has been commissioned by the developer however, the results of the survey were not available at the time of writing this report.

Where levels dictate the surface water infrastructure drainage will be a gravity system. However, some areas may need to be pumped due to the levels.

Surface Water Discharge from the site will be restricted to greenfield run off rate of 3.900 l/s for all storms up to the 1 in 100-year event plus climate change.

Attenuation storage will be provided on site in attenuation basins and the network.

Allowance for climate change for this development is 40%.

Foul water drainage will discharge into the existing off-site 600 dia. combined water public sewer in Barugh Green Road at unrestricted discharge.

A capacity study will be carried out by YW to assess the capacity of the existing public sewer network.

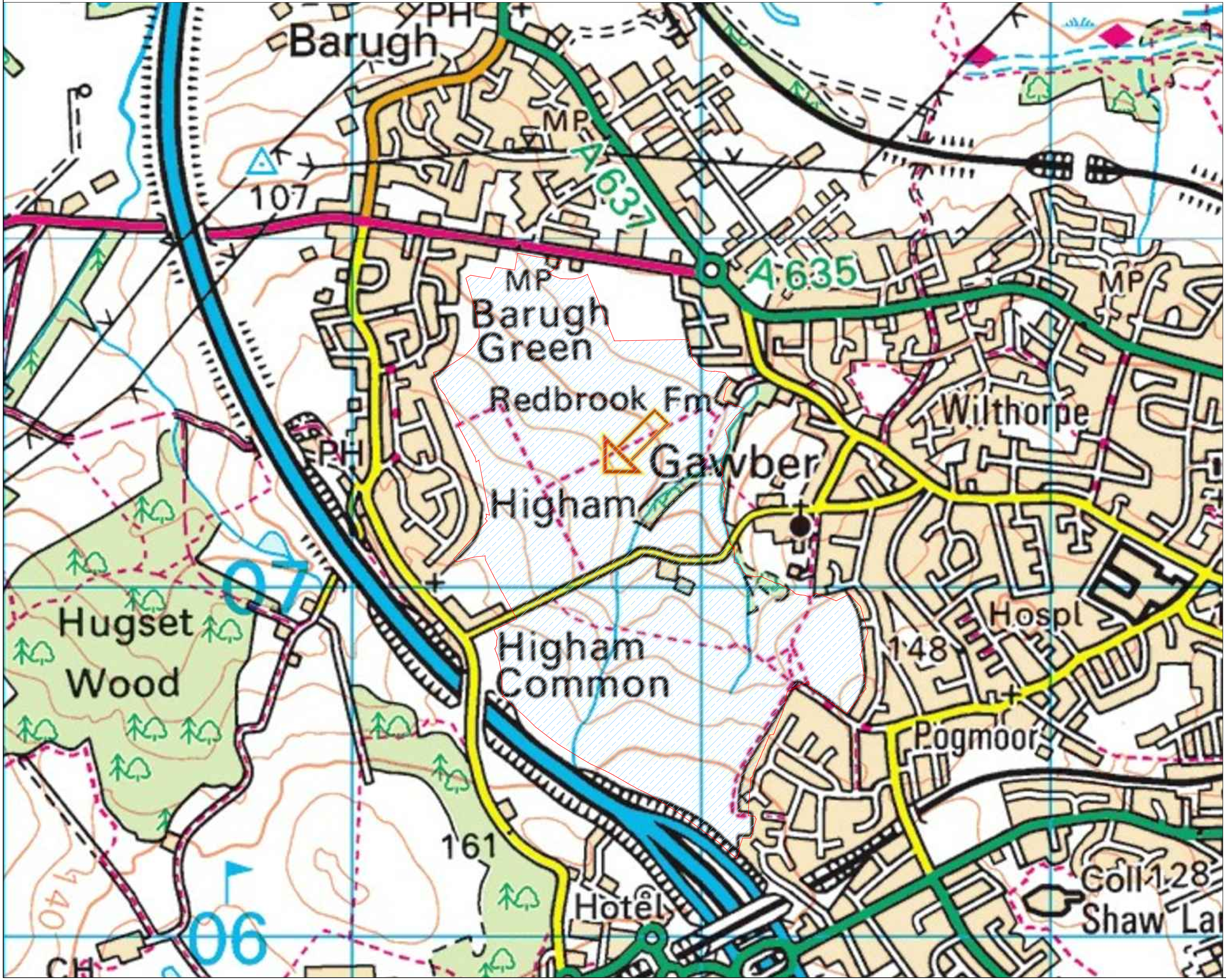
The existing of site public sewer network will be updated by YW to accommodate the anticipated foul water flows based on the findings of the capacity study.

Where levels dictate the foul water infrastructure drainage will be a gravity system. However, some areas will need to be pumped due to the levels.

The reports supporting calculations and drawings provide a robust case for justifying the means of foul and surface water drainage and that the site can be suitably, safely and sustainably drained.

Overall, this report demonstrates that the foul and surface water drainage systems reasonable and acceptable for the proposed development.

Appendix A Site Location Plan



DO NOT SCALE

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP IS TO COMPLY WITH JPG CONSULTANTS STANDARD SPECIFICATION & ALL RELEVANT BRITISH & EUROPEAN STANDARDS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, M & E CONSULTANTS AND JPG CONSULTANTS DRAWINGS.
3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

KEY:

▨ DENOTES APPROXIMATE LOCATION OF SITE.

SITE INFORMATION

SITE ADDRESS - HERMIT HOUSE FARM, HERMIT LN, HIGHAM, BARNSLEY
NEAREST POSTCODE - S75 2RW
OS SHEET/TILE - SE317073
OS CO-ORDINATES - E431762, N407312

REV	DESCRIPTION	DATE	BY
P01	FIRST ISSUE.	27.03.20	LSG

Project
BARNSLEY WEST
BARNSLEY

Drawing Title
SITE LOCATION PLAN

INFORMATION ISSUE

Architect
BOND BRYAN

www.jpg.group
Leeds London Birmingham 0113 263 1155

JPG Project Ref	Scale at A1	Date	Checked	Drawn
4848	1:10000	27.03.20	JDM	LSG

4848 - JPG - SW - XX - DR - D - 1450 S2 P01

Appendix B Topographic Survey


HAYCOCK & TODD
SITE SURVEY
BARNSLEY WEST.
Sheet 1 of 1
Datum
Date of Survey
December 2013
Survey Job No.
S7970

Appendix C Yorkshire Water Sewer Records

431603 : 406735	Map Name : SE3005NE	Title

Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
YorMap Advisor C ROBERTS
Contact Tel : 87 2582

Notes

Partial Key
Foul Sewer = F
Combined Sewer = C
Surface Water Sewer = SW
Trade Sewer = TD
Partially Separate = PS

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.

Date Req : 03/02/2021, 09:19:59
Date Gen : 03/02/2021, 09:21:07
Source : Sewer Network Enquiry

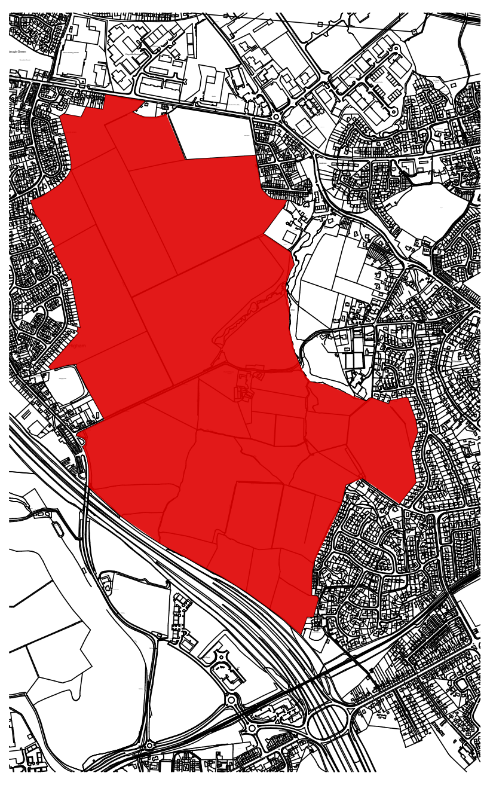
UPN: Undefined
Originator: C ROBERTS, YorMap, 87 2582

Appendix D Proposed Site Layout Plan

Native model: 19028-BBA-ZZ-ZZ-M3-A-0002_Site Model_Reshared_A

North

Key Plan



Site Area: 116.50 ha

Key

🟥	Local Plan Boundary
🟨	Private Garden
🟩	Public Landscape
☐	Highway - Roads & Side Walk
▨	Homezone
▨	Formal Play
🟫	Informal Play
➜	Existing Pedestrian Access
- ➜	Proposed Pedestrian Access
1	Commercial
2	School
3	Employment Zone

1:2500 0 20 40 60 80 100 120m

Note:

The drawing is based upon survey information provided by others, no guarantee of its accuracy can be given

rev	description	drawn	checked	date
P04	Consultation issue.	YF	TR	10/05/21
P03	Revised layout to suit proposed levels	AG	TR	11/09/19
P02	Consultation issue	AG	TR	12/08/19
P01	First issue	AM	TR	02/08/19

BOND BRYAN

The Church Studio Springvale Road Sheffield S10 1LP
t 0114 266 2040
e info@bondbryan.co.uk
w www.bondbryan.co.uk

Strata Sterling Barnsley West Ltd

Barnsley West Masterplan

strata STERLING CAPITOL

Proposed Site Plan

Originator project ref **19028**	Purpose of Issue **CONSULTATION**
Scale(s) **1:2500**	Status **S2 SUITABLE FOR INFORMATION**
Paper size **A1**	Revision **P04 PRELIMINARY**

project	originator	volume	level	type	role	number	status	revision
BWM	BBA	ZZ	XX	DR	A	1004	S2	P04

Appendix E LLFA Responses and Plans

4848 – Barnsley West Drainage Strategy Meeting with LLFA

Meeting Agenda

Date: 11.01.2021 **Time:** 13.00 – 15.00 **Location:** Teams

Attendees

Wayne Atkins – BMBC – LLFA

Jonathan Millar – JPG – Infrastructure Associate

Points of Discussion - **Notes from Meeting in Red**

1. Discuss and agree discharge rates and/or method of calculation. Assumed greenfield run off rates preliminary calculation provided for information. **Greenfield run off from the plots can be calculated using a recognised method i.e., ICPSUDs or IH124 for example.**

2. BMBC historic information on the existing drainage network i.e., issues with flooding and operational problem downstream off the site etc. We have walked the open section as far as the weirs near Redbrook Road. However downstream of this it is unclear where the network then goes to get into the river. We are assuming that it is culverted for some or most of the route. **BMBC confirmed that there are capacity and structural issues with the culvert downstream of Redbrook Road and where the culvert runs beneath Zenith Park Industrial Estate. BMBC confirmed that there is major flooding here and as such direct connection into the on-site water courses for the development runoff even at greenfield rates would not be acceptable. This was communicated to Strata in a pass a planning strategy meeting. As such the restricted discharge from the site would needs to connect into the open ditch section to the north east of Zenith Park Industrial Estate. BMBC accept that the section the from the new roundabout on BGR to the open ditch section would need to be culverted/piped.**

3. Can you provide details of any highway drainage infrastructure in the public highway road network within and around the site and advise on outfall locations, capacities, and any issues? **There is a known highway drain in Baugh Green Road located in the northern footway. This has limited capacity. The proposed roundabout is to connect into this as per previous discussion with BMBC. This ultimately discharges into the water course to the west of Aldi and then running approximately north and is culverted beyond Aldi. Here there is also major flooding beyond Aldi. As agreed, as part of the previous submission by JPG that drainage from the new roundabout on Higham Common Road to connect into the existing highway drain in this location.**

4. Discuss and agree principles and points of discharge? High level strategy drawing provided detailing proposed location for attenuation basins and anticipated flows. **Points of discharge refer to item 2 comments. The principle of attenuation basins for the storage of surface water is acceptable to BMBC. However, they have concerns over the siting of Basin F been next to and higher than the existing housing. They have requested for the developer to looks at relocating this basin further away from the boundary or relocating this somewhere else. Relocation of the basin to the northern end of the site may address this but you would then be adjacent to the new housing proposed adjacent to BGR. Design team to review.**

5. Discuss the proposed location of attenuation basins and exceedance design criteria. What designing criteria should we be working to in terms of volumes and exceedance events? **BMBC confirmed there have no knowledge of any official guidance national or local that we would be expected to adhere too. However, principle discussed for an exceedance event would be that the basins would be required to retain the 1 in 100 YSE plus 40% CC and a minimum free board of 0.500m would be required above this level. Water level above this would be allowed to discharge back into the existing water course system in a controlled manor. JPG to provide calculation to confirm what storm event could be held in the basin up to the top of free board. Some from of control to allow water to spill above this level would be required. Maybe short section of weir to limit run off. Discharge back into the existing water courses would been to avoid scour of the existing watercourse.**

6. Discuss and agree how exceedance flows would be dealt with from the development. **See comment in item 6 above.**

7. Discuss and agree requirements for attenuation basins and other SuDs features if not to SuDs manual criteria? **Any SuDs features should be design as a minimum to SuDs manual criteria and requirements.**

8. Discuss options for adoption/maintenance of the basins and other SuDs features. Infiltration is not going to be feasible. Potential issues with YW taking these as the design criteria is onerous and as such developer would like to try and avoid this route if possible. Would the likes of BMBC, or private management company or some other body like a wildlife trust for example be acceptable to be responsible for these subject to negotiations? Incorporation of SuDs should be first option, but issue as always is who will maintain these. **BMBC confirmed that they would not take on the operation and maintenance of the basins. There acknowledged the issues we would likely have with YW and this was also discussed in the planning strategy meeting which YW attended who were non-committal on the adoption of SuDs in general even though this is now part of the CODES guidance document. BMBC do not like private management companies due to past issues on other schemes. But is there was no other option then this route would be acceptable. However, they would need to see from the developer how this would work, how this would monitor and that maintenance etc was been carried out and who would ultimately be liable if the management company went bust for example. BMBC are very nerves because of the location of basin F and adjoining existing houses. If the pond overtopped and the cause was due to lack of maintenance where would everyone stand in terms of liability?**

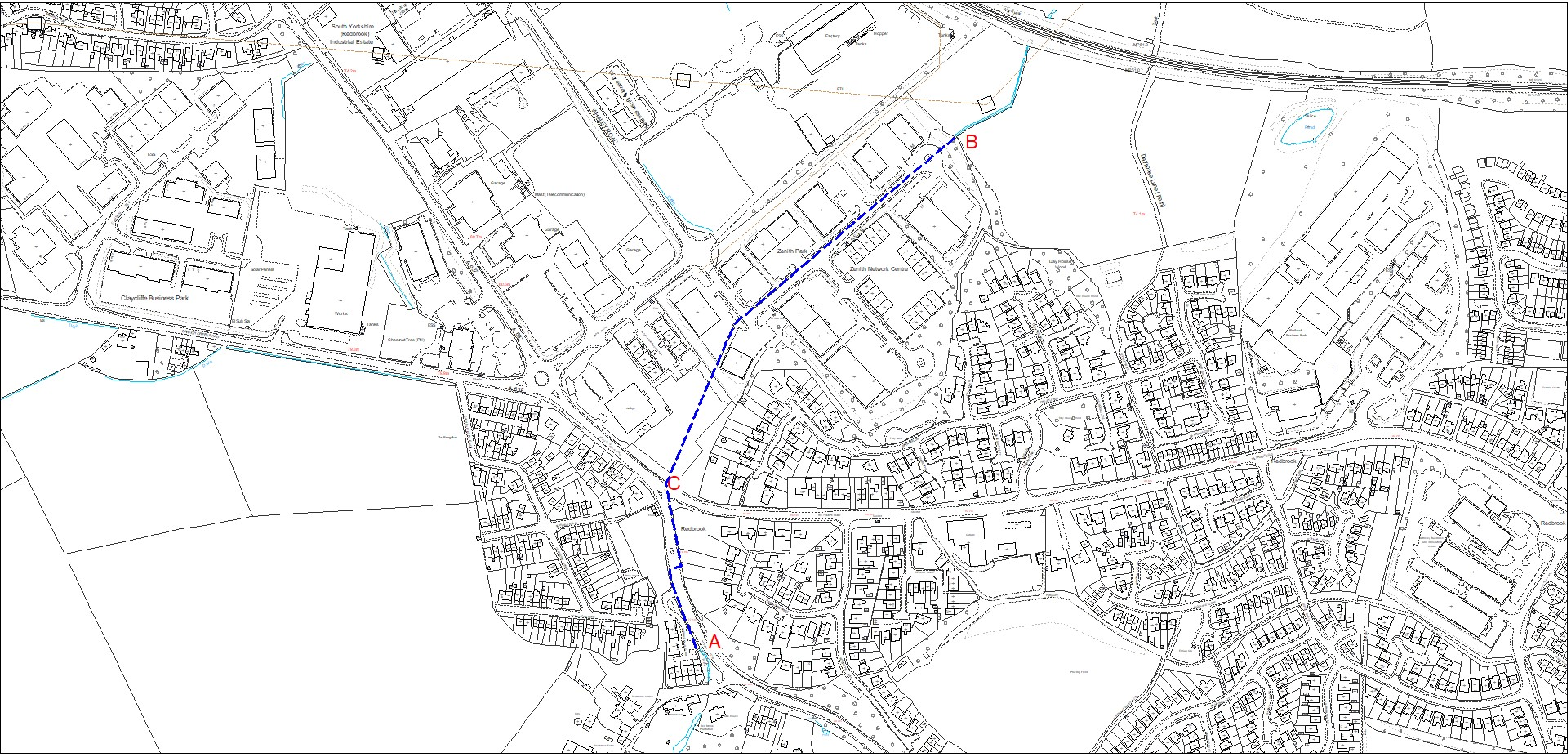
9. Discuss and agree principles for dealing with the runoff from existing land drainage, we know there are some springs on the site and others may be located during the earthworks (discharge rates and methodology for dealing with these etc.). **BMBC confirmed that the principle of redirecting any existing land drainage what needed to be dealt with after the earthworks and connecting this back into the existing watercourse was acceptable. Run off from this would unrestricted via suitable SuDs features i.e., ditches and filter drains etc. However, to minimise scour the existing land drainage run off should be discharged where possible evenly into the water course. A large outfall collecting big areas would not be acceptable.**

