

# Appendix C Consultation responses

Anglian Water pre-planning assessment report

Anglian Water correspondence

ECC Pre-Application response

Development & Flood Risk Management – Meeting Notes

Pre-Planning  
Assessment Report

**SOUTH WOODHAM FERRERS**

**146443/93100165/1/0056883**

## Section 1: Proposed development

Thank you for submitting a pre-planning enquiry. This has been produced for Countryside Properties Plc. Your reference number is **146443/93100165/1/0056883**. If you have any questions upon receipt of this report, please contact the Pre-Development team on 03456 066087 or email [planningliaison@anglianwater.co.uk](mailto:planningliaison@anglianwater.co.uk).

The response within this report has been based on the following information which was submitted as part of your application:

List of planned developments	
Type of development	No. Of units
Business	4
Dwellings	1500

The anticipated residential build rate is:

Year	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
Build rate	50	50	50	50	50	50	50	50	50	50	50	954

Site grid reference no.

TQ8053998570

Development type

Greenfield

Planning application status

Unknown

The comments contained within this report relate to the public water mains and sewers indicated on our records. Your attention is drawn to the disclaimer in the useful information section of this report.

## Section 2: Assets affected

Our records indicate that we have the following types of assets within or overlapping the boundary of your development site as listed in the table below.

Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence. We are unable to permit development either over or within the easement strip without our prior consent. The extent of the easement is provided in the table below. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

Water and Used water easement information		
Asset type	Pipe size (mm)	Total easement required (m)
Sewer mains	Unknown	3.00 m either side of the centre line
Sewer mains	Unknown	3.00 m either side of the centre line

If it is not possible to avoid our assets then these may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). You will need to make a formal application if you would like a diversion to be considered.

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

## Section 3: Water recycling services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and influent quality arising from your development.

### Water recycling centre

The foul drainage from this development is in the catchment of South Woodham Ferrers Water Recycling Centre, which currently does not have capacity to treat the flows from your development site. Anglian Water are obligated to accept the foul flows from your development with the benefit of planning consent and would therefore take the necessary steps to ensure that there is sufficient treatment capacity should the planning authority grant planning permission.

### Used water network

Our assessment has been based on development flows connecting to the nearest foul water sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey foul water flows to the receiving sewerage network is assumed to be the responsibility of the developer. Conveyance to the connection point is considered as Onsite Work and includes all work carried out upstream from of the point of connection, including making the connection to our existing network. Our assessment has identified that a direct connection to the public foul sewerage system is likely to have a detrimental effect on the existing sewerage network and further assessment will be required to define a feasible foul water drainage strategy for your site. There is no additional charge for this work. Richard Lyon, our Pre-Development Senior Engineer for this area, will be responsible for undertaking this additional work. For your reference, Richard can be contacted on 07885135404 or rlyon@anglianwater.co.uk. The results of this additional assessment may require a meeting or conference call to understand your onsite drainage design in greater detail and may result in us issuing an addendum to this report which will be issued within 28 days. Please note that Anglian Water will request a suitably worded condition at planning application stage to ensure this strategy is implemented to mitigate the risk of flooding.

It is assumed that the developer will provide the necessary infrastructure to convey flows from the site to the network. Consequently, this report does not include any costs for the conveyance of flows.

## Surface water disposal

You indicated on the Pre-Planning Application form that a connection to the public surface water sewer network is not required. Therefore a capacity assessment has not been made on the public surface water network.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website at <http://www.anglianwater.co.uk/developers/suds.aspx>. We will adopt features located in public open space that are designed and constructed, in conjunction with the Local Authority and Lead Local Flood Authority (LLFA), to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating that the assets can be maintained both now and in the future with adequate access.

If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website at: <http://www.anglianwater.co.uk/developers/suds.aspx>

The proposed method of surface water disposal is not relevant to Anglian Water; we suggest that you contact the relevant Local Authority, Lead Local Flood Authority, the Environment Agency or the Internal Drainage Board, as appropriate.

## Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

## Used Water Budget Costs

As a result of the recent charging rules published by Ofwat, our charging regime has changed. Your development site will be required to pay a Zonal charge for each new property connecting to the public sewer that benefits from Full planning permission.

Payment of the Zonal charge must be made before premises are connected to the public sewer. More information on the Zonal charge can be found at <http://www.anglianwater.co.uk/developers/charges>

The Zonal charge consists of two elements. The first is called the 'Fixed Element' which is the same in nature to the Infrastructure charge applied prior to April 2018. The second is called the 'Variable Element' which may vary each financial year.

The elements are combined together to create the 2018/19 Zonal charge for Sewerage:

Fixed Element	£ 370
Variable Element	£ 101

In most circumstances zonal charges are raised on a standard basis of one charge per new connection (one for water and one for sewerage). However, if the new connection is to non-household premises, the fixed element is calculated according to the number and type of water fittings in the premises. This is called the "relevant multiplier" method of calculating the charge. Details of the relevant multiplier for each fitting can be found at our web-page: <http://www.anglianwater.co.uk/developers/charges/>

The total Zonal charge payable for your site for Sewerage is:

Zonal charge per new connection - Sewerage	No. Of Units	Total amount payable
£ 471	1500	£ 706,500.00

It has been assumed that the onsite used water network will be provided under a section 104 Water Industry Act application.

It is recommended that you also budget for connection costs. Please note that we offer alternative types of connections depending on your needs and these costs are available at our website.

## Section 4: Useful Information

### Used water

#### Water Industry Act – Key Used Water Sections:

##### Section 98:

This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

##### Section 102:

This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.

##### Section 104:

This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.

##### Section 106:

This provides you with the right to have your constructed sewer connected to the public sewer.

##### Section 185:

This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website at <http://www.anglianwater.co.uk/developers> or via our Development Services team on 03456 066087.

#### Sustainable drainage systems:

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are not resilient to climate change in the long term. Therefore our preferred method of surface water disposal is through the use of Sustainable Drainage Systems (SuDS). SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website at <http://www.anglianwater.co.uk/developers/suds.aspx>. We also recommend that you contact the Local Authority and Lead Local Flood Authority (LLFA) for the area to discuss your application.

#### Private sewer transfers:

Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

- Surface water sewers and lateral drains that did not discharge to the public sewer, e.g. those that discharged to a watercourse.
- Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.
- Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

### **Encroachment:**

Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our website at <http://anglianwater.co.uk/developers/encroachment.aspx>

### **Locating our assets:**

Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from . All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge. We have more information on our website at: <http://www.anglianwater.co.uk/developers/our-assets/>

### **Summary of charges:**

A summary of this year's water and used water connection and infrastructure charges can be found at <http://www.anglianwater.co.uk/developers/charges>

### **Disclaimer:**

The information provided in this report is based on data currently held by Anglian Water Services Limited ('Anglian Water') or provided by a third party. Accordingly, the information in this report is provided with no guarantee of accuracy, timeliness, completeness and is without indemnity or warranty of any kind (express or implied).

This report should not be considered in isolation and does not nullify the need for the enquirer to make additional appropriate searches, inspections and enquiries. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework ('NPPF') and any infrastructure needs identified in this report must be considered in the context of current, adopted and/or emerging local plans. Where local plans are absent, silent or have expired these needs should be considered against the definition of sustainability holistically as set out in the NPPF.

Whilst the information in this report is based on the presumption that proposed development obtains planning permission, nothing in this report confirms that planning permission will be granted or that Anglian Water will be bound to carry out the works/proposals contained within this report.

No liability whatsoever, including liability for negligence is accepted by Anglian Water, or its partners, employees or agents, for any error or omission, or for the results obtained from the use of this report and/or its content. Furthermore in no event will any of those parties be liable to the applicant or any third party for any decision made or action taken as a result of reliance on this report.

This report is valid for the date printed and the enquirer is advised to resubmit their request for an up to date report should there be a delay in submitting any subsequent application for water supply/sewer connection(s).





# Pre-Planning Addendum Report

## Project Title: Proposed Development of Land at South Woodham Ferrers

### Anglian Water Services contact:

Richard Lyon  
Pre-Development Senior Engineer  
Thorpe Wood House  
Thorpe Wood  
Peterborough  
PE3 6WT  
rlyon@anglianwater.co.uk  
Our reference number: **PPE-0056883**

### Version control

VERSION	DATE	BY	AMENDMENT	REASON
1	12-11-19	RL	-	

This report has been undertaken in response to an enquiry from AECOM, on behalf of Countryside Properties Plc, to determine the appropriate connection point for the proposed development site in land north of Burnham Road, South Woodham Ferrers to the existing foul sewer network. This report concerns only the foul water flows generated by the development. It should be read in conjunction with the pre-planning report **146443/93100165/1/0056883** dated 20/05/2019, which indicated that a direct connection foul water to the public foul sewer system is likely to have a detrimental effect on the existing sewerage network.