10. Discuss and agree principles for dealing with the runoff from the landscaped areas and large embankments which will be created as part of the earthworks exercise (discharge rates and methodology for dealing with this). **BMBC confirmed that the principle of redirecting any runoff generated from the proposed banks and connecting this back into the existing watercourse was acceptable. Run off from this would be restricted to greenfield run off or equivalent run off from embankments. BMBC said that they recall they used to be a calculation in DMRB to work out run off from slopes and embankments. JPG to review this and advise. It is likely that item 9 and 10 would be a combined system in some of all the locations.**

11. Discuss and agree principles for dealing with temporary drainage once the development platforms have been formed and prior to any houses or commercial buildings been constructed. **BMBC agreed that control of run off from the development platforms prior to construction of the dwellings and commercial units needed to be considered. Whether it was possible to produce a design to cover the entire site at this stage was debatable, and it was likely this would be a moving target. However, principles could be agreed on methodology what could be implemented by the contractor and to suit their phasing and programme. Things like mounds, ditches, filter drains to direct and collect run off and stilling/silt basins, silt fencing around stockpiles to control silt and bunding to fuel storage areas etc could be incorporated up stream of any discharge into the basins to control run off. The two main objectives would be to minimise silt getting into the attenuation basins and controlling the runoff as best possible.**

12. Any other information that we need to consider and not mentioned in the above points. **Non discussed.**

13. AOB. **Non.**


South Yorkshire (Redbrook) Industrial Estate
Factory
Hopper
Tanks
ESS
ETL
Garage
Mast (Telecommunication)
WHALEY ROAD
Tanks
Works
Solar Panels
Claycliffe Business Park
El Sub Sta
Chestnut Tree (PH)
A 635
A 628
74.2m
60.7m
60.6m
79.0m
79.0m
Zenith Park
Zenith Network Centre
B
Dyehouse Lane (Path)
Pond
Day House Wood
74.1m
MP 51.0
Redbrook Business Park
C
Redbrook
A
Playing Field
Redbrook

Jonathan Millar

From:	Atkins , Wayne (ASSET MANAGER) <WayneAtkins@barnsley.gov.uk>
Sent:	19 February 2021 09:46
To:	Jonathan Millar
Subject:	RE: RE 4848 - Barnsley West, SW Drainage discharge points and off site drainage
Attachments:	Redbrook Plan.BMP

Hi Jonathan,

My apologies for not getting back to you sooner, things have been rather hectic at this end.

I understand your issues, I have had a look at the proposals. I think we could compromise on this one, most of the flooding issues have been associated with the culvert between point A and point C on the attached plan. I would look more favourably on the development discharging into this watercourse if point C was used as the outfall. There is an existing manhole on the culvert at point C. If this option is to be explored then I would require a CCTV survey of the culvert from point C to point B to be carried out at the developer's expense so that we can assess its condition and agree any necessary repairs or up sizing for existing assets and any developer contributions. I am aware of Manholes on the culvert between point C and point B, however I am unsure of their exact location, however, I would assume they are in the access road through the Industrial Estate.

If your client is agreeable to this please let me know. If you wish to discuss then please contact me, my mobile number is 07748181374.

Regards

Wayne Atkins F.I.H.E.
Principal Engineer – Highways Asset Management
Environment & Transport
Place Directorate
Barnsley Metropolitan Borough Council

E-mail: wayneatkins@barnsley.gov.uk

From: Jonathan Millar <Jonathan.Millar@jpg.group>
Sent: 12 February 2021 07:41
To: Atkins , Wayne (ASSET MANAGER) <WayneAtkins@barnsley.gov.uk>
Subject: RE 4848 - Barnsley West, SW Drainage discharge points and off site drainage

Wayne,

We had our discussion on the 11th January 2021 and sent through some note for you to review on the 13th January 2021. Don't seem to have had a response on the email dated the 13th.

I then sent you a further an email on the 29th January 2021 and subsequently tried to call you on 9th February 2021 on the number I have for you and left a message.

We need to have a further dialog with you with regards to the surface water discharge locations. Please could you get back to me on the above two emails.

Regards,

Jonathan Millar
Associate

✉ Jonathan.Millar@jpg.group
07599 535381 ☎0113 2631155
5 John Charles Way, Leeds LS12 6QA

Appendix F YW Responses

Mr J Millar
JPG Consulting Engineers
5 John Charles Way
Leeds
LS12 6QA
jonathan.millar@jpg.group

Yorkshire Water Services
Developer Services
Pre-Development Team
PO BOX 52
Bradford
BD3 7AY

Tel: 0345 120 8482
Fax:

Email:
technical.sewerage@yorkshirewater.co.uk

For telephone enquiries ring:
Chris Roberts on 0345 120 8482

Your Ref:
Our Ref: X001148

3rd February 2021

Dear Mr Millar,

Land Between Baugh Green & Higham Common, Barnsley, S75 2RW - Pre-Planning Sewerage Enquiry U111900 (MIXED)

Thank you for your recent enquiry. Our charge of £157.00 will be added to your account with us, reference JPG027. 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:

Existing Infrastructure

The local Waste Water Treatment Works (WWTW) is Lundwood. It is understood that this WWTW may only have limited spare capacity, if any, available. We have contacted the respective treatment team for more information regarding the impact of proposed development and will contact you when an assessment has been made.

Foul Water

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.

The closest practicable point of discharge for foul will be the 600 mm combined public sewer in Baugh Green Road, but at present there is no spare capacity available to accept the foul discharge from all the proposed development. Further investigation in the form of modelling, at the developers cost, will be required to understand the impact on the public sewer network along with a build programme of the development. Please contact us on the above number to discuss this further.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

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.

It is understood that all surface water will discharge to watercourses located on the site. This appears to be the obvious place for surface water disposal (if SuDS are not viable). Please note Yorkshire Water cannot provide plans of culverted watercourses or highway drains. To obtain plans please contact the Lead Local Flood Authority for more details.

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.

Surface water run-off from communal parking (greater than 800 sq metres or more than 50 car parking spaces) and hardstanding must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge to the public sewer network. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator. It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

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.

Under the provisions of section 111 of the Water Industry Act 1991 it is unlawful to pass into any public sewer (or into any drain or private sewer communicating with the public sewer network) any items likely to cause damage to the public sewer network interfere with the free flow of its contents or affect the treatment and disposal of its contents. Amongst other things this includes fat, oil, nappies, bandages, syringes, medicines, sanitary towels and incontinence pants. Contravention of the provisions of section 111 is a criminal offence.

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.

The site is within an area that may be affected by river, coastal or estuarine flooding. We would advise you to contact the Environment Agency for details.

Yorkshire Water’s Trade Effluent team must be consulted in respect of any proposed trade effluent discharge to the public sewer.

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
Development Services Technician

Jonathan Millar

From:	Wendy Mullaney <wendy.mullaney@yorkshirewater.co.uk>
Sent:	23 February 2021 12:42
To:	Jonathan Millar
Subject:	Pre Design Discussion Meeting for Barnsley West, land between Baugh Green and Highan Common

S104 (Codes) - 1b. Pre Design Discussion Meeting Notes (April 20)

Pre Design Discussion Meeting Notes

Please find enclosed a record of the discussions held in relation to your design proposals for prospectively adoptable sewers and associated assets.

This meeting has been held in accordance with the Design and Construction Guidance, Local Practices and Technical Standards contained within the Code for Adoption (2020).

Reference Number	U133060
Site Name	Barnsley West, land between Baugh Green and Highan Common
Site Address	Barnsley West, land between Baugh Green and Highan Common
Developer Name / Company	
Designer Name / Company	Jonathon Millar
Yorkshire Water Adoptions Technician	Wendy Mullaney
Date / Time / Location of Meeting	22/2/21 2pm

Meeting Attendees

- Jonathon Millar
- Wendy Mullaney

Yorkshire Water Response

Design Acceptance Comments	Yorkshire Water Comments
	We will have another meeting when we have a more detailed site design.
	The 225mm foul sewers should not be laid flatter than 1 in 150
	Surface water storage to be in adoptable detention basins subject to the design criteria stipulated in the Ciria SuDS Manual. With the maximum water depth off 1m.
	YW will not allow a management company to maintain the basins.
Flow control MH design main points	• A detailed scaled drawing is required. • Minimum diameter of 1800mm. • Double twin cover with a hinged fall arrest grille (may need to be upsized to if the flow control unit is large than 1200mm. • No ladders/step irons required (winch access only). • 450mm sump from edge of the slope to the front of the unit.

Description of Prospective Adoptable Network	Yorkshire Water Comments
Gravity Network	Foul and surface water
Pumping Stations	Potentially 2 foul pump stations
Flow control devices	yes
Headwall / Inlet / Outlet Structures	yes
Storage Tank	no
SUDS Components	Detention basins
Access Requirements	Tanker access to within 5m of the flow controls and tanker access to park on the pump station compound.
Private storage facilities	n/a
Any other site specific information	

Legal Requirements (necessary to facilitate development)	Yorkshire Water Comments
	A land transfer will be required for the detention basins and the pump station.

Point of Connection	Yorkshire Water Comments
	A S106 sewer connection application will be required.

If you have any queries regarding the content of these meeting notes, please get in touch. Otherwise, we look forward to receiving your S104 application in due course.

If you feel you would benefit from a further pre design meeting to discuss your proposals before submitting your S104 application, please let us know.

Kind regards

Adoptions Technician
Sewer Adoption, Diversion and Requisition Team
Developer Services

Wendy Mullaney
Sewer Adoption & Diversion Senior Engineer
Developer Services (Customer Experience)

07790 616925
yorkshirewater.com/developers

Yorkshire Water customers can get in touch for free via live chat or by requesting a free call back at https://www.yorkshirewater.com
Save money on your utility bills and help conserve water by requesting a free water saving pack https://www.yorkshirewater.com/savewater

Hi Jonathan,

Apologies for the delay in responding but there has been a change to the process since my last email.

The closest practicable point of discharge for foul will be the 600 mm combined public sewer in Baugh Green Road, but at present it does not have adequate capacity available to accommodate the anticipated foul water discharge from the proposed site. Subject to the submission of a Formal Planning Application Yorkshire Water will look to carry out a feasibility study to determine, any available capacity in the public sewer network, together with timescales for any potential upgrading works required. All cost will be borne by Yorkshire Water up-front and recouped via the Infrastructure Charges at a later date.

Please when submitting your formal planning state you wish to connect to the 600 mm combined public sewer in Baugh Green Road along with your required pumped rate along with your build schedule and start date.

Kind Regards

(Embedded image moved to file: pic12994.gif)

*** Please note, all correspondence must be sent to technical.sewerage@yorkshirewater.co.uk and will be responded to within 10 working days ***

|------------>

| From: |

|------------>

>--|

|Jonathan Millar <Jonathan.Millar@jpg.group>
|

>--|

|------------>

| To: |

|------------>

>---
----------------|

|Technical Sewerage@NotesMail
|

>---
----------------|

|----------->

| Cc: |

|----------->

>---
----------------|

|Chris Roberts/Water Business Unit/YWS/Yorkshire Water@O365
|

>---
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|----------->

| Date: |

|----------->

>---
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|08/04/2021 09:25 |

>---
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|----------->

| Subject: |

|----------->

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|RE: 4848 - Land Between Baugh Green & Higham Common, Barnsley, S75 2RW - Pre-Planning Sewerage Enquiry U111900 (MIXED) |

>---
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VR 516208440010000

08/04/2021

Chris,

Further to your email below and pre planning advice YW reference U111900 or X001148 our client would like to instruct YW to carry out the capacity check on the foul water network. Please see below

On behalf of Strata Sterling Barnsley West Limited, please take this e-mail as an instruction to proceed with the agreed scope of service and fee attached.

Please note that on completion of your services, your invoice should be made out to Strata Sterling Barnsley West Limited address and sent to Rex Procter and Partners for processing, which occurs at the end of each calendar month:

Fee Proposal: £2,000 (ex VAT). Please confirm as soon as possible if this fee will be more then the suggested £2,000 + vat so that we can inform our client of any additional costs.

Address your invoice should be made out to:

Strata Sterling Barnsley West Limited

Quay Point

Lakeside

Doncaster

United Kingdom

DN4 5PL

E-mail Address your invoice should be sent to for processing; r.owen@rpp.co.uk

Please confirm what is required form our client to enable you to carry out the capacity study.

Please confirm receipt of this e-mail.

Regards,

Jonathan Millar

Associate

Jonathan.Millar@jpg.group

07599 535381

0113 2631155

5 John Charles Way, Leeds LS12 6QA

Appendix G Greenfield Runoff Calculations

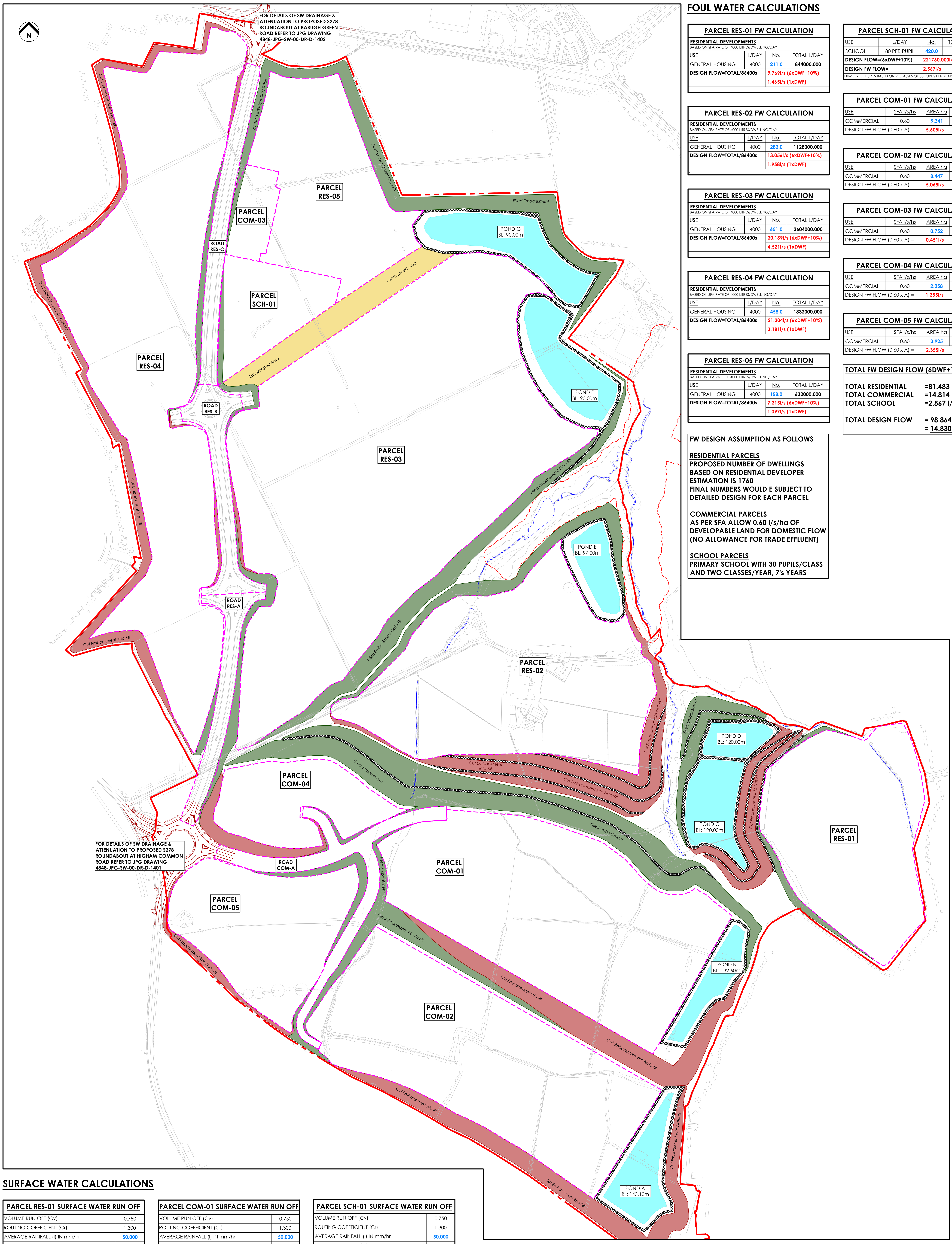
ICP SUDS Mean Annual Flood

```
                                Input

Return Period (years)      1           Soil     0.450
            Area (ha)  1.000          Urban     0.000
            SAAR (mm)    636  Region Number  Region 3

                           Results   l/s

                         QBAR Rural  3.9
                         QBAR Urban  3.9

                            Q1 year  3.4

                            Q1 year  3.4
                          Q30 years  6.9
                         Q100 years  8.2
```

IH 124 Mean Annual Flood

```
                         Input

Return Period (years)       1           Soil     0.450
            Area (ha)  50.000          Urban     0.000
            SAAR (mm)     636  Region Number  Region 3

                    Results     l/s

                  QBAR Rural  196.3
                  QBAR Urban  196.3

                     Q1 year  168.9

                     Q1 year  168.9
                    Q2 years  185.3
                    Q5 years  245.4
                   Q10 years  284.7
                   Q20 years  322.4
                   Q25 years  335.0
                   Q30 years  345.1
                   Q50 years  371.9
                  Q100 years  408.4
                  Q200 years  463.4
                  Q250 years  481.0
                 Q1000 years  596.9
```

Appendix H Preliminary Drainage Strategy Calculations



FOR DETAILS OF SW DRAINAGE & ATTENUATION TO PROPOSED S278 ROUNDABOUT AT BARUGH GREEN ROAD REFER TO JPG DRAWING 4848-JPG-SW-00-DR-D-1402

FOR DETAILS OF SW DRAINAGE & ATTENUATION TO PROPOSED S278 ROUNDABOUT AT HIGHAM COMMON ROAD REFER TO JPG DRAWING 4848-JPG-SW-00-DR-D-1401

FOUL WATER CALCULATIONS

PARCEL RES-01 FW CALCULATION

RESIDENTIAL DEVELOPMENTS
BASED ON SFA RATE OF 4000 LITRES/DWELLING/DAY

USE	L/DAY	No.	TOTAL L/DAY
GENERAL HOUSING	4000	211.0	844000.000
DESIGN FLOW=TOTAL/86400s		9.769l/s (6xDWF+10%)	
		1.465l/s (1xDWF)	
-			

PARCEL RES-02 FW CALCULATION

RESIDENTIAL DEVELOPMENTS
BASED ON SFA RATE OF 4000 LITRES/DWELLING/DAY

USE	L/DAY	No.	TOTAL L/DAY
GENERAL HOUSING	4000	282.0	1128000.000
DESIGN FLOW=TOTAL/86400s		13.056l/s (6xDWF+10%)	
		1.958l/s (1xDWF)	
-			

PARCEL RES-03 FW CALCULATION

RESIDENTIAL DEVELOPMENTS
BASED ON SFA RATE OF 4000 LITRES/DWELLING/DAY

USE	L/DAY	No.	TOTAL L/DAY
GENERAL HOUSING	4000	651.0	2604000.000
DESIGN FLOW=TOTAL/86400s		30.139l/s (6xDWF+10%)	
		4.521l/s (1xDWF)	
-			

PARCEL RES-04 FW CALCULATION

RESIDENTIAL DEVELOPMENTS
BASED ON SFA RATE OF 4000 LITRES/DWELLING/DAY

USE	L/DAY	No.	TOTAL L/DAY
GENERAL HOUSING	4000	458.0	1832000.000
DESIGN FLOW=TOTAL/86400s		21.204l/s (6xDWF+10%)	
		3.181l/s (1xDWF)	
-			

PARCEL RES-05 FW CALCULATION

RESIDENTIAL DEVELOPMENTS
BASED ON SFA RATE OF 4000 LITRES/DWELLING/DAY

USE	L/DAY	No.	TOTAL L/DAY
GENERAL HOUSING	4000	158.0	632000.000
DESIGN FLOW=TOTAL/86400s		7.315l/s (6xDWF+10%)	
		1.097l/s (1xDWF)	
-			

FW DESIGN ASSUMPTION AS FOLLOWS

RESIDENTIAL PARCELS
PROPOSED NUMBER OF DWELLINGS BASED ON RESIDENTIAL DEVELOPER ESTIMATION IS 1760
FINAL NUMBERS WOULD E SUBJECT TO DETAILED DESIGN FOR EACH PARCEL

COMMERCIAL PARCELS
AS PER SFA ALLOW 0.60 l/s/ha OF DEVELOPABLE LAND FOR DOMESTIC FLOW (NO ALLOWANCE FOR TRADE EFFLUENT)

SCHOOL PARCELS
PRIMARY SCHOOL WITH 30 PUPILS/CLASS AND TWO CLASSES/YEAR, 7's YEARS

PARCEL SCH-01 FW CALCULATION

USE	L/DAY	No.	TOTAL L/DAY
SCHOOL	80 PER PUPIL	420.0	33600.000
DESIGN FLOW=(6xDWF+10%)		221760.000l/day	
DESIGN FW FLOW=		2.567l/s	

NUMBER OF PUPILS BASED ON 2 CLASSES OF 30 PUPILS PER YEAR FOR 7 YEARS.

PARCEL COM-01 FW CALCULATION

USE	SFA l/s/hs	AREA ha	
COMMERCIAL	0.60	9.341	
DESIGN FW FLOW (0.60 x A) =		5.605l/s	

PARCEL COM-02 FW CALCULATION

USE	SFA l/s/hs	AREA ha	
COMMERCIAL	0.60	8.447	
DESIGN FW FLOW (0.60 x A) =		5.068l/s	

PARCEL COM-03 FW CALCULATION

USE	SFA l/s/hs	AREA ha	
COMMERCIAL	0.60	0.752	
DESIGN FW FLOW (0.60 x A) =		0.451l/s	

PARCEL COM-04 FW CALCULATION

USE	SFA l/s/hs	AREA ha	
COMMERCIAL	0.60	2.258	
DESIGN FW FLOW (0.60 x A) =		1.355l/s	

PARCEL COM-05 FW CALCULATION

USE	SFA l/s/hs	AREA ha	
COMMERCIAL	0.60	3.925	
DESIGN FW FLOW (0.60 x A) =		2.355l/s	

TOTAL FW DESIGN FLOW (6DWF+10%)

TOTAL RESIDENTIAL	**=81.483 l/s**
TOTAL COMMERCIAL	**=14.814 l/s**
TOTAL SCHOOL	**=2.567 l/s**
TOTAL DESIGN FLOW	**= 98.864 l/s (6DWF+10%)** **= 14.830 l/s (1DWF)**

DO NOT SCALE

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP IS TO COMPLY WITH JPG CONSULTANTS STANDARD SPECIFICATION & ALL RELEVANT BRITISH & EUROPEAN STANDARDS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, M & E CONSULTANTS AND JPG CONSULTANTS DRAWINGS.
3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

DRAINAGE KEY

PROPOSED SITE BOUNDARY	▬ ▪ ▪ ▬
DEVELOPMENT PARCEL BOUNDARIES	- - - - -

DWELLING NUMBERS TO BE CONFIRMED AS PART OF THE DETAILED PLANNING AND DETAILED DESIGN PROCESS BY THE RESIDENTIAL DEVELOPER

DETAILS OF THE SCHOOL ARE TO BE CONFIRMED BY THE LOCAL AUTHORITY

DETAILS OF THE LOCAL CENTRE ARE TO BE CONFIRMED BY THE LOCAL AUTHORITY

FW POINTS OF DISCHARGE AND DISCHARGE RATES INTO THE EXISTING FW PUBLIC SEWER SYSTEM ARE TO BE AGREED WITH YW.
THIS MAY INVOLVE THE NEED FOR A NETWORK CAPACITY STUDY, OFFSITE SEWER UPGRADING OR NEW OFF SITE SEWERS AND UPGRADING OF TREATMENT WORKS ALL TO BE DETERMINED AS PART OFF THE DETAILED DESIGN

LEVELS AND DETAILS OF THE EXISTING SEWER NETWORK ARE TO BE SURVEYED TO CONFIRM COVER AND INVERT LEVELS AND CONDITION OF THE RECEIVING SEWERS

SURFACE WATER CALCULATIONS

PARCEL RES-01 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	3.788
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	513.369l/s

Impermeable area based on 60% of the total plot area refer to table below

PARCEL RES-02 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	5.066
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	686.570l/s

Impermeable area based on 60% of the total plot area refer to table below

PARCEL RES-03 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	11.797
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	1598.788l/s

Impermeable area based on 60% of the total plot area refer to table below

PARCEL RES-04 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	8.227
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	1114.964l/s

Impermeable area based on 60% of the total plot area refer to table below

PARCEL RES-05 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	2.772
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	375.675l/s

Impermeable area based on 60% of the total plot area refer to table below

PARCEL COM-01 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	8.407
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	1139.359l/s

Impermeable area based on 90% of the total plot area refer to table below

PARCEL COM-02 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	7.602
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	1030.261l/s

Impermeable area based on 90% of the total plot area refer to table below

PARCEL COM-03 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	0.677
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	91.750l/s

Impermeable area based on 90% of the total plot area refer to table below

PARCEL COM-04 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	2.032
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	275.387l/s

Impermeable area based on 90% of the total plot area refer to table below

PARCEL COM-05 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	3.533
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	478.810l/s

Impermeable area based on 90% of the total plot area refer to table below

PARCEL SCH-01 SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	0.919
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	124.547l/s

Impermeable area based on 50% of the total plot area refer to table below

ROAD COM-A SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	0.421
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	57.056l/s

Impermeable area based on 90% of the total plot area refer to table below

ROAD RES-A SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	0.908
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	123.057l/s

Impermeable area based on 90% of the total plot area refer to table below

ROAD RES-B SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	1.084
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	146.909l/s

Impermeable area based on 90% of the total plot area refer to table below

ROAD RES-C SURFACE WATER RUN OFF

VOLUME RUN OFF (Cv)	0.750
ROUTING COEFFICIENT (Cr)	1.300
AVERAGE RAINFALL (I) IN mm/hr	50.000
AREA IN HECTARES (A)	1.080
FLOW RATE (Q) = 2.78 x Cv x Cr x I x A	146.367l/s

Impermeable area based on 50% of the total plot area refer to table below

PARCEL REF.	TOTAL AREA (Ha)	IMP. AREA (Ha)	UNRESTRICTED DISCHSRGE (l/s)	RESTRICTED DISCHSRGE (l/s)	SW ATTENUATION VOL. 1 IN 30 (m3)	SW ATTENUATION VOL. 1 IN 100 + CC (m3)
RES-01	6.313	3.788	SEE CALCULATION	14.773	1640.0	3361.0
RES-02	8.444	5.066	SEE CALCULATION	19.757	2193.0	4494.0
RES-03	19.661	11.797	SEE CALCULATION	46.008	5110.0	10471.0
RES-04	13.712	8.227	SEE CALCULATION	32.085	3563.0	7302.0
RES-05	4.620	2.772	SEE CALCULATION	10.811	1201.0	2461.0
IMPERMEABLE AREA BASED ON 60% OF THE TOTAL PARCEL AREA						
RESTRICTED DISCHARGE BASED ON 3.90 l/s/ha CALCULATED USING ICP-SUDS METHOD IN MICRO DRAINAGE DESIGN SOFTWARE						
ALLOWANCE FOR CLIMATE CHANGE 40%						

RESIDENTIAL PARCELS DISCHARGE RATES AND VOLUMES

PARCEL REF.	TOTAL AREA (Ha)	IMP. AREA (Ha)	UNRESTRICTED DISCHSRGE (l/s)	RESTRICTED DISCHSRGE (l/s)	SW ATTENUATION VOL. 1 IN 30 (m3)	SW ATTENUATION VOL. 1 IN 100 + CC (m3)
COM-01	9.341	8.407	SEE CALCULATION	32.787	3641.0	7461.0
COM-02	8.447	7.602	SEE CALCULATION	29.648	3294.0	6750.0
COM-03	0.752	0.677	SEE CALCULATION	2.640	295.0	603.0
COM-04	2.258	2.032	SEE CALCULATION	7.925	881.0	1805.0
COM-05	3.925	3.533	SEE CALCULATION	13.779	1529.0	3135.0
IMPERMEABLE AREA BASED ON 90% OF THE TOTAL PARCEL AREA						
RESTRICTED DISCHARGE BASED ON 3.90 l/s/ha CALCULATED USING ICP-SUDS METHOD IN MICRO DRAINAGE DESIGN SOFTWARE						
ALLOWANCE FOR CLIMATE CHANGE 40%						

COMMERCIAL PARCELS DISCHARGE RATES AND VOLUMES

PARCEL REF.	TOTAL AREA (Ha)	IMP. AREA (Ha)	UNRESTRICTED DISCHSRGE (l/s)	RESTRICTED DISCHSRGE (l/s)	SW ATTENUATION VOL. 1 IN 30 (m3)	SW ATTENUATION VOL. 1 IN 100 + CC (m3)
SCH-01	1.837	0.919	SEE CALCULATION	3.584	397.0	815.0
IMPERMEABLE AREA BASED ON 50% OF THE TOTAL PARCEL AREA						
RESTRICTED DISCHARGE BASED ON 3.90 l/s/ha CALCULATED USING ICP-SUDS METHOD IN MICRO DRAINAGE DESIGN SOFTWARE						
ALLOWANCE FOR CLIMATE CHANGE 40%						

SCHOOL PARCELS DISCHARGE RATES AND VOLUMES

PARCEL REF.	TOTAL AREA (Ha)	IMP. AREA (Ha)	UNRESTRICTED DISCHSRGE (l/s)	RESTRICTED DISCHSRGE (l/s)	SW ATTENUATION VOL. 1 IN 30 (m3)	SW ATTENUATION VOL. 1 IN 100 + CC (m3)
RES-A	0.908	0.908	SEE CALCULATION	3.541	395.0	808.0
RES-B	1.084	1.084	SEE CALCULATION	4.228	470.0	964.0
RES-C	1.080	1.080	SEE CALCULATION	4.212	468.0	959.0
COM-A	1.286	1.286	SEE CALCULATION	5.015	558.0	1142.0
IMPERMEABLE AREA BASED ON 100% OF THE TOTAL AREA						
RESTRICTED DISCHARGE BASED ON 3.90 l/s/ha CALCULATED USING ICP-SUDS METHOD IN MICRO DRAINAGE DESIGN SOFTWARE						
ALLOWANCE FOR CLIMATE CHANGE 40%						

ROADS DISCHARGE RATES AND VOLUMES

ATTENUATION VOLUMES ARE BASED ON THE FOLLOWING ASSUMPTIONS

RESIDENTIAL PARCELS
ASSUMED 60% MAX. IMPERMEABLE AREA OF TOTAL DEVELOPMENT PARCEL AREA
ALLOWANCE FOR CLIMATE CHANGE 40%

COMMERCIAL PARCELS
ASSUMED 90% MAX. IMPERMEABLE AREA OF TOTAL DEVELOPMENT PARCEL AREA
ALLOWANCE FOR CLIMATE CHANGE 40%

SCHOOL PARCELS
ASSUMED 50% MAX. IMPERMEABLE AREA OF TOTAL DEVELOPMENT PARCEL AREA
ALLOWANCE FOR CLIMATE CHANGE 40%

POINTS OF DISCHARGE FOR SW RUN OFF INTO THE EXISTING WATER COURSE/LAND DRAINAGE SYSTEM & DISCHARGE RATES ARE TO BE AGREED WITH THE LLFA
RATES USED ARE BASED ON CALCULATED GREENFIELD RATES USING RECOGNISED METHODS TO CALCULATE THE GREENFIELD RATES
CALCULATED RATE 3.900 l/s/ha
TOTAL RESTRICTED DISCHARGE TO BE 233.404 l/s BASED ON THE PARAMETER AND TABLES ON THIS DRAWING (SHOULD THE AREAS CHANGE THEN THE DISCHARGE RATE WOULD BE AMENDED ACCORDINGLY TO SUIT BASED ON THE AGREED GREENFIELD RATES).