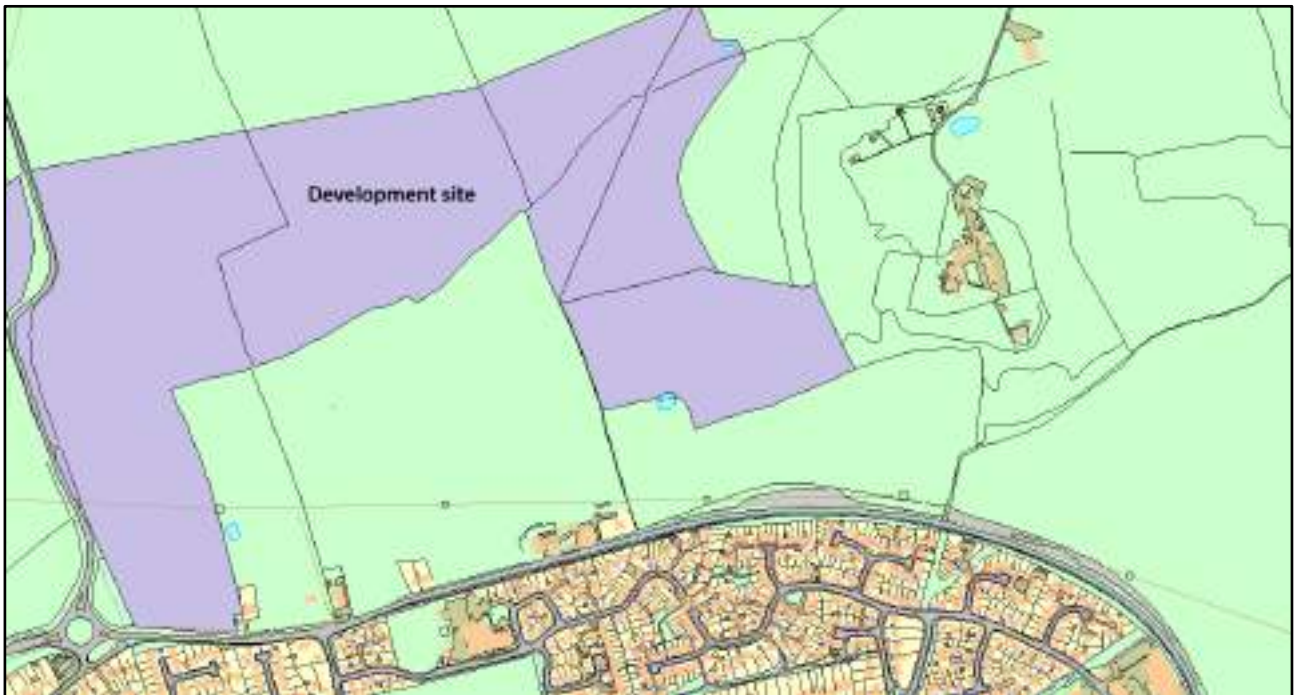
**PLEASE BE AWARE:**

**The contents of this report are an estimate based on a solution generated by a desktop assessment. The network enhancement scheme set out within this report is indicative and not final and should not be relied upon without further detailed investigations. A detailed design would be required to investigate and validate the solution.**

## Development Details

The proposed development site is located in land north of Burnham Road, South Woodham Ferrers (Figure 1). The foul water (FW) flow from the site will drain to the catchment served by the South Woodham Ferrers Water Recycling Centre (WRC), which is located circa 1.0km to the south west of the development site.

The proposed development is predominantly residential, with up to 1500 C3 dwellings but also comprises a school and 1000m<sup>2</sup> of commercial.



**Figure 1: Showing the location of the proposed development site**

From the information provided in the pre-planning enquiry the peak dry weather flow from the development is estimated at 12.7/s. The flow assumptions for this estimate are shown in Table 1 below.

Use	Quantity	Unit	Litres/day	DWF (l/s)	Peak DWF (l/s)
A2 Commercial offices	1000	m <sup>2</sup>	3	0.09	0.23
C3 Residential	1500	unit	367.19	6.37	12.09
D2 School	100	head	50	0.11	0.37

**Table 1: Development flow estimate**

## Zonal Charge Connection Point

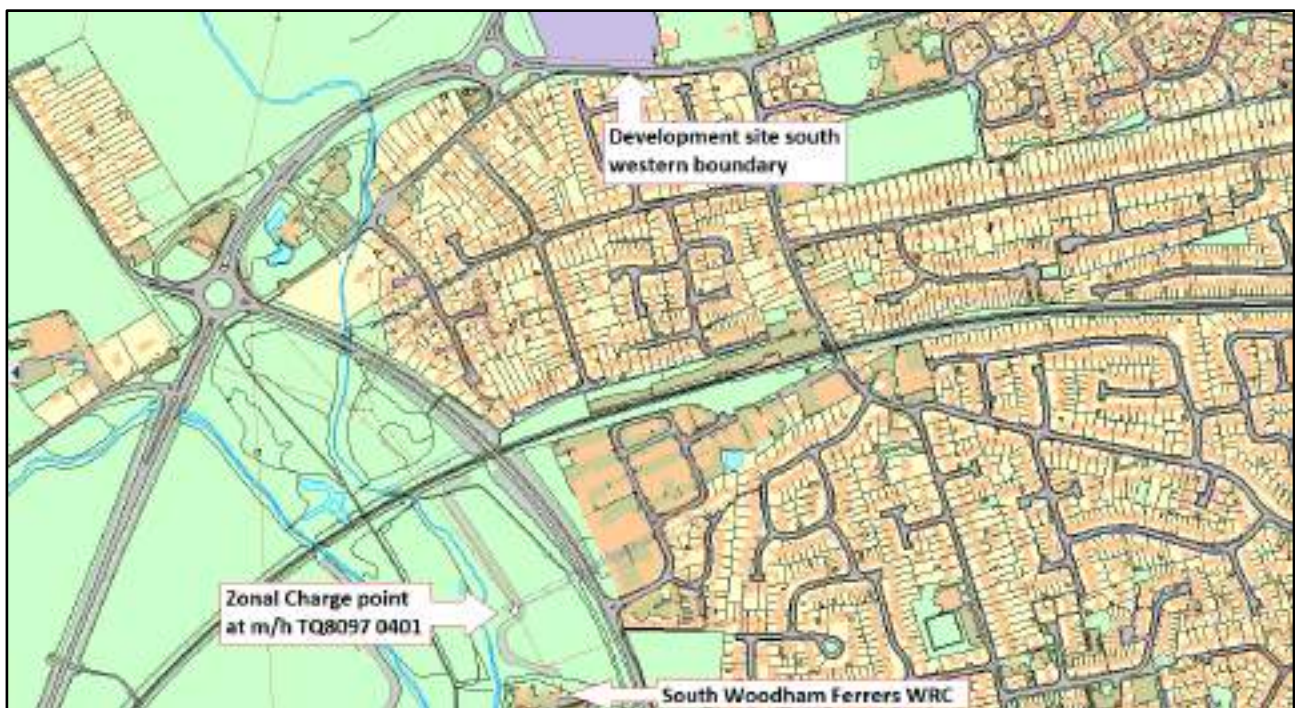
Since the introduction on Zonal Charging in April'18 the connection point is now determined on the basis of the development foul water (FW) flows connecting to the nearest FW sewer of the same size or greater pipe diameter to that required to drain the site. The infrastructure to convey FW flows to the receiving sewerage network is the responsibility of the developer. Conveyance to the connection point is considered

as *Onsite Work* and includes all work carried out upstream of the point of connection, including making the connection to our existing network.

This connection point is referred to as the *zonal charge connection point*.

For the purposes of defining the *zonal charge connection point* and the extent of *Onsite Work*, we would generally consider the nearest accessible sewer of 375mm diameter or greater to serve a development of this size. An accessible sewer would generally be located in the public highway or public open space and to which a connection could be made using reasonably practicable construction techniques.

The nearest sewer conforming to this criterion is the 450mm diameter located in grass land to the west of Ferrers Road. Therefore, the *zonal charge connection point* would be at manhole TQ8097 0401 (NGR TQ8009297428), located at approx. 700m from the south western boundary of the development site (*Figures 2*).



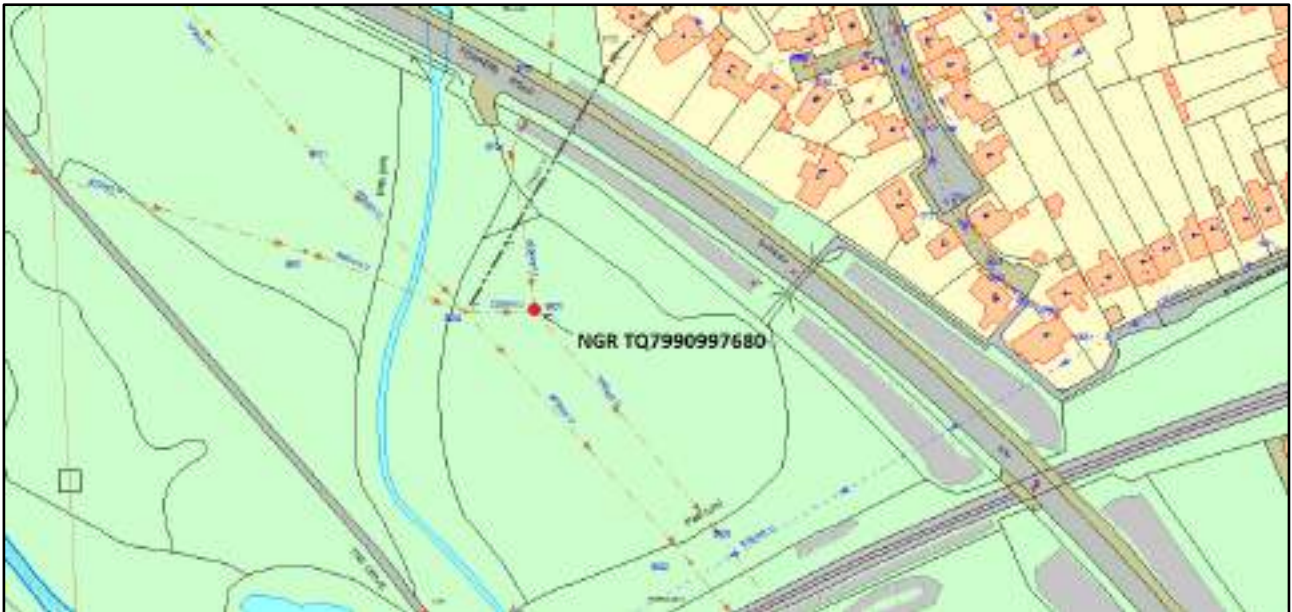
**Figure 2: Showing the location of the zonal charge connection point for development site**

It should be noted that the zonal charge point is intended to indicate the extent of the developer's obligation and may not be the preferred point of connection (POC) for a recommended foul water drainage strategy.