REV	DESCRIPTION	DATE	BY
P03	COMMERCIAL DESIGN VOLUMES AND DISCHARGE RATES UPDATED IN LINE WITH LATEST LAYOUT	21.05.2021	JDM
P02	DWELLING NUMBERS UPDATED IN LINE WITH HOUSE BUILDERS ESTIMATIONS	15.01.2021	JDM
P01	INITIAL ISSUE	01.05.2020	JDM

Project
BARNSLEY WEST

Drawing Title
FW & SW DRAINAGE STRATEGY CALCULATIONS PLAN

WORK IN PROGRESS

Architect

JPG
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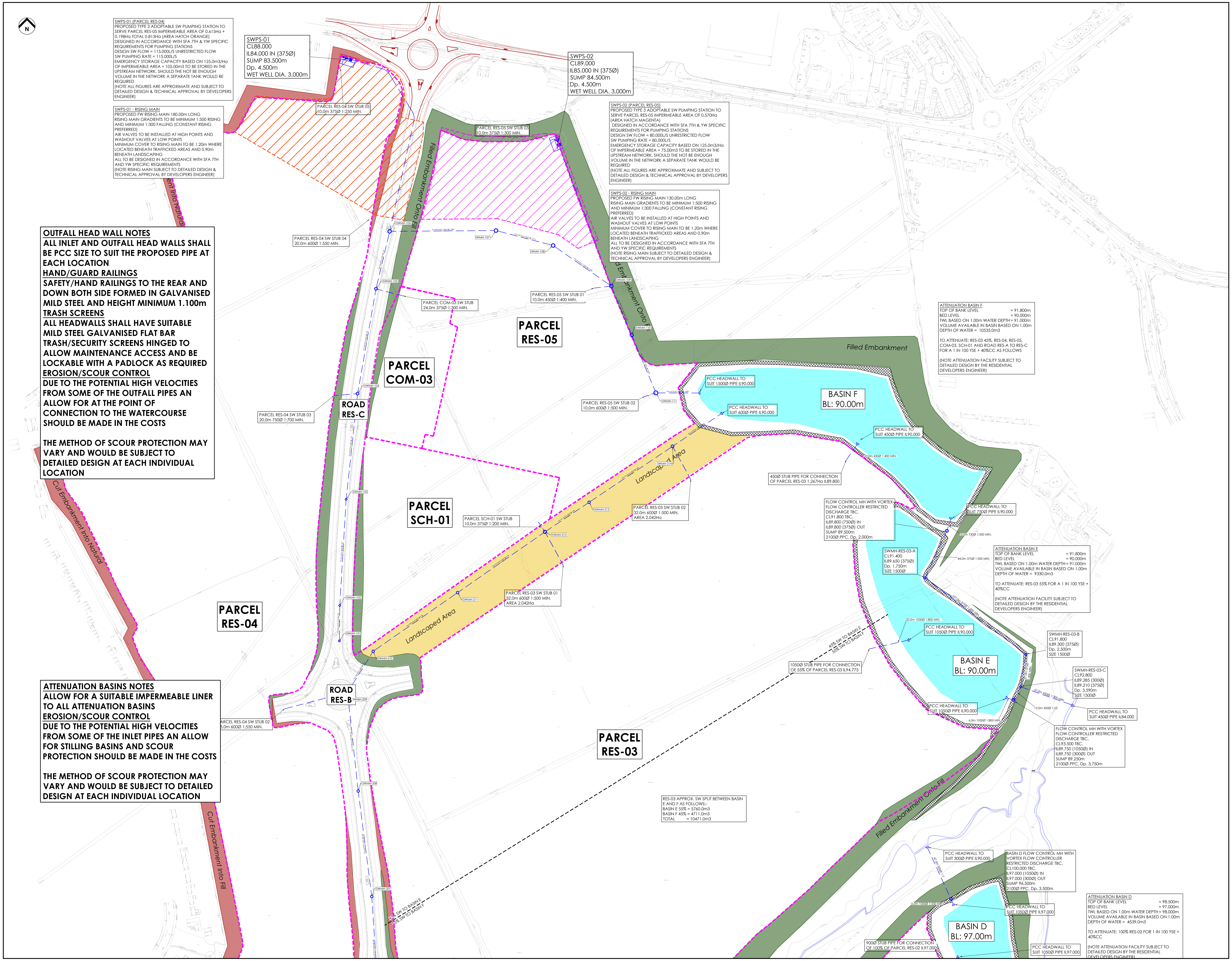
Leeds London Birmingham 0113 263 1155

JPG Project Ref	Scale at A0	Date	Checked	Drawn
4848	1:1000	APR 2020	RMR	JDM

4848- JPG - SW - 00 - DR - D - 1410	S0	P03

Appendix I Preliminary SW Drainage Calculations



SWPS-01 (PARCEL RES-04)
PROPOSED TYPE 3 ADOPTABLE SW PUMPING STATION TO SERVE PARCEL RES-05 IMPERMEABLE AREA OF 0.615Ha + 0.198Ha TOTAL 0.813Ha (AREA HATCH ORANGE)
DESIGNED IN ACCORDANCE WITH SFA 7TH & YW SPECIFIC REQUIREMENTS FOR PUMPING STATIONS
DESIGN SW FLOW = 115.000L/S UNRESTRICTED FLOW
SW PUMPING RATE = 115.000L/S
EMERGENCY STORAGE CAPACITY BASED ON 125.0m3/Ha OF IMPERMEABLE AREA = 105.00m3 TO BE STORED IN THE UPSTREAM NETWORK. SHOULD THE NOT BE ENOUGH VOLUME IN THE NETWORK A SEPARATE TANK WOULD BE REQUIRED
(NOTE ALL FIGURES ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN & TECHNICAL APPROVAL BY DEVELOPERS ENGINEER)

SWPS-01 - RISING MAIN
PROPOSED FW RISING MAIN 180.00m LONG
RISING MAIN GRADIENTS TO BE MINIMUM 1:500 RISING AND MINIMUM 1:300 FALLING (CONSTANT RISING PREFERRED)
AIR VALVES TO BE INSTALLED AT HIGH POINTS AND WASHOUT VALVES AT LOW POINTS
MINIMUM COVER TO RISING MAIN TO BE 1.20m WHERE LOCATED BENEATH TRAFFICKED AREAS AND 0.90m BENEATH LANDSCAPING
ALL TO BE DESIGNED IN ACCORDANCE WITH SFA 7TH AND YW SPECIFIC REQUIREMENTS
(NOTE RISING MAIN SUBJECT TO DETAILED DESIGN & TECHNICAL APPROVAL BY DEVELOPERS ENGINEER)

SWPS-02 (PARCEL RES-05)
PROPOSED TYPE 3 ADOPTABLE SW PUMPING STATION TO SERVE PARCEL RES-05 IMPERMEABLE AREA OF 0.570Ha (AREA HATCH MAGENTA)
DESIGNED IN ACCORDANCE WITH SFA 7TH & YW SPECIFIC REQUIREMENTS FOR PUMPING STATIONS
DESIGN SW FLOW = 80.000L/S UNRESTRICTED FLOW
SW PUMPING RATE = 80.000L/S
EMERGENCY STORAGE CAPACITY BASED ON 125.0m3/Ha OF IMPERMEABLE AREA = 75.00m3 TO BE STORED IN THE UPSTREAM NETWORK. SHOULD THE NOT BE ENOUGH VOLUME IN THE NETWORK A SEPARATE TANK WOULD BE REQUIRED
(NOTE ALL FIGURES ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN & TECHNICAL APPROVAL BY DEVELOPERS ENGINEER)

SWPS-02 - RISING MAIN
PROPOSED FW RISING MAIN 130.00m LONG
RISING MAIN GRADIENTS TO BE MINIMUM 1:500 RISING AND MINIMUM 1:300 FALLING (CONSTANT RISING PREFERRED)
AIR VALVES TO BE INSTALLED AT HIGH POINTS AND WASHOUT VALVES AT LOW POINTS
MINIMUM COVER TO RISING MAIN TO BE 1.20m WHERE LOCATED BENEATH TRAFFICKED AREAS AND 0.90m BENEATH LANDSCAPING
ALL TO BE DESIGNED IN ACCORDANCE WITH SFA 7TH AND YW SPECIFIC REQUIREMENTS
(NOTE RISING MAIN SUBJECT TO DETAILED DESIGN & TECHNICAL APPROVAL BY DEVELOPERS ENGINEER)

OUTFALL HEAD WALL NOTES

ALL INLET AND OUTFALL HEAD WALLS SHALL BE PCC SIZE TO SUIT THE PROPOSED PIPE AT EACH LOCATION

HAND/GUARD RAILINGS

SAFETY/HAND RAILINGS TO THE REAR AND DOWN BOTH SIDE FORMED IN GALVANISED MILD STEEL AND HEIGHT MINIMUM 1.100m

TRASH SCREENS

ALL HEADWALLS SHALL HAVE SUITABLE MILD STEEL GALVANISED FLAT BAR TRASH/SECURITY SCREENS HINGED TO ALLOW MAINTENANCE ACCESS AND BE LOCKABLE WITH A PADLOCK AS REQUIRED

EROSION/SCOUR CONTROL

DUE TO THE POTENTIAL HIGH VELOCITIES FROM SOME OF THE OUTFALL PIPES AN ALLOW FOR AT THE POINT OF CONNECTION TO THE WATERCOURSE SHOULD BE MADE IN THE COSTS

THE METHOD OF SCOUR PROTECTION MAY VARY AND WOULD BE SUBJECT TO DETAILED DESIGN AT EACH INDIVIDUAL LOCATION

ATTENUATION BASIN F
TOP OF BANK LEVEL = 91.800m
BED LEVEL = 90.000m
TWL BASED ON 1.00m WATER DEPTH = 91.000m
VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 10535.0m3

TO ATTENUATE: RES-03 45%, RES-04, RES-05, COM-03, SCH-01 AND ROAD RES-A TO RES-C FOR A 1 IN 100 YSE + 40%CC AS FOLLOWS

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

FLOW CONTROL MH WITH VORTEX FLOW CONTROLLER RESTRICTED DISCHARGE TBC.
CL91.800 TBC.
IL89.800 (750Ø) IN
IL89.800 (375Ø) OUT
SUMP 89.500m
2100Ø PPC, Dp. 2.000m

ATTENUATION BASIN E
TOP OF BANK LEVEL = 91.800m
BED LEVEL = 90.000m
TWL BASED ON 1.00m WATER DEPTH = 91.000m
VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 9330.0m3

TO ATTENUATE: RES-03 55% FOR A 1 IN 100 YSE + 40%CC

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

FLOW CONTROL MH WITH VORTEX FLOW CONTROLLER RESTRICTED DISCHARGE TBC.
CL93.500 TBC.
IL89.750 (1050Ø) IN
IL89.750 (300Ø) OUT
SUMP 89.250m
2100Ø PPC, Dp. 3.750m

RES-03 APPROX. SW SPLIT BETWEEN BASIN E AND F AS FOLLOWS:-
BASIN E 55% = 5760.0m3
BASIN F 45% = 4711.0m3
TOTAL = 10471.0m3

ATTENUATION BASINS NOTES

ALLOW FOR A SUITABLE IMPERMEABLE LINER TO ALL ATTENUATION BASINS

EROSION/SCOUR CONTROL

DUE TO THE POTENTIAL HIGH VELOCITIES FROM SOME OF THE INLET PIPES AN ALLOW FOR STILLING BASINS AND SCOUR PROTECTION SHOULD BE MADE IN THE COSTS

THE METHOD OF SCOUR PROTECTION MAY VARY AND WOULD BE SUBJECT TO DETAILED DESIGN AT EACH INDIVIDUAL LOCATION

BASIN D FLOW CONTROL MH WITH VORTEX FLOW CONTROLLER RESTRICTED DISCHARGE TBC.
CL100.000 TBC.
IL97.000 (1050Ø) IN
IL97.000 (300Ø) OUT
SUMP 96.500m
2100Ø PPC, Dp. 3.500m

ATTENUATION BASIN D
TOP OF BANK LEVEL = 98.500m
BED LEVEL = 97.000m
TWL BASED ON 1.00m WATER DEPTH = 98.000m
VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 4539.0m3

TO ATTENUATE: 100% RES-02 FOR 1 IN 100 YSE + 40%CC

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

DO NOT SCALE

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP IS TO COMPLY WITH JPG CONSULTANTS STANDARD SPECIFICATION & ALL RELEVANT BRITISH & EUROPEAN STANDARDS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, M & E CONSULTANTS AND JPG CONSULTANTS DRAWINGS.
3. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO COMMENCEMENT OF WORKS.

DWELLING NUMBERS TO BE CONFIRMED AS PART OF THE DETAILED PLANNING AND DETAILED DESIGN PROCESS BY THE RESIDENTIAL DEVELOPER

DETAILS OF THE SCHOOL INCLUDING PUPIL NUMBERS ARE TO BE CONFIRMED BY THE LOCAL AUTHORITY

DETAILS OF THE LOCAL CENTRE ARE TO BE CONFIRMED BY THE LOCAL AUTHORITY

POINT OF DISCHARGE AND DISCHARGE RATES INTO THE EXISTING LAND DRAINAGE SYSTEM ARE TO BE CONFIRMED ADN AGREED WITH THE LLFA ENGINEER AND YW AS REQUIRED

DETAILED DESIGN OF ALL THE SW DRAINAGE INFRASTRUCTURE TO BE BY THE RESIDENTIAL DEVELOPER AND ADOPTABLE DRAINAGE TO BE TECHNICALLY APPROVED BY YW VIA S104 OR OTHER AGREEMENTS

PROPOSED FINISHED LEVELS ARE TO BE CONFIRMED AS PART OF THE PLOT DETAILED DESIGN PROCESS
(DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEERS)

LEVELS AND DETAILS OF THE EXISTING SEWER NETWORK ARE TO BE SURVEYED TO CONFIRM COVER AND INVERT LEVELS AND CONDITION OF THE RECEIVING SEWERS

DRAINAGE KEY

PROPOSED SITE BOUNDARY	▬ ▪ ▪ ▬
EXISTING FW PUBLIC SEWERS	▬ · ▬ · ▬
EXISTING CW PUBLIC SEWERS	▬▬▬
EXISTING SW PUBLIC SEWERS	▬ ▬ ▬
EXISTING WATERCOURSES	▬ ▬ ▬
EXISTING WATERCOURSES CULVERTED SECTIONS	▬ ▬ ▬
PROPOSED SW SEWERS	— — ○ — —
PROPOSED FW SEWERS	— · ● · —

ALL INFRASTRUCTURE SEWERS AND DRAIN AS SHOWN ON THIS DRAWING ARE SUBJECT TO DESIGN DEVELOPMENT & DETAILED DESIGN INFORMATION SHOWN FOR COSTING PURPOSES ONLY

REV	DESCRIPTION	DATE	BY
P03	SITE CONSTRAINTS UPDATED	15.04.2021	BT
P02	REVISED TO SUIT LATEST EARTHWORKS & COMMERCIAL LAYOUT	26.02.2021	BT
P01	INITIAL ISSUE	06.05.2020	JDM

Project
BARNSLEY WEST,
BARNSLEY

Drawing Title
SW DRAINAGE STRATEGY SHEET 1 OF 3

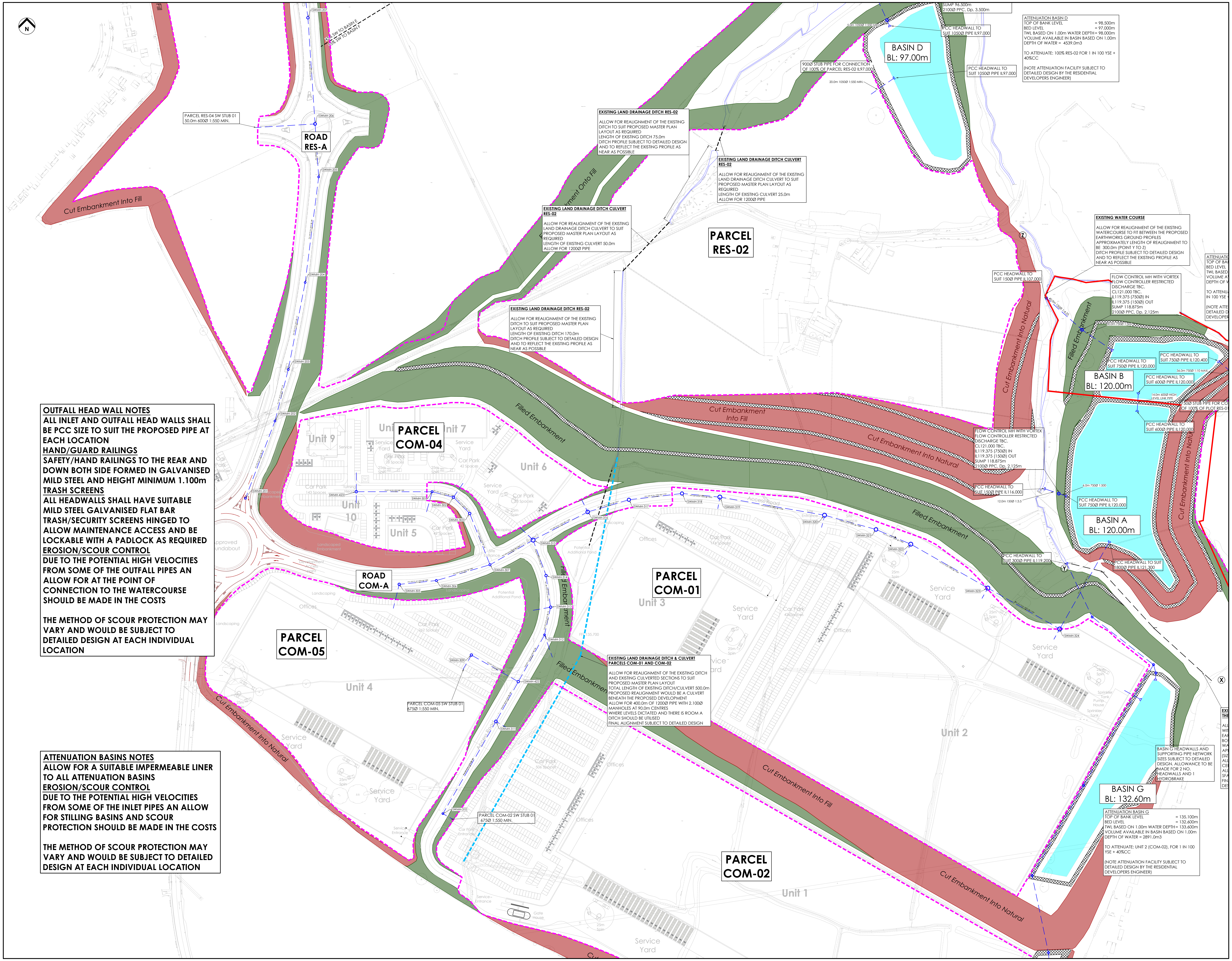
PLANNING

Architect

www.jpg.group
Leeds London Birmingham **0113 263 1155**

JPG Project Ref	Scale at A0	Date	Checked	Drawn
4848	1:1000	APR 2020	RMR	JDM

4848- JPG - SW - 00 - DR - D - 1415 | S4 | P03



OUTFALL HEAD WALL NOTES

ALL INLET AND OUTFALL HEAD WALLS SHALL BE PCC SIZE TO SUIT THE PROPOSED PIPE AT EACH LOCATION

HAND/GUARD RAILINGS

SAFETY/HAND RAILINGS TO THE REAR AND DOWN BOTH SIDE FORMED IN GALVANISED MILD STEEL AND HEIGHT MINIMUM 1.100m

TRASH SCREENS

ALL HEADWALLS SHALL HAVE SUITABLE MILD STEEL GALVANISED FLAT BAR TRASH/SECURITY SCREENS HINGED TO ALLOW MAINTENANCE ACCESS AND BE LOCKABLE WITH A PADLOCK AS REQUIRED

EROSION/SCOUR CONTROL

DUE TO THE POTENTIAL HIGH VELOCITIES FROM SOME OF THE OUTFALL PIPES AN ALLOW FOR AT THE POINT OF CONNECTION TO THE WATERCOURSE SHOULD BE MADE IN THE COSTS

THE METHOD OF SCOUR PROTECTION MAY VARY AND WOULD BE SUBJECT TO DETAILED DESIGN AT EACH INDIVIDUAL LOCATION

ATTENUATION BASINS NOTES

ALLOW FOR A SUITABLE IMPERMEABLE LINER TO ALL ATTENUATION BASINS

EROSION/SCOUR CONTROL

DUE TO THE POTENTIAL HIGH VELOCITIES FROM SOME OF THE INLET PIPES AN ALLOW FOR STILLING BASINS AND SCOUR PROTECTION SHOULD BE MADE IN THE COSTS

THE METHOD OF SCOUR PROTECTION MAY VARY AND WOULD BE SUBJECT TO DETAILED DESIGN AT EACH INDIVIDUAL LOCATION

DO NOT SCALE

NOTES

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DETAILS OF THE LOCAL CENTRE ARE TO BE CONFIRMED BY THE LOCAL AUTHORITY

POINT OF DISCHARGE AND DISCHARGE RATES INTO THE EXISTING LAND DRAINAGE SYSTEM ARE TO BE CONFIRMED ADN AGREED WITH THE LLFA ENGINEER AND YW AS REQUIRED

DETAILED DESIGN OF ALL THE SW DRAINAGE INFRASTRUCTURE TO BE BY THE RESIDENTIAL DEVELOPER AND ADOPTABLE DRAINAGE TO BE TECHNICALLY APPROVED BY YW VIA S104 OR OTHER AGREEMENTS

PROPOSED FINISHED LEVELS ARE TO BE CONFIRMED AS PART OF THE PLOT DETAILED DESIGN PROCESS
(DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEERS)

LEVELS AND DETAILS OF THE EXISTING SEWER NETWORK ARE TO BE SURVEYED TO CONFIRM COVER AND INVERT LEVELS AND CONDITION OF THE RECEIVING SEWERS

DRAINAGE KEY

PROPOSED SITE BOUNDARY	🟥 — · · —
EXISTING FW PUBLIC SEWERS	— · — · —
EXISTING CW PUBLIC SEWERS	———
EXISTING SW PUBLIC SEWERS	— — — —
EXISTING WATERCOURSES	— — — —
EXISTING WATERCOURSES CULVERTED SECTIONS	— — — —
PROPOSED SW SEWERS	— — ○ — —
PROPOSED FW SEWERS	— · ● · —

ALL INFRASTRUCTURE SEWERS AND DRAIN AS SHOWN ON THIS DRAWING ARE SUBJECT TO DESIGN DEVELOPMENT & DETAILED DESIGN INFORMATION SHOWN FOR COSTING PURPOSES ONLY

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Project
BARNSLEY WEST,
BARNSLEY

Drawing Title
SW DRAINAGE STRATEGY SHEET 2 OF 3

PLANNING

Architect

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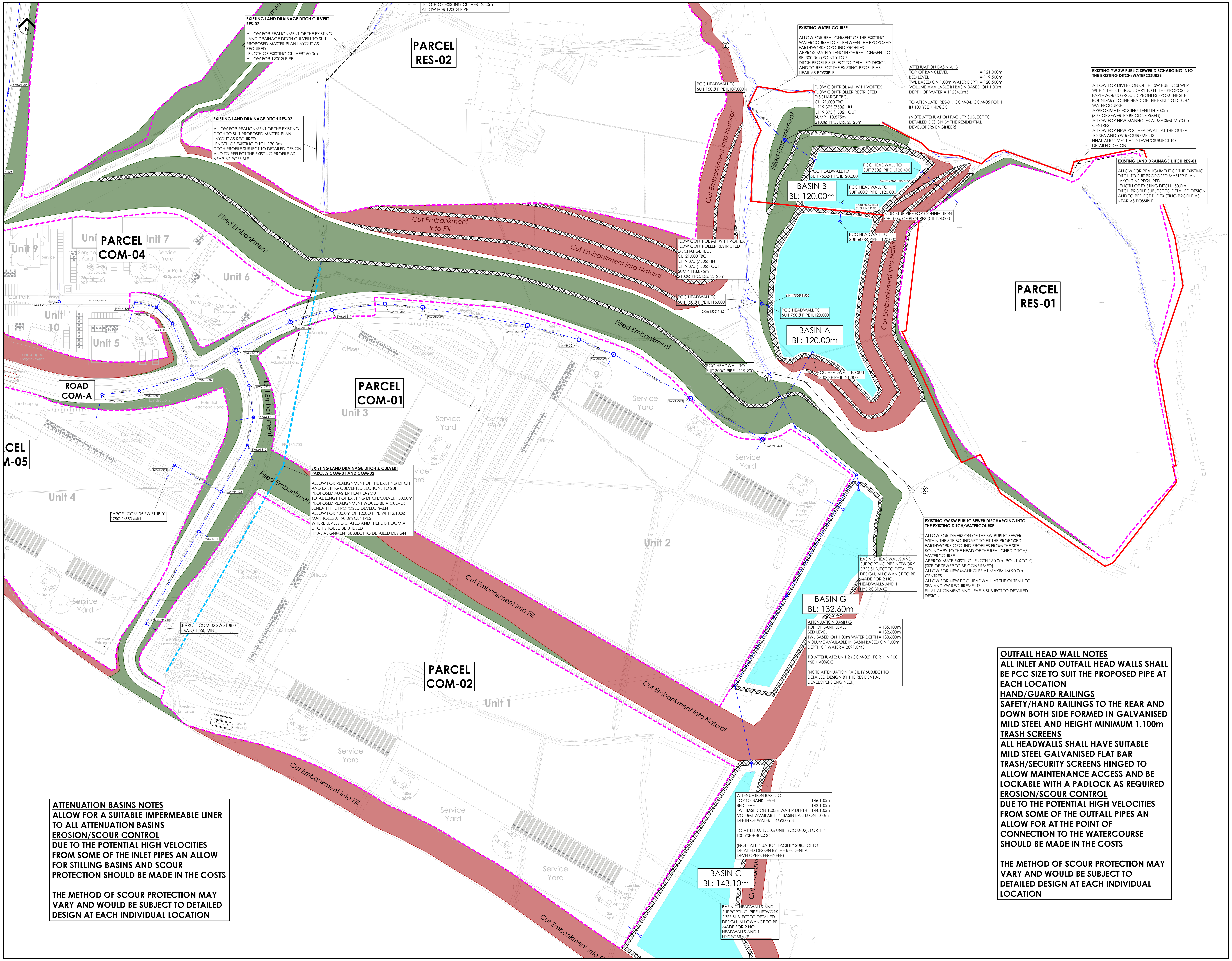
JPG Project Ref	Scale at A0	Date	Checked	Drawn
4848	1:1000	APR 2020	RMR	JDM

4848- JPG - SW - 00 - DR - D - 1416 | S4 | P03



EXISTING LAND DRAINAGE DITCH CULVERT RES-02

ALLOW FOR REALIGNMENT OF THE EXISTING LAND DRAINAGE DITCH CULVERT TO SUIT PROPOSED MASTER PLAN LAYOUT AS REQUIRED
LENGTH OF EXISTING CULVERT 50.0m
ALLOW FOR 1200Ø PIPE

LENGTH OF EXISTING CULVERT 25.0m
ALLOW FOR 1200Ø PIPE

EXISTING LAND DRAINAGE DITCH RES-02

ALLOW FOR REALIGNMENT OF THE EXISTING DITCH TO SUIT PROPOSED MASTER PLAN LAYOUT AS REQUIRED
LENGTH OF EXISTING DITCH 170.0m
DITCH PROFILE SUBJECT TO DETAILED DESIGN AND TO REFLECT THE EXISTING PROFILE AS NEAR AS POSSIBLE

EXISTING WATER COURSE

ALLOW FOR REALIGNMENT OF THE EXISTING WATERCOURSE TO FIT BETWEEN THE PROPOSED EARTHWORKS GROUND PROFILES
APPROXIMATELY LENGTH OF REALIGNMENT TO BE 300.0m (POINT Y TO Z)
DITCH PROFILE SUBJECT TO DETAILED DESIGN AND TO REFLECT THE EXISTING PROFILE AS NEAR AS POSSIBLE

PCC HEADWALL TO SUIT 150Ø PIPE IL107.000

FLOW CONTROL MH WITH VORTEX FLOW CONTROLLER RESTRICTED DISCHARGE TBC.
CL121.000 TBC.
IL119.375 (750Ø) IN
IL119.375 (150Ø) OUT
SUMP 118.875m
2100Ø PPC, Dp. 2.125m

ATTENUATION BASIN A+B

TOP OF BANK LEVEL	= 121.000m
BED LEVEL	= 119.500m
TWL BASED ON 1.00m WATER DEPTH	= 120.500m

VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 11234.0m3

TO ATTENUATE: RES-01, COM-04, COM-05 FOR 1 IN 100 YSE + 40%CC

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

PCC HEADWALL TO SUIT 750Ø PIPE IL120.000

PCC HEADWALL TO SUIT 750Ø PIPE IL120.400

PCC HEADWALL TO SUIT 600Ø PIPE IL120.000

750Ø STUB PIPE FOR CONNECTION OF 100% OF PLOT RES-01IL124.000

PCC HEADWALL TO SUIT 600Ø PIPE IL120.000

PCC HEADWALL TO SUIT 750Ø PIPE IL120.000

PCC HEADWALL TO SUIT 1800Ø PIPE IL121.300

EXISTING YW SW PUBLIC SEWER DISCHARGING INTO THE EXISTING DITCH/WATERCOURSE

ALLOW FOR DIVERSION OF THE SW PUBLIC SEWER WITHIN THE SITE BOUNDARY TO FIT THE PROPOSED EARTHWORKS GROUND PROFILES FROM THE SITE BOUNDARY TO THE HEAD OF THE EXISTING DITCH/ WATERCOURSE
APPROXIMATE EXISTING LENGTH 70.0m
(SIZE OF SEWER TO BE CONFIRMED)
ALLOW FOR NEW MANHOLES AT MAXIMUM 90.0m CENTRES
ALLOW FOR NEW PCC HEADWALL AT THE OUTFALL TO SFA AND YW REQUIREMENTS
FINAL ALIGNMENT AND LEVELS SUBJECT TO DETAILED DESIGN

EXISTING LAND DRAINAGE DITCH RES-01

ALLOW FOR REALIGNMENT OF THE EXISTING DITCH TO SUIT PROPOSED MASTER PLAN LAYOUT AS REQUIRED
LENGTH OF EXISTING DITCH 150.0m
DITCH PROFILE SUBJECT TO DETAILED DESIGN AND TO REFLECT THE EXISTING PROFILE AS NEAR AS POSSIBLE

FLOW CONTROL MH WITH VORTEX FLOW CONTROLLER RESTRICTED DISCHARGE TBC.
CL121.000 TBC.
IL119.375 (750Ø) IN
IL119.375 (150Ø) OUT
SUMP 118.875m
2100Ø PPC, Dp. 2.125m

PCC HEADWALL TO SUIT 150Ø PIPE IL116.000

PCC HEADWALL TO SUIT 300Ø PIPE IL119.200

EXISTING LAND DRAINAGE DITCH & CULVERT PARCELS COM-01 AND COM-02

ALLOW FOR REALIGNMENT OF THE EXISTING DITCH AND EXISTING CULVERTED SECTIONS TO SUIT PROPOSED MASTER PLAN LAYOUT
TOTAL LENGTH OF EXISTING DITCH/CULVERT 500.0m
PROPOSED REALIGNMENT WOULD BE A CULVERT BENEATH THE PROPOSED DEVELOPMENT
ALLOW FOR 400.0m OF 1200Ø PIPE WITH 2.100Ø MANHOLES AT 90.0m CENTRES
WHERE LEVELS DICTATED AND THERE IS ROOM A DITCH SHOULD BE UTILISED
FINAL ALIGNMENT SUBJECT TO DETAILED DESIGN

PARCEL COM-05 SW STUB 01
675Ø 1:550 MIN.