Noting that the presence of the railway line passing north of the zonal charge point and that the development size is only just beyond the indicative band for a 300mm diameter pipe, we have evaluated a POC north of the railway.

The proposed POC is at manhole TQ7997 9601 (NGR TQ7990997680), located in land west of Ferrers Road (see Figure 3). This is a 300mm diameter sewer; our records indicate an invert level at this point of 0.92m AOD and a depth of 3.54m.

This POC is approx. 550m from the development site boundary.



**Figure 3: Showing the location of the proposed point of connection for development site**

### **Capacity Assessment**

Although the size of the development is likely to comprise some low lying areas the available topographical information indicates that a connection can be made from the southwest corner of the development site to the proposed POC by gravity sewer. Consequently, we have assessed the impact of the development flows connecting at a maximum rate of discharge of 12.7l/s.

Our assessment has identified a potential hydraulic constraint in the network downstream of the POC that may cause surcharging with the development connected. This network receives domestic surface water flows and therefore, will be susceptible to surcharging in heavy rainfall.

Our analysis has identified a predicted increase in surcharge levels within the sewerage downstream of the POC as a result of the full development flow discharging during rainfall events. However, this increase is marginal and can be accommodated within the sewerage provided that the discharge rate from the new development does not exceed 3l/s.

Consequently we would conclude that a connection from an initial phase of circa 300 houses development could be received without significant detriment to the existing sewer performance.

Some enhancement to the FW sewerage system would be required in order to accommodate later phases of the development.

It may be possible to mitigate the impact of the substantive development using active flow control and onsite attenuation. We would need to see details of the proposed onsite FW drainage network in order evaluate an active control system

## **Recommended FW Drainage Strategy**

The recommended FW drainage strategy for this development site is for a connection to the 300mm diameter sewer at manhole TQ7997 9601 (NGR TQ7990997680), located in land west of Ferrers Road (*Figure 3*).

An initial phase approximating to a discharge rate 3l/s can be accommodated within the existing sewerage network ahead of capacity enhancement.

An active discharge control and onsite attenuation installation can be evaluated once the detail of the onsite FW drainage is available. This approach may enable the full development to connect without the need to enhance the existing sewerage network capacity.

Please note that Anglian Water will request a suitably worded condition at planning application stage to ensure this strategy is implemented to mitigate the risk of flooding.

## **Next Steps**

We would strongly recommend that Anglian Water is kept informed if the details of the development, particularly in relation to the estimated flow rate, are changed as the detailed design progresses.

Should the anticipated flow rate increase due to a change in the development composition, we may need to evaluate an alternative connection point or methods for controlling the discharge rate.

Anglian Water will reimburse reasonable costs incurred in connecting to an alternative connection point or providing for discharge control, over and above those required to connect to zonal charge connection point.

Further correspondence on this enquiry may be directed to the pre-planning mail box at [planningliaison@anglianwater.co.uk](mailto:planningliaison@anglianwater.co.uk).

Please quote the pre-planning reference **PPE-0056883**

## **Installation of the Conveyance**

The infrastructure to convey foul water flows to the receiving sewerage network is the responsibility of the developer.

In some circumstances it may be appropriate for the developer to install some elements of the conveyance under the provisions of Section 30 of the Anglian Water Act 1974.

It is also possible to requisition Anglian Water to install this conveyance.

Please see our 2019/20 charging arrangements for further cost information.

[https://www.anglianwater.co.uk/siteassets/developer/ds\\_charges\\_2019\\_to\\_2020.pdf](https://www.anglianwater.co.uk/siteassets/developer/ds_charges_2019_to_2020.pdf)

Should you wish to pursue either of these options please contact our Growth Liaison Manager for this area for further details.

The Growth Liaison Manager for this area is Paul Lancaster and he can be contacted on 07802605403.

### **Further work required for a Section 104 or Section 106 application**

Please note, it would be deemed premature by Anglian Water to submit a Section 106 or Section 104 application under the Water Industry Act 1991 prior to a Legal Agreement being signed under Section 98 of the same act, ensuring the necessary upgrade works required have been undertaken.

### **Anglian Water supports sustainable development as set out in the NPPF**

Whilst this report has been prepared to help assess the viability of your proposal, it must not be considered in isolation. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework (NPPF). As a spatial planning statutory consultee, we assist planning authorities in the preparation of a sustainable local plan on the basis of capacity within our water and water recycling (formerly referred to as wastewater) infrastructure. Consequently, any infrastructure needs identified in this report must only be considered in the context of up to date, adopted or emerging local plans. Where local plans are absent, silent or out of date these needs should be considered against the definition of sustainability set out in the NPPF as a whole.

## Trigueros, Borja

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**From:** Lyon Richard <rlyon@anglianwater.co.uk>  
**Sent:** 12 December 2019 15:13  
**To:** Trigueros, Borja  
**Cc:** Farmer, Anne; Butt, Matthew James; Charlie Ward; Lancaster Paul  
**Subject:** RE: South Woodham Ferrers - AW Capacity Assessment Report

Hi Borja

Thanks for sending your latest FW drainage strategy through.

We do have a number of hydraulic constraints throughout this catchment, hence identifying manhole TQ7997 9601 as the initial POC but we recognise the benefit to all concerned in maximising the options for gravity connections.

I believe we have a meeting scheduled for the 20<sup>th</sup> Jan to review the drainage strategy for this site so ahead of that I'll do a bit of analysis on the impact of the flows connecting as you've proposed.

The crucial factors are the phasing determining which parcels will build first and the expected build rate. This will help us to align a supportable investment programme to meet the demand. If you've got any indication of this it would be helpful but if not I'll define some potential scenarios that we can discuss in the meeting.

I note that your calculations use the SfA criteria. For my assessment I'll also consider our own MAS flow calculation of 2.35 occupancy, 125l/h/day consumption and 25% infiltration so as to avoid an unduly conservative result.

I'll aim to get my assessment to you by the 17<sup>th</sup> Jan.

Regards

**Richard Lyon**

Pre-development Senior Engineer  
Development Services

**Anglian Water Services Limited**

Thorpe Wood House, Thorpe Wood,  
Peterborough, Cambridgeshire, PE3 6WT  
Mobile: 07885 135404  
[www.anglianwater.co.uk](http://www.anglianwater.co.uk)

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**From:** Trigueros, Borja [mailto:Borja.Trigueros@aecom.com]  
**Sent:** 11 December 2019 09:44  
**To:** Lyon Richard  
**Cc:** Farmer, Anne; Butt, Matthew James; Charlie Ward  
**Subject:** South Woodham Ferrers - AW Capacity Assessment Report



**\*EXTERNAL MAIL\*** - Please be aware this mail is from an external sender - **THINK BEFORE YOU CLICK**

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Dear Richard,

Thank you for issuing the Pre-Planning Addendum Report on the proposed development of **Land at South Woodham Ferrers** in conjunction with the pre-planning report **146443/93100165/1/0056883**.

As you might be aware, the proposed development area has been upsized to include the land of Essex County Council, however the total number of properties has been reduced to a total number of 1364 dwellings (from 1500), with 2.5 Ha. for a school & local centre and 1.6 Ha. for travelling show people use.

Please find attached the outline foul water drainage strategy drawing and foul drainage calculations based on the requirements as set out in Sewers for Adoption 7<sup>th</sup> Edition. Please note some of the manhole invert levels for the AW manholes at connection points, where not available from AW sewer records, have been assumed, taking into consideration levels of upstream & downstream manholes.

AW addendum report states that the whole development is discharging into a single point of connection located at manhole TQ7997 9601 and the capacity assessment is based on this assumption. However, the Site has been divided in different catchments for the foul drainage strategy, with the Site discharging into four manholes located in two existing catchments. With the split of the development into separate AW foul networks (one on the east and one on the west of the development) there is less impact on the receiving network.

All connections from the proposed development into the existing network are expected to be 150 or 225mm dia. pipes, therefore it won't be required to connect the new development into a 300mm dia. existing pipe.

Could you please review the capacity assessment and point of connection in accordance to our proposed drainage strategy?

Should you require any further information, please let me know.