PARCEL COM-02 SW STUB 01
675Ø 1:550 MIN.

EXISTING YW SW PUBLIC SEWER DISCHARGING INTO THE EXISTING DITCH/WATERCOURSE

ALLOW FOR DIVERSION OF THE SW PUBLIC SEWER WITHIN THE SITE BOUNDARY TO FIT THE PROPOSED EARTHWORKS GROUND PROFILES FROM THE SITE BOUNDARY TO THE HEAD OF THE REALIGNED DITCH/ WATERCOURSE
APPROXIMATE EXISTING LENGTH 160.0m (POINT X TO Y)
(SIZE OF SEWER TO BE CONFIRMED)
ALLOW FOR NEW MANHOLES AT MAXIMUM 90.0m CENTRES
ALLOW FOR NEW PCC HEADWALL AT THE OUTFALL TO SFA AND YW REQUIREMENTS
FINAL ALIGNMENT AND LEVELS SUBJECT TO DETAILED DESIGN

BASIN G HEADWALLS AND SUPPORTING PIPE NETWORK SIZES SUBJECT TO DETAILED DESIGN. ALLOWANCE TO BE MADE FOR 2 NO. HEADWALLS AND 1 HYDROBRAKE

ATTENUATION BASIN G

TOP OF BANK LEVEL	= 135.100m
BED LEVEL	= 132.600m
TWL BASED ON 1.00m WATER DEPTH	= 133.600m

VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 2891.0m3

TO ATTENUATE: UNIT 2 (COM-02), FOR 1 IN 100 YSE + 40%CC

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

ATTENUATION BASIN C

TOP OF BANK LEVEL	= 146.100m
BED LEVEL	= 143.100m
TWL BASED ON 1.00m WATER DEPTH	= 144.100m

VOLUME AVAILABLE IN BASIN BASED ON 1.00m DEPTH OF WATER = 4693.0m3

TO ATTENUATE: 50% UNIT 1(COM-02), FOR 1 IN 100 YSE + 40%CC

(NOTE ATTENUATION FACILITY SUBJECT TO DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEER)

BASIN C HEADWALLS AND SUPPORTING PIPE NETWORK SIZES SUBJECT TO DETAILED DESIGN. ALLOWANCE TO BE MADE FOR 2 NO. HEADWALLS AND 1 HYDROBRAKE

ATTENUATION BASINS NOTES

ALLOW FOR A SUITABLE IMPERMEABLE LINER TO ALL ATTENUATION BASINS

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DUE TO THE POTENTIAL HIGH VELOCITIES FROM SOME OF THE INLET PIPES AN ALLOW FOR STILLING BASINS AND SCOUR PROTECTION SHOULD BE MADE IN THE COSTS

THE METHOD OF SCOUR PROTECTION MAY VARY AND WOULD BE SUBJECT TO DETAILED DESIGN AT EACH INDIVIDUAL LOCATION

OUTFALL HEAD WALL NOTES

ALL INLET AND OUTFALL HEAD WALLS SHALL BE PCC SIZE TO SUIT THE PROPOSED PIPE AT EACH LOCATION

HAND/GUARD RAILINGS

SAFETY/HAND RAILINGS TO THE REAR AND DOWN BOTH SIDE FORMED IN GALVANISED MILD STEEL AND HEIGHT MINIMUM 1.100m

TRASH SCREENS

ALL HEADWALLS SHALL HAVE SUITABLE MILD STEEL GALVANISED FLAT BAR TRASH/SECURITY SCREENS HINGED TO ALLOW MAINTENANCE ACCESS AND BE LOCKABLE WITH A PADLOCK AS REQUIRED

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DRAINAGE KEY

PROPOSED SITE BOUNDARY	▬ ▪ ▪ ▬
EXISTING FW PUBLIC SEWERS	▬ · ▬ · ▬
EXISTING CW PUBLIC SEWERS	▬▬▬
EXISTING SW PUBLIC SEWERS	▬ ▬ ▬
EXISTING WATERCOURSES	▬ ▬ ▬
EXISTING WATERCOURSES CULVERTED SECTIONS	▬ ▬ ▬
PROPOSED SW SEWERS	— — ○ — —
PROPOSED FW SEWERS	— · ● · —

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Project
BARNSLEY WEST,
BARNSLEY

Drawing Title
SW DRAINAGE STRATEGY SHEET 3 OF 3

PLANNING

Architect

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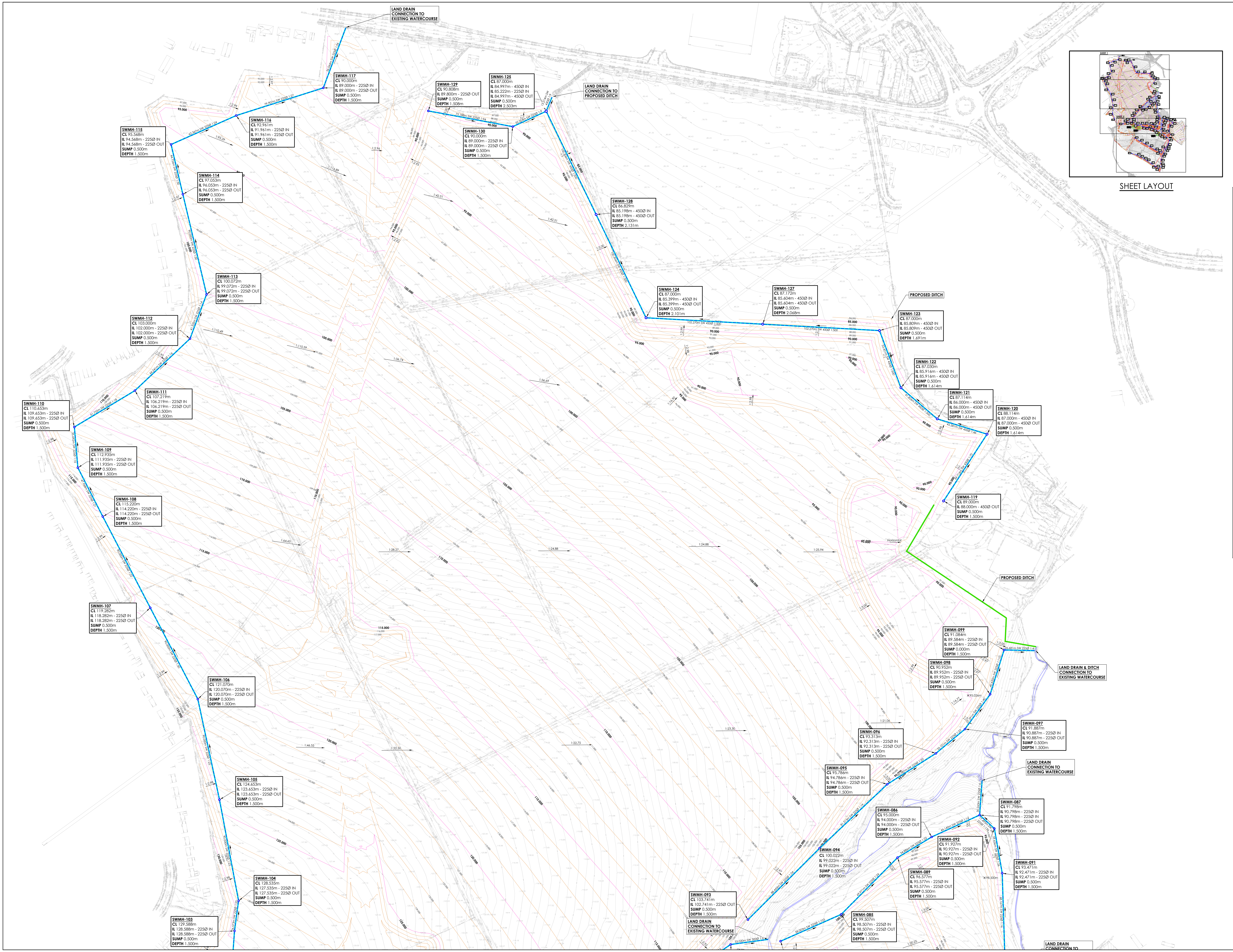
JPG Project Ref	Scale at A0	Date	Checked	Drawn
4848	1:1000	APR 2020	RMR	JDM

4848- JPG - SW - 00 - DR - D - 1417 | S4 | P03

Appendix J Preliminary Land Drainage Strategy Drawings



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0m 2.5m 5m

SCALE 1:100

KEY

▬ ▬	PROPOSED FILTER DRAIN (SEE DRAWING 1460 FOR DETAIL)
▬	PROPOSED 1m DEEP DITCH (SEE DRAWING 1460 FOR DETAIL)

SURAFCE WATER MANAGEMENT NOTES

THE FOLLOWING METHODS OF SURFACE WATER MANAGEMENT COULD BE CONSIDERED BY THE APPOINTED CONTRACTOR, A DETAILED CONSTRUCTION WATER MANAGEMENT PLAN WILL BE PROVIDED BY THE APPOINTED CONTRACTOR.

THE CONTRACTOR SHOULD REFER TO THE FOLLOWING DOCUMENTS WHEN PREPARING THE CONSTRUCTION PHASE SW MANAGEMENT PLAN.

- CONTROL OF WATER POLLUTION FROM CONSTRUCTION PROJECTS C532
- CONTROL OF WATER POLLUTION FROM CONSTRUCTION PROJECTS SP156
- ENVIRONMENTAL GOOD PRACTICE - SITE GUIDE C650
- THE SUDS MANUAL C753
- BS 8582:2013 CODE OF PRACTICE FOR SURFACE WATER MANAGEMENT FOR DEVELOPMENT SITES

1. SUMPS PLACED AT TOPOGRAPHICALLY LOW AREAS THAT WILL COLLECT RUNOFF. DITCHES MAY BE UTILISED TO DIRECT WATER TO SUMPS. SUBMERSIBLE PUMPS ARE PLACED INTO THE SUMPS SO THAT WATER CAN BE PUMPED OUT OF THE CONSTRUCTION SITE ON AN AS NEEDED BASIS.

2. A SEDIMENT TRAP/BASIN TO ALLOW SEDIMENT TO SETTLE OUT. A SEDIMENT TRAP/BASIN CAN BE CREATED BY EXCAVATING A BASIN, UTILIZING AN EXISTING DEPRESSION, OR CONSTRUCTING A SMALL DAM ON A SLIGHT SLOPE DOWN STREAM FROM THE WORK AREA.

3. DIVERSION DITCHES CONSTRUCTED UP STREAM OF DISTURBED AREAS TO INTERCEPT CLEAN SURFACE WATER RUNOFF AND DISCHARGE IT THROUGH AN OUTLET DESIGNED TO HANDLE THE EXPECTED RUNOFF VELOCITIES AND FLOWS FROM THE DITCH WITHOUT SCOURING.

4. A COLLECTION DITCH TO INTERCEPT CONTACT WATER RUNOFF FROM DISTURBED AREAS AND DIVERT IT TO AN AREA WHERE IT CAN BE EFFECTIVELY MANAGED REFER TO ITEMS 1 AND 2. STRAW BALES OR OTHER FILTRATION MATERIALS COULD BE INSTALLED IN THE DITCH TO HELP INTERCEPT SILT.

5. TEMPORARY BUNDS CONSTRUCTED FROM SITE WON MTERIAL OR FORMED IN SANDBAGS COULD BE CONSTRUCTED TO DIRECT WATER TO A DEDICATED TREATMENT/SETTLEMENT FACILITY BEFORE BEEN DISCHARGE OFF SITE.

6. WHEEL WASHES COULD BE INCORPORATED AT THE SITE EXIT (NOTE THE SITES ARE RELATIVELY SMALL AND SPACE MAY NOT BE AVAILABLE FOR THIS SORT OF FACILITY)

7. MECHANICAL SWEEPING OF THE OFF SITE HIGHWAY TO KEEP IT FREE FROM DIRT AND MUD.

8. BOWERS CAN BE USED TO KEEP EXPOSED EARTH DAMP AND PREVENT DUST GENERATION.

9. SILT FENCES CAN BE INSTALLED AROUND STOCKPILES TO CAPTURE ANY POTENTIAL RUN OFF.

10. FUEL SHOULD BE STORED IN SUITABLE BUNDED TANKS WITH FUELLING ONLY CARRIED OUT IN A DEDICATED AREA. SPILL KITS SHOULD BE PROVIDED ADJACENT TO THESE AREAS FOR EMERGENCY USE.

11. FOUL WATER FROM THE SITE CABINS SHALL BE EITHER COLLECTED IN A BELOW GROUND TANK ADJACENT TO THE SITE SET UP AND TAKEN OFF SITE BY A TANKER OR CONNECTED UP TO THE PUBLIC SEWER NETWORKS VIA A TEMPORARY OF PERMANENT PIPED CONNECTION.

REV	DESCRIPTION	DATE	CHK	BY
P02	UPDATED LEVELS SHOWN	15/04/21		BT
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Project
BARNSLEY WEST,
BARNSLEY

Drawing Title
LAND DRAINAGE STRATEGY
SHEET 1 OF 3

PLANNING

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Leeds - 0113 263 1155 | **London** - 0207 947 4148

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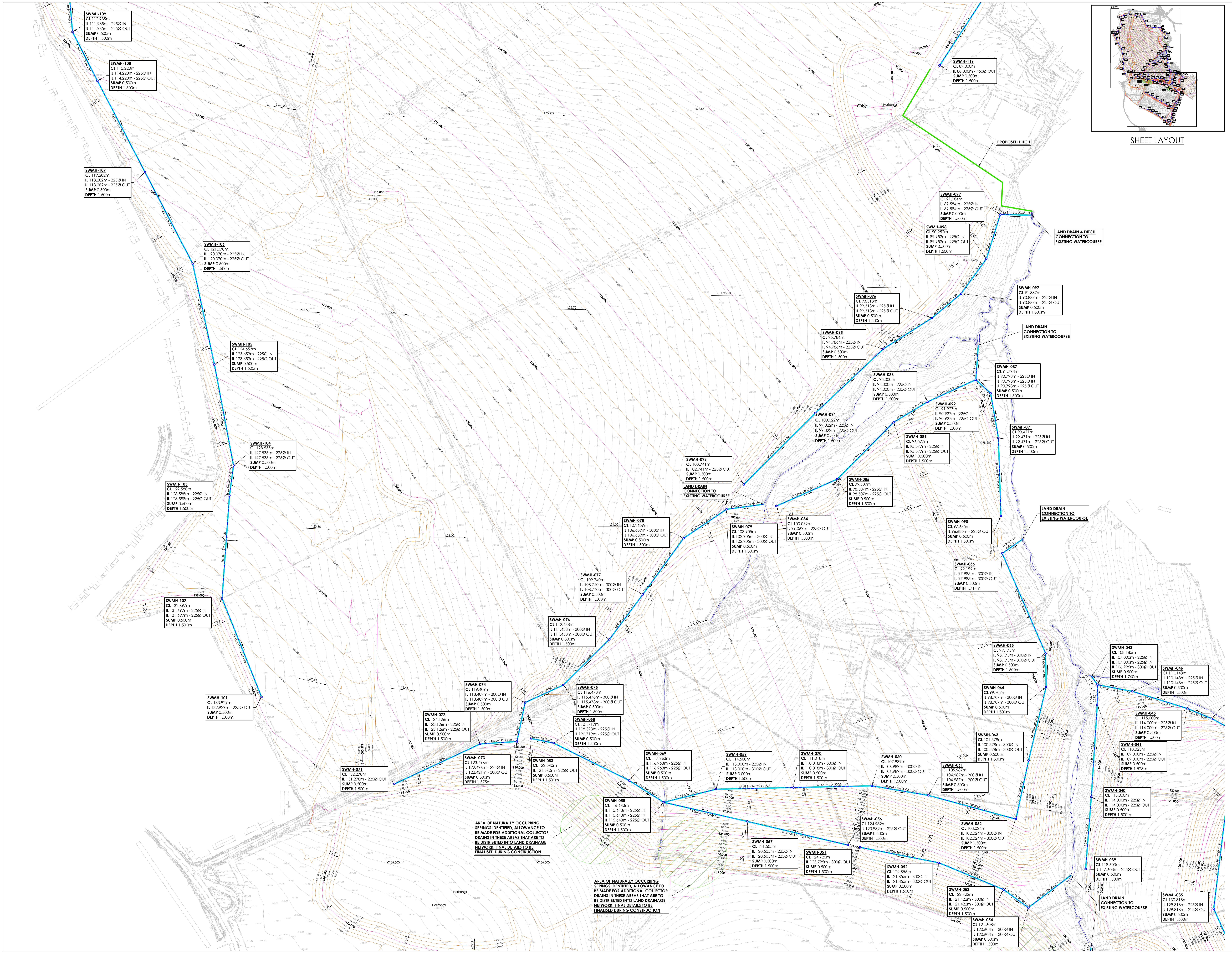

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0m 2.5m 5m

SCALE 1:100

KEY

🟦	PROPOSED FILTER DRAIN (SEE DRAWING 1460 FOR DETAIL)
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1. SUMPS PLACED AT TOPOGRAPHICALLY LOW AREAS THAT WILL COLLECT RUNOFF. DITCHES MAY BE UTILISED TO DIRECT WATER TO SUMPS. SUBMERSIBLE PUMPS ARE PLACED INTO THE SUMPS SO THAT WATER CAN BE PUMPED OUT OF THE CONSTRUCTION SITE ON AN AS NEEDED BASIS.