Kind regards,  
Borja

**Borja Trigueros** BEng, MEng  
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## **Trigueros, Borja**

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**From:** Trigueros, Borja  
**Sent:** 26 April 2021 15:30  
**To:** Richard Lyon; Paul Lancaster; Charlie Ward; Kathryn Waldron  
**Cc:** Farmer, Anne  
**Subject:** Anglian Water - Foul Water Drainage Strategy Discussion

Hi all,

Please find below some key points from our meeting today. Please feel free to add anything or make any comments if needed.

### **Key points**

- Foul Drainage Strategy presented by AECOM and agreed in principle by AW, however new options have been proposed. Option to gravitate the whole network will not be feasible for the site.
- As connecting to more than 1 point - agreed POC is to the east, any works to the west will be over above the infrastructure cost.
- The 300mm pipe on Ferrers Road extend to the north of the railway, so worse case POC is upstream of the Railway Crosses.
- Foul Drainage Options:
  - Option 1: As per draft drawing issued to AW. West part of the catchment draining into MH1101. Central catchment draining into the proposed pumping station, rising main laid until the highest point of Burnham Road and then gravitate towards Ferrers Road. Rising main will be laid within Countryside boundary providing an easement for AW.
  - Option 2: Same strategy as Option 1, but a new connection will be done from the south of the pumping station to drain the existing properties within the catchment in the south of Burnham Road. This will alleviate the increased flows in MH1101 due to the west catchment connection. Countryside will be responsible to build the section of the rising main and foul gravity pipe within their land and AW from the roundabout to the south.
  - Option 3: As Option 2, however the work on most of the raising main and the gravity pipe will be done by AW directly and located within the verge of the road.
- Pumping station and rising main done under requisition?? 100% of cots up front?
- Pumping Station and Rising Main should go under S104. If Countryside built and took existing flows would be adopted immediately through network upgrade agreement. Adopted subject to Tech Approval under S104 but at agreement stage as soon as taking flows would adopt and take control as soon as plumbed in with normal 12-month maintenance.
- AW would want Countryside to do the crossing of Burnham Road for Options 2 and 3.
- Requisition length of gravity sewer.
- Countryside can decide who does work downstream of the site - Sewer Requisition Works by AW?
- AW agreed the criteria of 90L per person and apportioned over 8 hours day for the school.

### **Actions:**

- AW will put summary costs together based on current strategy, will assume in road for worst case costs plus second option for AW constructing from roundabout.

- Richard get survey of existing sewer in the highway to be diverted.
- AECOM to review levels and properties in the south of Burnham Road that could be connected into the Pumping Station.
- AECOM to review access off Burnham Road to pumping station.
- If strategy for whole site includes offset relatively happy. AECOM to send a draft of the FW strategy prior to planning submission

Many thanks,  
Borja

**Borja Trigueros** BEng, MEng  
Civil Engineer  
M +447795 917 070  
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Essex County Council  
**Development and Flood Risk**  
**Waste & Environment**  
E3 County Hall  
Chelmsford  
Essex CM1 1QH



Borja Trigueros

Date: 14 May 2020  
Our Ref SUDS-004465

Dear Ms Trigueros,

### **Pre-application Response – North of South Woodham Ferrers**

Thank you for contacting us for pre-application advice which provides Essex County Council (ECC) with the opportunity to assess and advise on the proposed surface water drainage strategy for the aforementioned planning application.

As the Lead Local Flood Authority (LLFA) ECC provides advice on SuDS schemes for major developments. ECC have been statutory consultee on surface water since the 15th April 2015.

In providing advice this Council looks to ensure sustainable drainage proposals comply with the required standards as set out in the following documents:

- Non-statutory technical standards for sustainable drainage systems
- Essex County Council's (ECC's) adopted Sustainable Drainage Systems Design Guide
- The CIRIA SuDS Manual (C753)
- BS8582 Code of practice for surface water management for development sites.

### **Lead Local Flood Authority position**

After reviewing the submitted documents please see a summary of our comments below:

ECC is statutory consultee to ensure the adoption of sustainable ways of surface water management where above ground storage is our preferred option when considering drainage strategies for new developments. Above ground storage options maximize the amenity and biodiversity benefits of SUDS. It is preferable that these are implemented throughout the development and integrated into the proposed landscaping as extensively as practicable.

## **Overall Drainage Strategy**

The proposed development at North of South Woodham Ferrers is a large major development and comprises of 8 sub-catchments. The drainage strategy has included SUDS features such as swales and detention basins. All existing ditched would be retained and the site discharge would be made using 3 outfalls into watercourses.

Having reviewed the surface water drainage strategy and flood risk assessment it is considered that the proposed surface water drainage and flood mitigation proposal has sufficiently address the SUDS principles to manage surface water flows from the site and also mitigated the overland flow by incorporating open SUDS features.

The surface water attenuation would be provided by detention basins and discharge from the site would be restricted to 1 in 1 year greenfield run off rates for all events including 1 in 100 plus 40% allowance of climate change. Further it was agreed to explore the suitability of infiltration by undertaking ground testing in line with BRE Digest 365 Soakaway Design. In case of positive infiltration, it is recommended to use onsite infiltration as the first method of discharge and or an opportunity to make the scheme more flood resilient by using hybrid infiltration.

It is notice that the discharge rates are expressed in relation to the multiple catchments 1 in 1 year greenfield rates and no information was given for 1 in 1 year discharge from the entire site. During the pre-application meeting it was discussed the combined discharge from multiple sites would not exceed from 1 in 1 year greenfield runoff rates for the whole site. This information should be included in drainage strategy.

Please note the discharge rate of detention basin "J" is given in drawing number XX-C-DR-0030 and 0031) is not in line with the discharge rates provided for detention basin J in table 6-10. It is assumed the attenuation volume is given for individual basin (J) however the discharge rates were expressed for total network J.

The drainage strategy has satisfied the SUDS principles at a scale of sub-catchments, it is recommended to use the same principal to achieve surface water management at individual parcel or development scale and provide additional benefits using range of SUDS features to improve water quality and enhance landscape with green and blue infrastructure.

## **Maintenance and Adoption**

The on-going maintenance of any features will be necessary to ensure that flooding does not occur due to failure of components. A maintenance plan should be provided as part of the planning application process detailing the maintenance activities and frequencies as well as who will be maintaining the system.

We understand that Anglian Water do adopt SuDS schemes within this region upon a scheme meeting their Adoption Criteria. If you intend to have them adopt your scheme, you will also need to provide proof that you have sent an Expression of Interest to them, or an Approval in Principle of your design.

**Additional comments:**

At some point during the planning stage, you would need to show how surface water will be managed during the construction phase.

You would also need to demonstrate how surface water impacts on the drainage system before and after development, and how the new development improves existing land drainage or surface water management.

Under Section 23 of the Land Drainage act (1991) any proposed structure that impacts on the cross-sectional area of a watercourse will require Ordinary Watercourse consent to be sought from Essex County Council. Such applications are separate from and are required in addition to the planning process.

The LLFA would expect the following documentation to be submitted at Outline Planning Application stage:

- Flood Risk Assessment
- Drainage strategy
- Preliminary layout drawings showing potential features, and location of discharge points
- Preliminary storage calculations and greenfield runoff rate calculations
- Preliminary landscape proposals
- Preliminary ground investigation report, to show potential infiltration viability
- Evidence of third-party agreement to discharge

This is not an exhaustive list and other information may need to be submitted alongside the application, pending on the site-specific requirements.

**Please note:**

The advice provided by the Council's Officers is informal opinion only and is made without prejudice to any formal decision that may be given in the event of an application being submitted.

In particular, any advice given will not constitute a formal response or recommendation of the County Council. Any views or opinions expressed are in good faith and to the best of ability, without prejudice to the formal consideration of any application, which will ultimately be decided by the Local Planning Authority. The County Council cannot guarantee that new issues will not be raised following submission of a planning application and consultation upon it.

Officers cannot give guarantees about the final formal decision that will be made on planning or related applications. However, the advice contained within the written response will be considered by officers when considering any future planning application. This is subject to the proviso that circumstances and information may change or come to light that could alter the position. It should be noted that the weight given to pre-application advice will change if new material considerations arise.

Whilst we have no further comments at this stage, we strongly recommend you engage in pre-application consultation with any other organisations that maybe relevant to the proposed drainage strategy to avoid potential delays at the application stage. If you have any queries about any advice we have given please do not hesitate to contact us.

Yours sincerely,

**Dr Zahida Yousaf**  
**Senior Development and Flood Risk Officer**  
Team: Development and Flood Risk  
Service: Waste & Environment  
Essex County Council

Internet: [www.essex.gov.uk](http://www.essex.gov.uk)  
Email: [suds@essex.gov.uk](mailto:suds@essex.gov.uk)

# Agenda

<b>Meeting name</b> Development & Flood Risk Management	<b>Subject</b> Drainage Strategy	<b>Attendees</b> Anne Farmer - AECOM Charlie Ward - Countryside Kathryn Waldron - Countryside Steve Price - Countryside Tim Simpson - Essex County Council Sally Rogers - Chelmsford City Council Andy Bestwick - Chelmsford City Council
<b>Meeting date</b> 25/02/2021	<b>Time</b> 11:00	
<b>Location</b> Microsoft Teams	<b>Project name</b> South Woodham Ferrers	
<b>Project number</b> 60567432	<b>AECOM project number</b> 60567432	
<b>Prepared by</b> Borja Trigueros		

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## Meeting Notes

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BT introduced existing scheme and drainage strategy for outline planning application

Ensure making adequate mention of at source such as rainwater harvesting - check against Chelmsford design

To include GI in drainage strategy as borehole information in order to prove infiltration is not a viable option.