2. A SEDIMENT TRAP/BASIN TO ALLOW SEDIMENT TO SETTLE OUT. A SEDIMENT TRAP/BASIN CAN BE CREATED BY EXCAVATING A BASIN, UTILIZING AN EXISTING DEPRESSION, OR CONSTRUCTING A SMALL DAM ON A SLIGHT SLOPE DOWN STREAM FROM THE WORK AREA.

3. DIVERSION DITCHES CONSTRUCTED UP STREAM OF DISTURBED AREAS TO INTERCEPT CLEAN SURFACE WATER RUNOFF AND DISCHARGE IT THROUGH AN OUTLET DESIGNED TO HANDLE THE EXPECTED RUNOFF VELOCITIES AND FLOWS FROM THE DITCH WITHOUT SCOURING.

4. A COLLECTION DITCH TO INTERCEPT CONTACT WATER RUNOFF FROM DISTURBED AREAS AND DIVERT IT TO AN AREA WHERE IT CAN BE EFFECTIVELY MANAGED REFER TO ITEMS 1 AND 2. STRAW BALES OR OTHER FILTRATION MATERIALS COULD BE INSTALLED IN THE DITCH TO HELP INTERCEPT SILT.

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Project
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Drawing Title
LAND DRAINAGE STRATEGY
SHEET 2 OF 3

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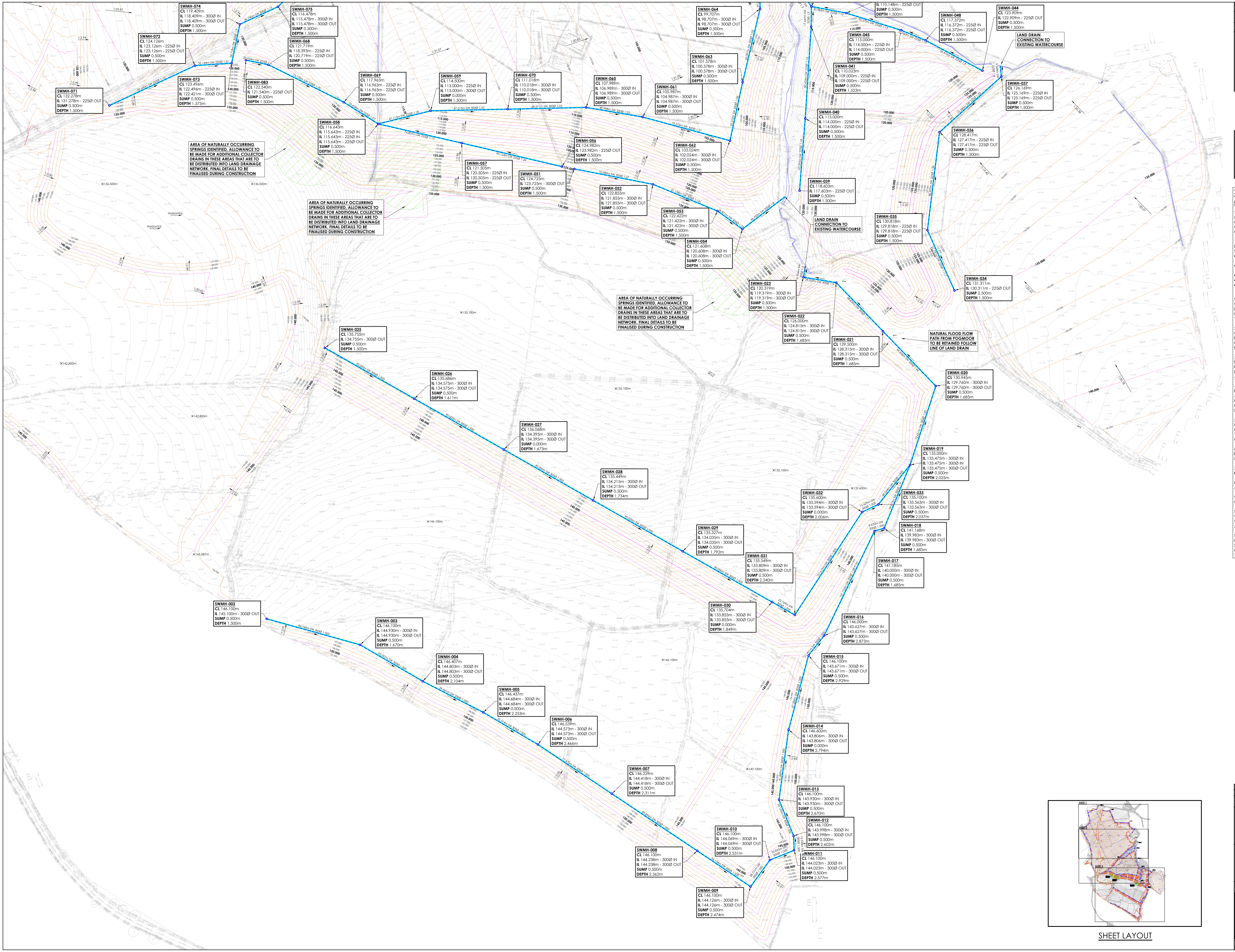

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0m 2.5m 5m

SCALE 1:100

KEY

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2. A SEDIMENT TRAP/BASIN TO ALLOW SEDIMENT TO SETTLE OUT. A SEDIMENT TRAP/BASIN CAN BE CREATED BY EXCAVATING A BASIN, UTILIZING AN EXISTING DEPRESSION, OR CONSTRUCTING A SMALL DAM ON A SLIGHT SLOPE DOWN STREAM FROM THE WORK AREA.

3. DIVERSION DITCHES CONSTRUCTED UP STREAM OF DISTURBED AREAS TO INTERCEPT CLEAN SURFACE WATER RUNOFF AND DISCHARGE IT THROUGH AN OUTLET DESIGNED TO HANDLE THE EXPECTED RUNOFF VELOCITIES AND FLOWS FROM THE DITCH WITHOUT SCOURING.

4. A COLLECTION DITCH TO INTERCEPT CONTACT WATER RUNOFF FROM DISTURBED AREAS AND DIVERT IT TO AN AREA WHERE IT CAN BE EFFECTIVELY MANAGED REFER TO ITEMS 1 AND 2. STRAW BALES OR OTHER FILTRATION MATERIALS COULD BE INSTALLED IN THE DITCH TO HELP INTERCEPT SILT.

5. TEMPORARY BUNDS CONSTRUCTED FROM SITE WON MTERIAL OR FORMED IN SANDBAGS COULD BE CONSTRUCTED TO DIRECT WATER TO A DEDICATED TREATMENT/SETTLEMENT FACILITY BEFORE BEEN DISCHARGE OFF SITE.

6. WHEEL WASHES COULD BE INCORPORATED AT THE SITE EXIT (NOTE THE SITES ARE RELATIVELY SMALL AND SPACE MAY NOT BE AVAILABLE FOR THIS SORT OF FACILITY)

7. MECHANICAL SWEEPING OF THE OFF SITE HIGHWAY TO KEEP IT FREE FROM DIRT AND MUD.

8. BOWERS CAN BE USED TO KEEP EXPOSED EARTH DAMP AND PREVENT DUST GENERATION.

9. SILT FENCES CAN BE INSTALLED AROUND STOCKPILES TO CAPTURE ANY POTENTIAL RUN OFF.

10. FUEL SHOULD BE STORED IN SUITABLE BUNDED TANKS WITH FUELLING ONLY CARRIED OUT IN A DEDICATED AREA. SPILL KITS SHOULD BE PROVIDED ADJACENT TO THESE AREAS FOR EMERGENCY USE.

11. FOUL WATER FROM THE SITE CABINS SHALL BE EITHER COLLECTED IN A BELOW GROUND TANK ADJACENT TO THE SITE SET UP AND TAKEN OFF SITE BY A TANKER OR CONNECTED UP TO THE PUBLIC SEWER NETWORKS VIA A TEMPORARY OF PERMANENT PIPED CONNECTION.

REV	DESCRIPTION	DATE	CHK	BY
P02	UPDATED LEVELS SHOWN	15/04/21		BT
P01	PRELIMINARY ISSUE	26/02/21	JDM	BT

Project
BARNSLEY WEST,
BARNSLEY

Drawing Title
LAND DRAINAGE STRATEGY
SHEET 3 OF 3

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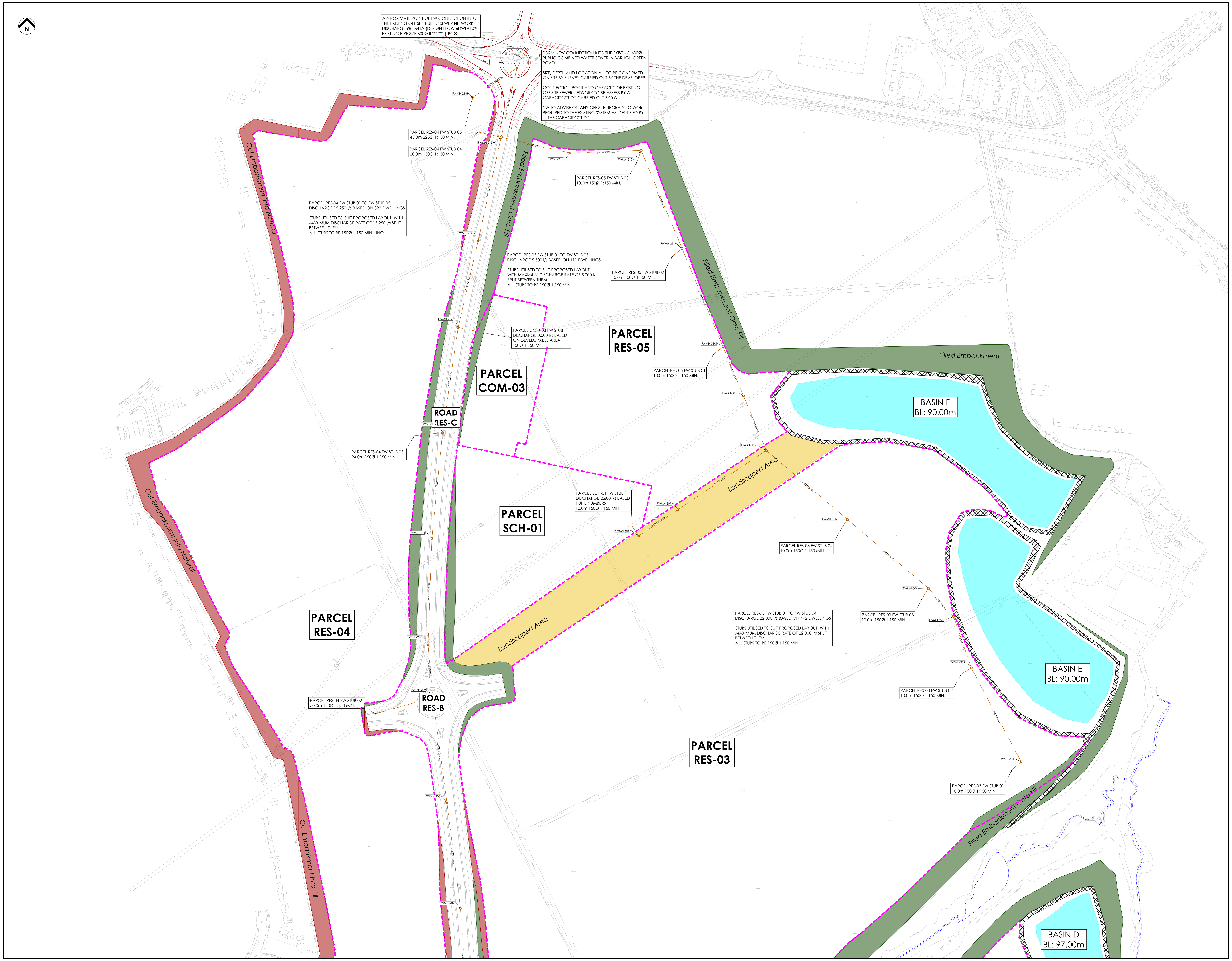
Appendix K Preliminary FW Drainage Strategy Drawings



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NOTES

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DETAILED DESIGN OF ALL THE FW DRAINAGE INFRASTRUCTURE TO BE BY THE RESIDENTIAL DEVELOPER AND ADOPTABLE DRAINAGE TO BE TECHNICALLY APPROVED BY YW VIA S104 OR OTHER AGREEMENTS

PROPOSED FINISHED LEVELS ARE TO BE CONFIRMED AS PART OF THE PLOT DETAILED DESIGN PROCESS
(DETAILED DESIGN BY THE RESIDENTIAL DEVELOPERS ENGINEERS)

LEVELS AND DETAILS OF THE EXISTING SEWER NETWORK ARE TO BE SURVEYED TO CONFIRM COVER AND INVERT LEVELS AND CONDITION OF THE RECEIVING SEWERS

DRAINAGE KEY

PROPOSED SITE BOUNDARY	▬ ▪ ▪ ▬
EXISTING FW PUBLIC SEWERS	— · — · —
EXISTING CW PUBLIC SEWERS	———
EXISTING SW PUBLIC SEWERS	– – – –
EXISTING WATERCOURSES	▬ ▬ ▬
EXISTING WATERCOURSES CULVERTED SECTIONS	▬ ▬ ▬
PROPOSED SW SEWERS	— — ○ — —
PROPOSED FW SEWERS	— · ● · —

ALL INFRASTRUCTURE SEWERS AND DRAINAS SHOWN ON THIS DRAWING IS SUBJECT TO DESIGN DEVELOPMENT & DETAILED DESIGN INFORMATION SHOWN FOR COSTING PURPOSES ONLY

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P01	INITIAL ISSUE	06.05.2020	JDM

Project
BARNSLEY WEST,
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Drawing Title
FW DRAINAGE STRATEGY SHEET 1 OF 3

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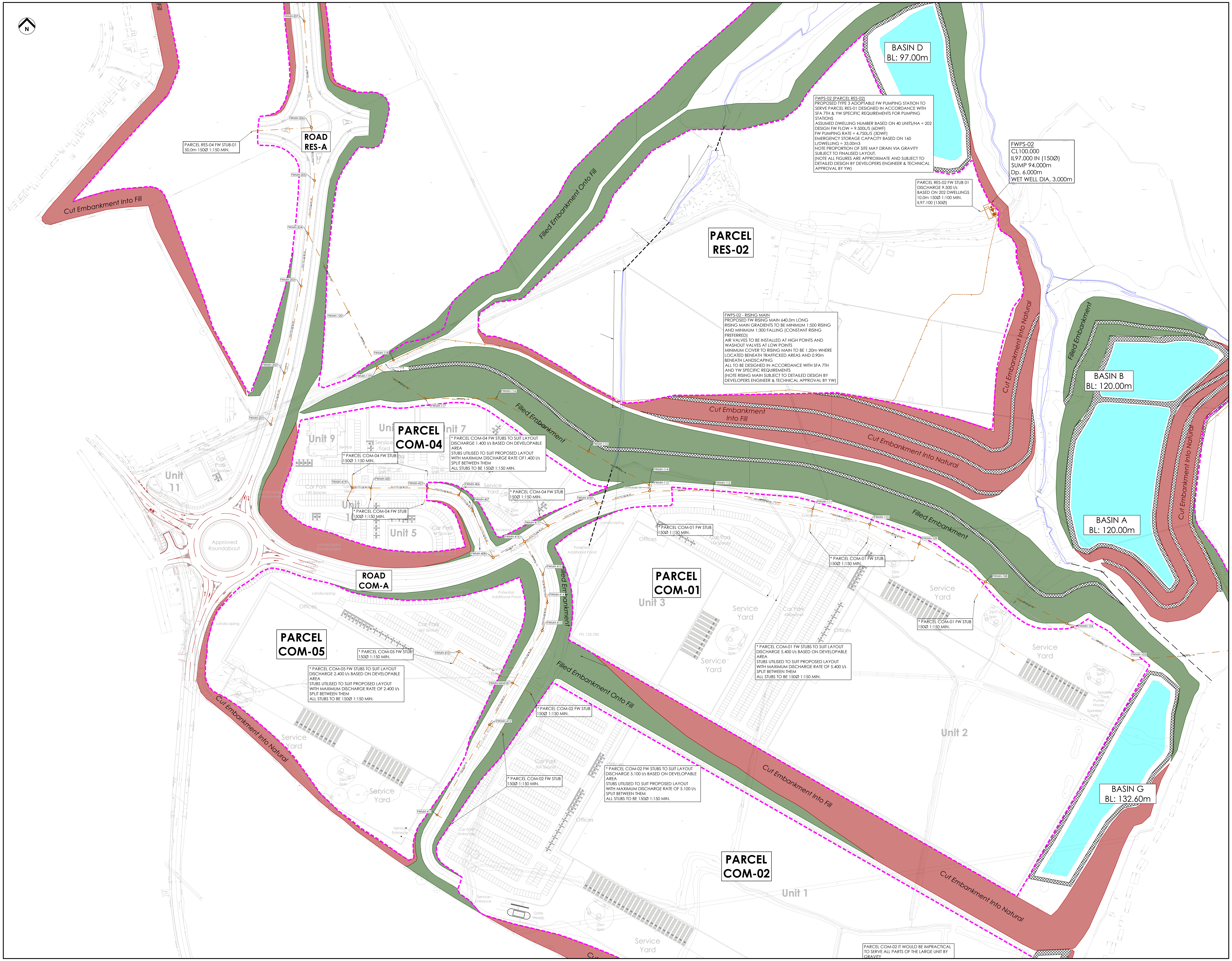

PARCEL RES-04 FW STUB-01
50.0m 150Ø 1:150 MIN.

FWPS-02 (PARCEL RES-02)
PROPOSED TYPE 3 ADOPTABLE FW PUMPING STATION TO SERVE PARCEL RES-01 DESIGNED IN ACCORDANCE WITH SFA 7TH & YW SPECIFIC REQUIREMENTS FOR PUMPING STATIONS
ASSUMED DWELLING NUMBER BASED ON 40 UNITS/HA = 202
DESIGN FW FLOW = 9.500L/S (6DWF)
FW PUMPING RATE = 4.750L/S (3DWF)
EMERGENCY STORAGE CAPACITY BASED ON 160 L/DWELLING = 33.00m3
NOTE PROPORTION OF SITE MAY DRAIN VIA GRAVITY SUBJECT TO FINALISED LAYOUT.
(NOTE ALL FIGURES ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN BY DEVELOPERS ENGINEER & TECHNICAL APPROVAL BY YW)

FWPS-02
CL100.000
IL97.000 IN (150Ø)
SUMP 94.000m
Dp. 6.000m
WET WELL DIA. 3.000m

PARCEL RES-02 FW STUB 01
DISCHARGE 9.500 l/s
BASED ON 202 DWELLINGS
10.0m 150Ø 1:100 MIN.
IL97.100 (150Ø)

FWPS-02 - RISING MAIN
PROPOSED FW RISING MAIN 640.0m LONG
RISING MAIN GRADIENTS TO BE MINIMUM 1:500 RISING AND MINIMUM 1:300 FALLING (CONSTANT RISING PREFERRED)
AIR VALVES TO BE INSTALLED AT HIGH POINTS AND WASHOUT VALVES AT LOW POINTS
MINIMUM COVER TO RISING MAIN TO BE 1.20m WHERE LOCATED BENEATH TRAFFICKED AREAS AND 0.90m BENEATH LANDSCAPING
ALL TO BE DESIGNED IN ACCORDANCE WITH SFA 7TH AND YW SPECIFIC REQUIREMENTS
(NOTE RISING MAIN SUBJECT TO DETAILED DESIGN BY DEVELOPERS ENGINEER & TECHNICAL APPROVAL BY YW)

* PARCEL COM-04 FW STUBS TO SUIT LAYOUT
DISCHARGE 1.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF1.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-04 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-04 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-04 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUBS TO SUIT LAYOUT
DISCHARGE 5.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 5.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-05 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-05 FW STUBS TO SUIT LAYOUT
DISCHARGE 2.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 2.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-02 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-02 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-02 FW STUBS TO SUIT LAYOUT
DISCHARGE 5.100 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 5.100 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

PARCEL COM-02 IT WOULD BE IMPRACTICAL TO SERVE ALL PARTS OF THE LARGE UNIT BY GRAVITY

DO NOT SCALE

NOTES

GENERAL NOTES

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DETAILED DESIGN OF ALL THE FW DRAINAGE INFRASTRUCTURE TO BE BY THE RESIDENTIAL DEVELOPER AND ADOPTABLE DRAINAGE TO BE TECHNICALLY APPROVED BY YW VIA S104 OR OTHER AGREEMENTS

PROPOSED FINISHED LEVELS ARE TO BE CONFIRMED AS PART OF THE PLOT DETAILED DESIGN PROCESS
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LEVELS AND DETAILS OF THE EXISTING SEWER NETWORK ARE TO BE SURVEYED TO CONFIRM COVER AND INVERT LEVELS AND CONDITION OF THE RECEIVING SEWERS

DRAINAGE KEY

PROPOSED SITE BOUNDARY	🟥 ━━ ▪ ▪ ━━
EXISTING FW PUBLIC SEWERS	━ · ━ · ━ · ━
EXISTING CW PUBLIC SEWERS	━━━━━━━
EXISTING SW PUBLIC SEWERS	━ ━ ━ ━ ━
EXISTING WATERCOURSES	━ ━ ━ ━ ━
EXISTING WATERCOURSES CULVERTED SECTIONS	━ ━ ━ ━ ━
PROPOSED SW SEWERS	— — ○ — —
PROPOSED FW SEWERS	— · — ● — · —

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P01	INITIAL ISSUE	06.05.2020	JDM

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BARNSLEY WEST,
BARNSLEY

Drawing Title
FW DRAINAGE STRATEGY SHEET 2 OF 3

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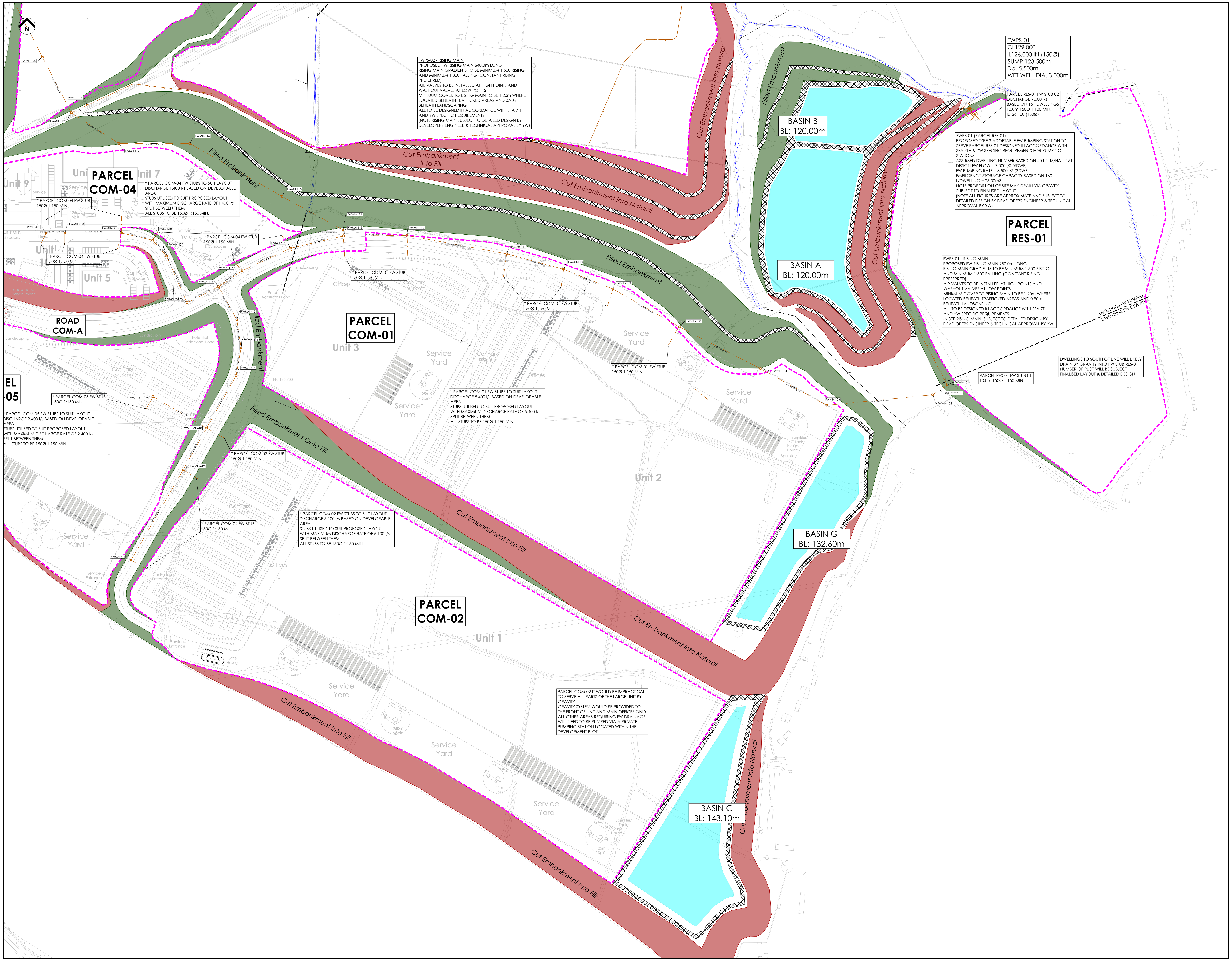

FWPS-02 - RISING MAIN
PROPOSED FW RISING MAIN 640.0m LONG
RISING MAIN GRADIENTS TO BE MINIMUM 1:500 RISING AND MINIMUM 1:300 FALLING (CONSTANT RISING PREFERRED)
AIR VALVES TO BE INSTALLED AT HIGH POINTS AND WASHOUT VALVES AT LOW POINTS
MINIMUM COVER TO RISING MAIN TO BE 1.20m WHERE LOCATED BENEATH TRAFFICKED AREAS AND 0.90m BENEATH LANDSCAPING
ALL TO BE DESIGNED IN ACCORDANCE WITH SFA 7TH AND YW SPECIFIC REQUIREMENTS
(NOTE RISING MAIN SUBJECT TO DETAILED DESIGN BY DEVELOPERS ENGINEER & TECHNICAL APPROVAL BY YW)

FWPS-01
CL129.000
IL126.000 IN (150Ø)
SUMP 123.500m
Dp. 5.500m
WET WELL DIA. 3.000m

PARCEL RES-01 FW STUB 02
DISCHARGE 7.000 l/s
BASED ON 151 DWELLINGS
10.0m 150Ø 1:100 MIN.
IL126.100 (150Ø)

FWPS-01 (PARCEL RES-01)
PROPOSED TYPE 3 ADOPTABLE FW PUMPING STATION TO SERVE PARCEL RES-01 DESIGNED IN ACCORDANCE WITH SFA 7TH & YW SPECIFIC REQUIREMENTS FOR PUMPING STATIONS
ASSUMED DWELLING NUMBER BASED ON 40 UNITS/HA = 151
DESIGN FW FLOW = 7.000L/S (6DWF)
FW PUMPING RATE = 3.500L/S (3DWF)
EMERGENCY STORAGE CAPACITY BASED ON 160 L/DWELLING = 25.00m3
NOTE PROPORTION OF SITE MAY DRAIN VIA GRAVITY SUBJECT TO FINALISED LAYOUT.
(NOTE ALL FIGURES ARE APPROXIMATE AND SUBJECT TO DETAILED DESIGN BY DEVELOPERS ENGINEER & TECHNICAL APPROVAL BY YW)

FWPS-01 - RISING MAIN
PROPOSED FW RISING MAIN 280.0m LONG
RISING MAIN GRADIENTS TO BE MINIMUM 1:500 RISING AND MINIMUM 1:300 FALLING (CONSTANT RISING PREFERRED)
AIR VALVES TO BE INSTALLED AT HIGH POINTS AND WASHOUT VALVES AT LOW POINTS
MINIMUM COVER TO RISING MAIN TO BE 1.20m WHERE LOCATED BENEATH TRAFFICKED AREAS AND 0.90m BENEATH LANDSCAPING
ALL TO BE DESIGNED IN ACCORDANCE WITH SFA 7TH AND YW SPECIFIC REQUIREMENTS
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DWELLINGS TO SOUTH OF LINE WILL LIKELY DRAIN BY GRAVITY INTO FW STUB RES-01 NUMBER OF PLOT WILL BE SUBJECT FINALISED LAYOUT & DETAILED DESIGN

PARCEL RES-01 FW STUB 01
10.0m 150Ø 1:150 MIN.

* PARCEL COM-04 FW STUBS TO SUIT LAYOUT
DISCHARGE 1.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF1.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-04 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-01 FW STUBS TO SUIT LAYOUT
DISCHARGE 5.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 5.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-05 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-05 FW STUBS TO SUIT LAYOUT
DISCHARGE 2.400 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 2.400 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

* PARCEL COM-02 FW STUB
150Ø 1:150 MIN.

* PARCEL COM-02 FW STUBS TO SUIT LAYOUT
DISCHARGE 5.100 l/s BASED ON DEVELOPABLE AREA
STUBS UTILISED TO SUIT PROPOSED LAYOUT WITH MAXIMUM DISCHARGE RATE OF 5.100 l/s SPLIT BETWEEN THEM
ALL STUBS TO BE 150Ø 1:150 MIN.

PARCEL COM-02 IT WOULD BE IMPRACTICAL TO SERVE ALL PARTS OF THE LARGE UNIT BY GRAVITY
GRAVITY SYSTEM WOULD BE PROVIDED TO THE FRONT OF UNIT AND MAIN OFFICES ONLY
ALL OTHER AREAS REQUIRING FW DRAINAGE WILL NEED TO BE PUMPED VIA A PRIVATE PUMPING STATION LOCATED WITHIN THE DEVELOPMENT PLOT

DO NOT SCALE

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DRAINAGE KEY

PROPOSED SITE BOUNDARY
EXISTING FW PUBLIC SEWERS
EXISTING CW PUBLIC SEWERS
EXISTING SW PUBLIC SEWERS
EXISTING WATERCOURSES
EXISTING WATERCOURSES CULVERTED SECTIONS
PROPOSED SW SEWERS
PROPOSED FW SEWERS

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BARNSLEY

Drawing Title
FW DRAINAGE STRATEGY SHEET 3 OF 3

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