Greenfield runoff rate 1 in1 2.984l/s/hectare calculated using IH124 used to calculate allowable discharge from each network – LLFA happy with this approach

Concerned about Fenn Brook, need to prove betterment – explore option to provide betterment using the previous development area.

Highway SUDS can't confirm adoption - costs of maintenance involved if do.

Adoption document for ditches and basins now live - discuss with Anglian Water at an early stage. DCG (design and construction guidance).

Sediment forebays in basins, protects main body of feature, amenity feature.

Half drain time on the detention basins to be checked.

Other adoption - land trust model as per Beaulieu - slightly more complicated due to age of development, might not be agreed yet -city council keen to take on with Beaulieu

Access Road, concerned about quality of runoff, won't consider gullies as treatment – check pollution hazards and make sure ok.

Countryside is responsible for infrastructure design before selling independent plots to other developers.

Submission end of April



# Appendix D Proposed development plans

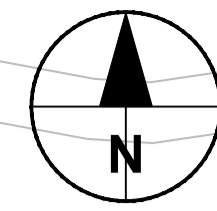
## Proposed Site Plan

L00005-AEC-NA-NA-DR-C-5000	Surface Water Drainage Plan
L00005-AEC-NA-PH1-DR-C-5001	Surface Water Drainage Plan Phase 1
L00005-AEC-NA-NA-DR-C-5002	Foul Water Drainage Plan
L00005-AEC-NA-PH1-DR-C-5003	Foul Water Drainage Plan Phase 1
L00005-AEC-NA-NA-DR-C-5004	Pluvial Risk of Flooding
L00005-AEC-NA-NA-DR-C-5005	Surface Catchment Areas
L00005-AEC-NA-NA-DR-C-5006	Foul Water Typical Pumping Station Details
L00005-AEC-NA-NA-DR-C-5100	Detention Basin Sections Sheet 1 of 3
L00005-AEC-NA-NA-DR-C-5101	Detention Basin Sections Sheet 2 of 3
L00005-AEC-NA-NA-DR-C-5102	Detention Basin Sections Sheet 3 of 3
L00005-AEC-NA-NA-DR-C-7002	Pumping Station Access Visibility Splays

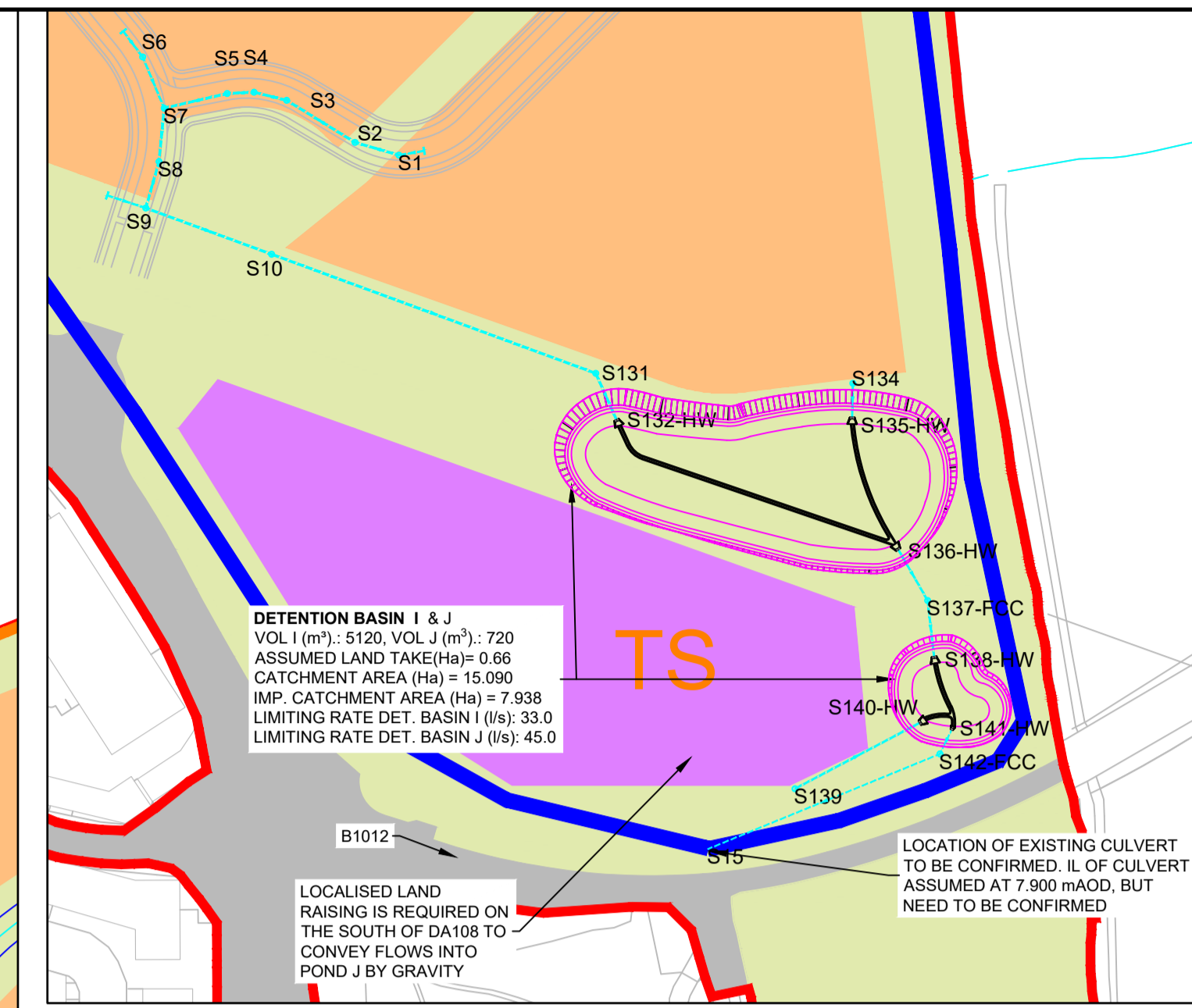
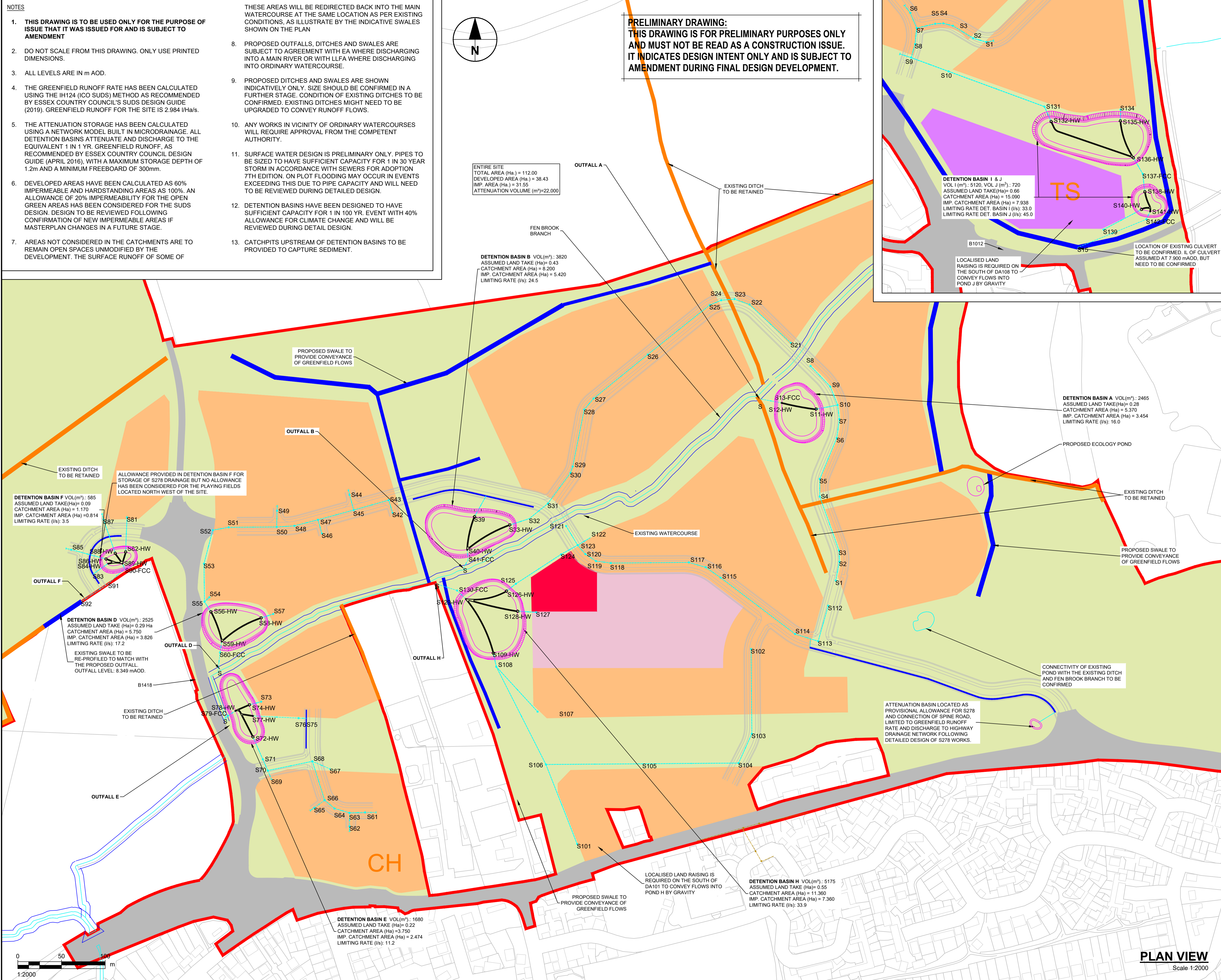
NOTES

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2. DO NOT SCALE FROM THIS DRAWING. ONLY USE PRINTED DIMENSIONS.
3. ALL LEVELS ARE IN m AOD.
4. THE GREENFIELD RUNOFF RATE HAS BEEN CALCULATED USING THE IH124 (ICO SUDS) METHOD AS RECOMMENDED BY ESSEX COUNTRY COUNCIL'S SUDS DESIGN GUIDE (2019). GREENFIELD RUNOFF FOR THE SITE IS 2.984 l/Ha/s.
5. THE ATTENUATION STORAGE HAS BEEN CALCULATED USING A NETWORK MODEL BUILT IN MICRODRAINAGE. ALL DETENTION BASINS ATTENUATE AND DISCHARGE TO THE EQUIVALENT 1 IN 1 YR. GREENFIELD RUNOFF, AS RECOMMENDED BY ESSEX COUNTRY COUNCIL DESIGN GUIDE (APRIL 2016), WITH A MAXIMUM STORAGE DEPTH OF 1.2m AND A MINIMUM FREEBOARD OF 300mm.
6. DEVELOPED AREAS HAVE BEEN CALCULATED AS 60% IMPERMEABLE AND HARDSTANDING AREAS AS 100%. AN ALLOWANCE OF 20% IMPERMEABILITY FOR THE OPEN GREEN AREAS HAS BEEN CONSIDERED FOR THE SUDS DESIGN. DESIGN TO BE REVIEWED FOLLOWING CONFIRMATION OF NEW IMPERMEABLE AREAS IF MASTERPLAN CHANGES IN A FUTURE STAGE.
7. AREAS NOT CONSIDERED IN THE CATCHMENTS ARE TO REMAIN OPEN SPACES UNMODIFIED BY THE DEVELOPMENT. THE SURFACE RUNOFF OF SOME OF

8. PROPOSED OUTFALLS, DITCHES AND SWALES ARE SUBJECT TO AGREEMENT WITH EA WHERE DISCHARGING INTO A MAIN RIVER OR WITH LLFA WHERE DISCHARGING INTO ORDINARY WATERCOURSE.
9. PROPOSED DITCHES AND SWALES ARE SHOWN INDICATIVELY ONLY. SIZE SHOULD BE CONFIRMED IN A FURTHER STAGE. CONDITION OF EXISTING DITCHES TO BE CONFIRMED. EXISTING DITCHES MIGHT NEED TO BE UPGRADED TO CONVEY RUNOFF FLOWS.
10. ANY WORKS IN VICINITY OF ORDINARY WATERCOURSES WILL REQUIRE APPROVAL FROM THE COMPETENT AUTHORITY.
11. SURFACE WATER DESIGN IS PRELIMINARY ONLY. PIPES TO BE SIZED TO HAVE SUFFICIENT CAPACITY FOR 1 IN 30 YEAR STORM IN ACCORDANCE WITH SEWERS FOR ADOPTION 7TH EDITION. ON PLOT FLOODING MAY OCCUR IN EVENTS EXCEEDING THIS DUE TO PIPE CAPACITY AND WILL NEED TO BE REVIEWED DURING DETAILED DESIGN.
12. DETENTION BASINS HAVE BEEN DESIGNED TO HAVE SUFFICIENT CAPACITY FOR 1 IN 100 YR. EVENT WITH 40% ALLOWANCE FOR CLIMATE CHANGE AND WILL BE REVIEWED DURING DETAIL DESIGN.
13. CATCHPITS UPSTREAM OF DETENTION BASINS TO BE PROVIDED TO CAPTURE SEDIMENT.



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ALLOWANCE PROVIDED IN DETENTION BASIN F FOR STORAGE OF S278 DRAINAGE BUT NO ALLOWANCE HAS BEEN CONSIDERED FOR THE PLAYING FIELDS LOCATED NORTH WEST OF THE SITE.

EXISTING DITCH TO BE RETAINED

EXISTING SWALE TO BE RE-PROFILED TO MATCH WITH THE PROPOSED OUTFALL

EXISTING SWALE TO BE RETAINED

EXISTING DITCH TO BE RETAINED

EXISTING DITCH TO BE RETAINED

EXISTING DITCH TO BE RETAINED

EXISTING DITCH TO BE RETAINED

EXISTING DITCH TO BE RETAINED

EXISTING DITCH TO BE RETAINED

ENTIRE SITE  
TOTAL AREA (Ha) = 112.00  
DEVELOPED AREA (Ha) = 38.43  
IMP. AREA (Ha) = 31.55  
ATTENUATION VOLUME (m³) = 22,000

DETENTION BASIN B VOL(m³): 3820  
ASSUMED LAND TAKE (Ha): 0.43  
CATCHMENT AREA (Ha) = 8.200  
IMP. CATCHMENT AREA (Ha) = 5.420  
LIMITING RATE (l/s): 24.5

DETENTION BASIN I & J  
VOL I (m³): 5120, VOL J (m³): 720  
ASSUMED LAND TAKE (Ha): 0.66  
CATCHMENT AREA (Ha) = 15.090  
IMP. CATCHMENT AREA (Ha) = 7.938  
LIMITING RATE DET. BASIN I (l/s): 33.0  
LIMITING RATE DET. BASIN J (l/s): 45.0

LOCALISED LAND RAISING IS REQUIRED ON THE SOUTH OF DA108 TO CONVEY FLOWS INTO POND J BY GRAVITY

LOCATION OF EXISTING CULVERT TO BE CONFIRMED. IL OF CULVERT ASSUMED AT 7.900 mAOD, BUT NEED TO BE CONFIRMED

DETENTION BASIN A VOL(m³): 2465  
ASSUMED LAND TAKE (Ha): 0.28  
CATCHMENT AREA (Ha) = 5.370  
IMP. CATCHMENT AREA (Ha) = 3.454  
LIMITING RATE (l/s): 16.0

PROPOSED ECOLOGY POND

EXISTING DITCH TO BE RETAINED

PROPOSED SWALE TO PROVIDE CONVEYANCE OF GREENFIELD FLOWS

CONNECTIVITY OF EXISTING POND WITH THE EXISTING DITCH AND FEN BROOK BRANCH TO BE CONFIRMED

ATTENUATION BASIN LOCATED AS PROVISIONAL ALLOWANCE FOR S278 AND CONNECTION OF SPINE ROAD, LIMITED TO GREENFIELD RUNOFF RATE AND DISCHARGE TO HIGHWAY DRAINAGE NETWORK FOLLOWING DETAILED DESIGN OF S278 WORKS.

LOCALISED LAND RAISING IS REQUIRED ON THE SOUTH OF DA101 TO CONVEY FLOWS INTO POND H BY GRAVITY

DETENTION BASIN H VOL(m³): 5175  
ASSUMED LAND TAKE (Ha): 0.55  
CATCHMENT AREA (Ha) = 11.360  
IMP. CATCHMENT AREA (Ha) = 7.360  
LIMITING RATE (l/s): 33.9

DETENTION BASIN E VOL(m³): 1680  
ASSUMED LAND TAKE (Ha): 0.22  
CATCHMENT AREA (Ha) = 3.750  
IMP. CATCHMENT AREA (Ha) = 2.474  
LIMITING RATE (l/s): 11.2



PROJECT  
Oaklands Meadows

CLIENT  
Countryside Properties

CONSULTANT  
AECOM  
The Colmore Building, Colmore Circus  
Queensway, Birmingham, B4 6AT  
0121 262 1900  
www.aecom.com

- KEY
- SITE BOUNDARY
  - EXISTING WATERCOURSE
  - EXISTING DITCH
  - PROPOSED SWALE
  - PROPOSED SW DRAINAGE PIPE
  - PROPOSED FW DRAINAGE PIPE
  - PROPOSED DETENTION BASIN

ISSUE/REVISION				
Rev	Date	Description	Dm	Chk
P02	23/09/21	PROJECT NAME CHANGE	JH	BT
P01	09/06/21	PRELIMINARY ISSUE	AH	BT

PROJECT NUMBER  
60567432

SHEET TITLE  
SURFACE WATER DRAINAGE PLAN

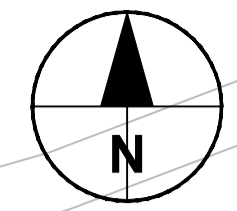
SHEET NUMBER  
L00005-AEC-NA-NA-DR-C-5000

PLAN VIEW  
Scale 1:2000

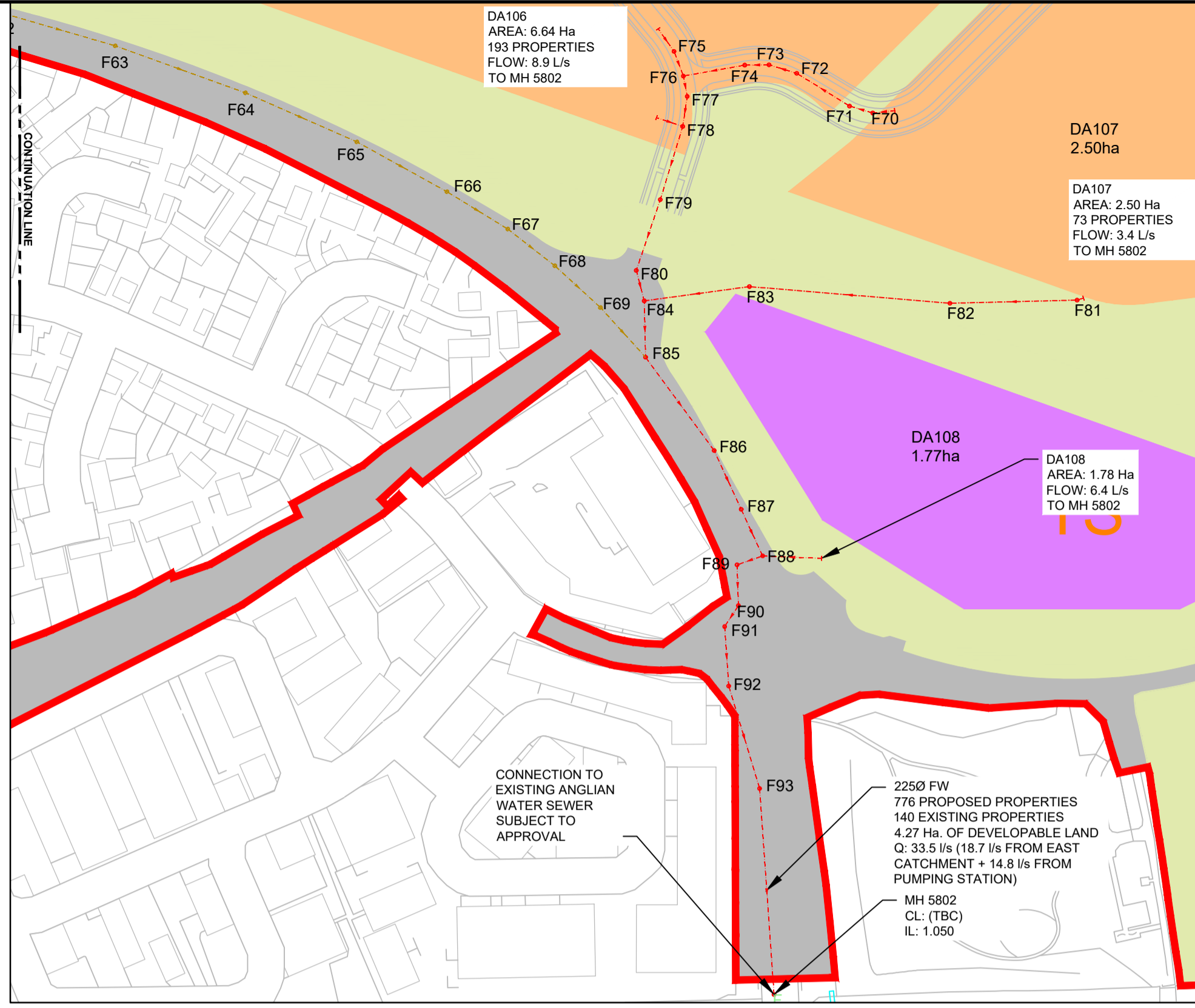
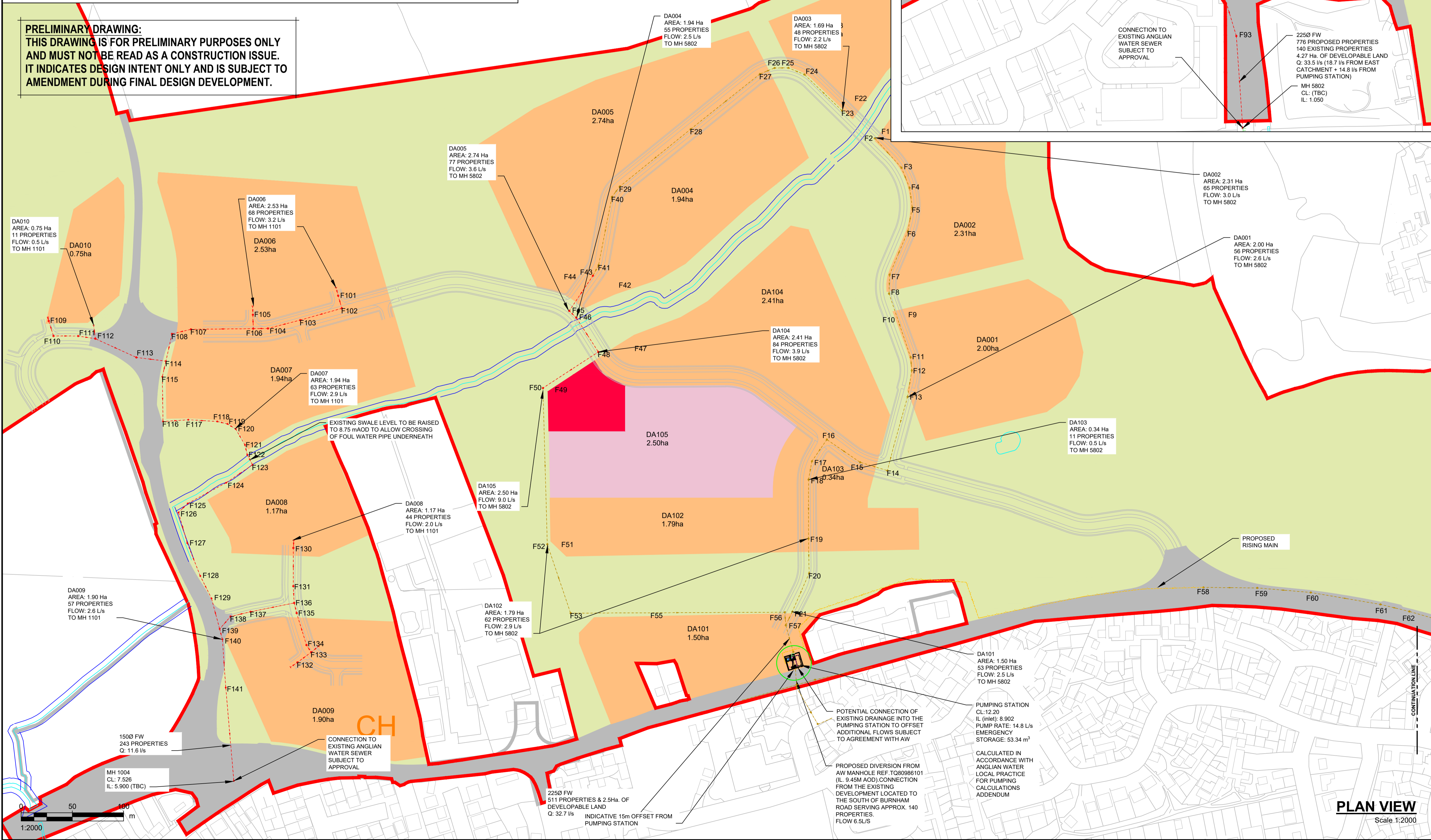


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3. ALL LEVELS ARE IN m AOD.
4. DESIGN FLOWS FOR FOUL SEWERS HAVE BEEN CALCULATED IN ACCORDANCE TO SEWERS FOR ADOPTION 6TH EDITION. DESIGN FLOW FOR RESIDENTIAL DEVELOPMENTS ARE BASED ON 4000 L/DWELLING/DAY. DESIGN FLOWS FOR INDUSTRIAL DEVELOPMENTS ARE BASED ON 0.6L/s/HA.
5. DESIGN OF PUMPING STATION CALCULATED IN ACCORDANCE TO ANGLIAN WATER LOCAL PRACTICE FOR PUMPING STATION ADDENDUM.
6. EXISTING FOUL WATER SEWER RECORDS ARE SHOWN INDICATIVELY BASED ON ANGLIAN WATER SEWER RECORD MAPS. INVERT LEVELS AND LOCATIONS HAVE BEEN ASSUMED BASED ON THE AVAILABLE INFORMATION AND NEED TO BE CONFIRMED PRIOR TO DETAIL DESIGN STAGE. IF THE OUTFALL POINT IS FOUND TO BE HIGHER OR SIGNIFICANTLY LOWER THAN SHOWN ON THE DRAWINGS THEN SIGNIFICANT REDESIGN OF DRAINAGE AND LEVELS MAY BE NECESSARY.
7. CONNECTION TO PUBLIC SEWERS IS SUBJECT TO CONFIRMATION FROM ANGLIAN WATER AND MAY REQUIRE OFFSITE REINFORCEMENT WORKS AT COST TO THE DEVELOPER.
8. PUMPING STATIONS SHOULD HAVE AN APPROPRIATE CORDON SANITAIRE (15m) FROM THE WET WELL IN ORDER TO PREVENT THE IMPACT OF ODOURS AND NOISE OF THE PUMPING STATION ON THE DEVELOPMENT AND WILL ALSO NEED A COMPOUND AND EMERGENCY STORAGE VOLUME.
9. DESIGN SUBJECT TO ALTERATION PENDING PROPOSED LEVELS DESIGN, FINAL MASTERPLAN ARRANGEMENT, ACCOMMODATION SCHEDULE AND ANGLIAN WATER APPROVAL.
10. EXISTING ANGLIAN WATER RECORDS DATE FROM FEBRUARY 2017. UPDATED SEWER RECORDS WILL BE REQUESTED IN A FURTHER STAGE.
11. ALL WORKS ON THE ORDINARY WATERCOURSE WILL BE SUBJECT TO ORDINARY WATERCOURSE CONSENT FROM THE LLFA.



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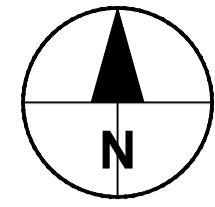


- KEY**
- SITE BOUNDARY
  - EXISTING WATERCOURSE
  - PROPOSED FW DRAINAGE PIPE PHASE 1
  - PROPOSED FW DRAINAGE PIPE PHASE 2
  - PROPOSED RISING MAIN
  - EXISTING FOUL WATER SEWER

**ISSUE/REVISION**

Rev	Date	Description	Drm	Chk	App
P03	20/09/21	PROJECT NAME CHANGE	JH	BT	AH
P02	29/07/21	FOUL WATER DRAINAGE NETWORK REVISED	JS	KW	AF
P01	16.06.21	PRELIMINARY ISSUE	AH	BT	AF





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6. PROPOSED OUTFALLS, DITCHES AND SWALES ARE SUBJECT TO AGREEMENT WITH EA WHERE DISCHARGING INTO A MAIN RIVER OR WITH LLFA WHERE DISCHARGING INTO ORDINARY WATERCOURSE.
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8. ANY WORKS IN VICINITY OF ORDINARY WATERCOURSES WILL REQUIRE APPROVAL FROM THE COMPETENT AUTHORITY.
9. RUNOFF FROM OVERLAND FLOWS WILL BE CAPTURED UPSTREAM OF PROPOSED DEVELOPMENT AREAS AND CONVEYED TO THE EXISTING WATERCOURSE THROUGH EXISTING AND PROPOSED SWALES, MIMICKING THE NATURAL DRAINAGE REGIME. RAINFALL WITHIN PROPOSED DEVELOPMENT AREAS WILL BE ATTENUATED TO THE GREENFIELD 1 IN 1 YR. RUNOFF RATE, HENCE THE FLOW TO THE WATERCOURSE ON EXTREME EVENTS WILL BE REDUCED.



**PROJECT**

Oaklands Meadows

**CLIENT**

Countryside Properties

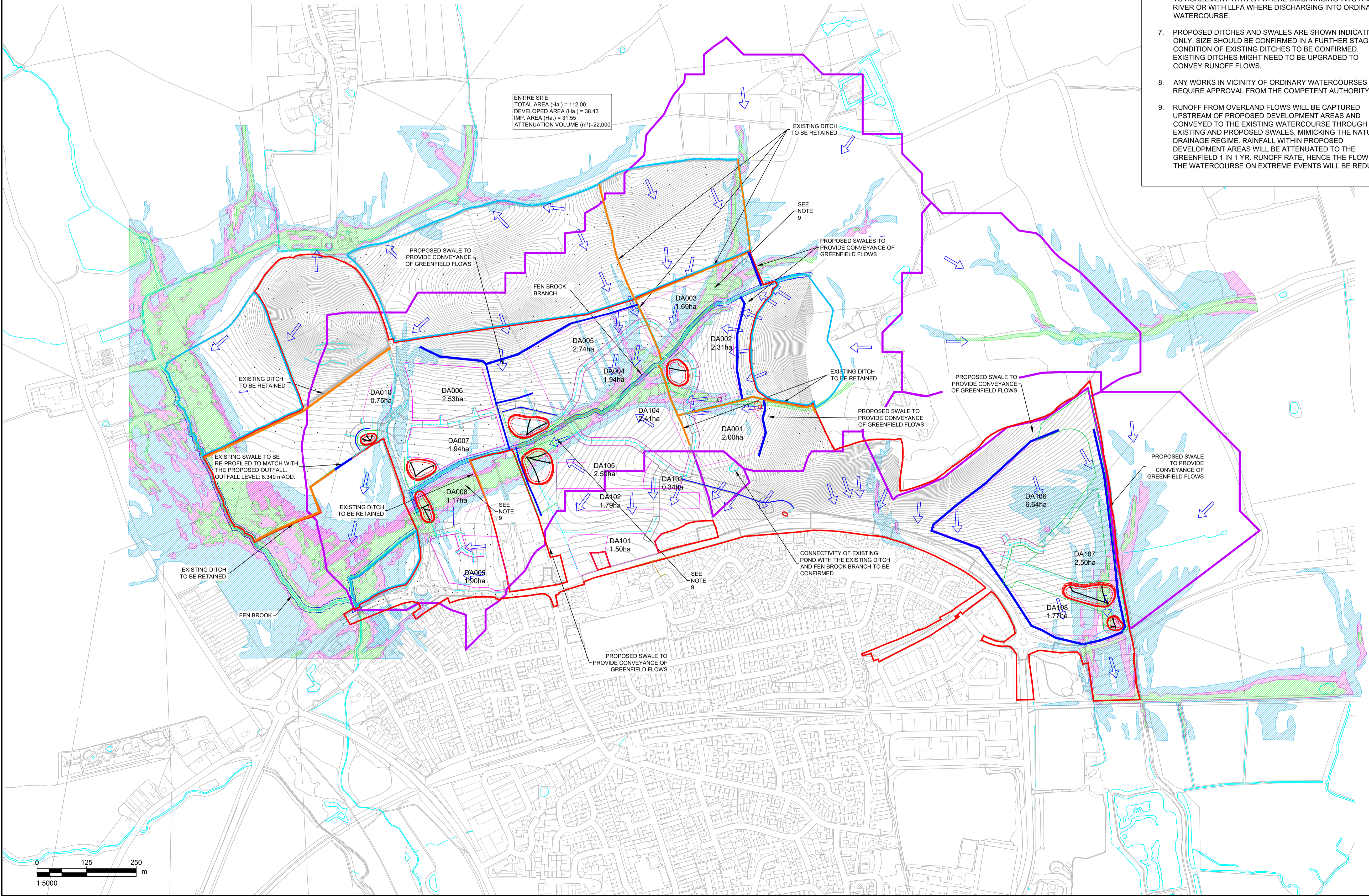
**CONSULTANT**

AECOM Ltd.  
Colmore Building  
Birmingham, B4 6AT, United Kingdom  
T +44-(0)121-262-1900  
www.aecom.com

**KEY PLAN**

- SITE BOUNDARY
- EXISTING WATERCOURSE
- EXISTING DITCH
- PROPOSED SWALE
- PROPOSED DRAINAGE PIPE
- PROPOSED DETENTION BASIN
- PROPOSED HIGHWAY AREA
- PROPOSED DEVELOPMENT AREA (DA)
- PROPOSED GREEN AREA (GA)
- PLUVIAL FLOOD RISK:
  - 30-YR EXTENT
  - 100-YR EXTENT
  - 1000-YR EXTENT
- CONTRIBUTING CATCHMENT
- OVERFLOW FLOOD PATHS

ENTIRE SITE  
TOTAL AREA (Ha.) = 112.00  
DEVELOPED AREA (Ha.) = 38.43  
IMP. AREA (Ha.) = 31.55  
ATTENUATION VOLUME (m³)=22,000



**ISSUE/REVISION**

Rev	Date	Description	Dwn	Chk	App
P03	23/09/21	PROJECT NAME CHANGE	JH	BT	AF
P02	17/06/21	BOUNDARY UPDATED	GS	BT	AF
P01	16/06/21	ISSUED FOR PLANNING	AH	BT	AF

**PROJECT NUMBER**

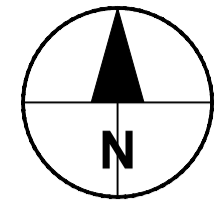
60567432

**SHEET TITLE**

PLUVIAL RISK OF FLOODING

**SHEET NUMBER**

L00005-AEC-NA-NA-DR-C-5004



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5. AREAS NOT CONSIDERED IN THE CATCHMENTS ARE TO REMAIN OPEN SPACES UNMODIFIED BY THE DEVELOPMENT. THE SURFACE RUNOFF OF SOME OF THESE AREAS WILL BE REDIRECTED BACK INTO THE MAIN WATERCOURSE AT THE SAME LOCATION AS PER EXISTING CONDITIONS, AS ILLUSTRATE BY THE INDICATIVE SWALES SHOWN ON THE PLAN

CATCHMENT AREAS SUMMARY			
NETWORK	KEY	TOTAL CATCHMENT AREA (Ha.)	IMPERMEABLE CATCHMENT AREA (Ha.)
A	[Red]	5,370	3,454
B	[Blue]	8,200	5,420
D	[Green]	5,750	3,826
E	[Orange]	3,750	2,474
F	[Yellow]	1,170	0,814
H	[Light Blue]	11,360	7,360
J	[Light Green]	15,360	8,208



**PROJECT**

Oaklands Meadows

**CLIENT**

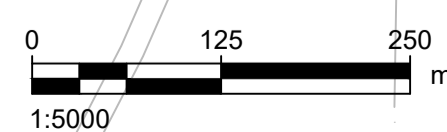
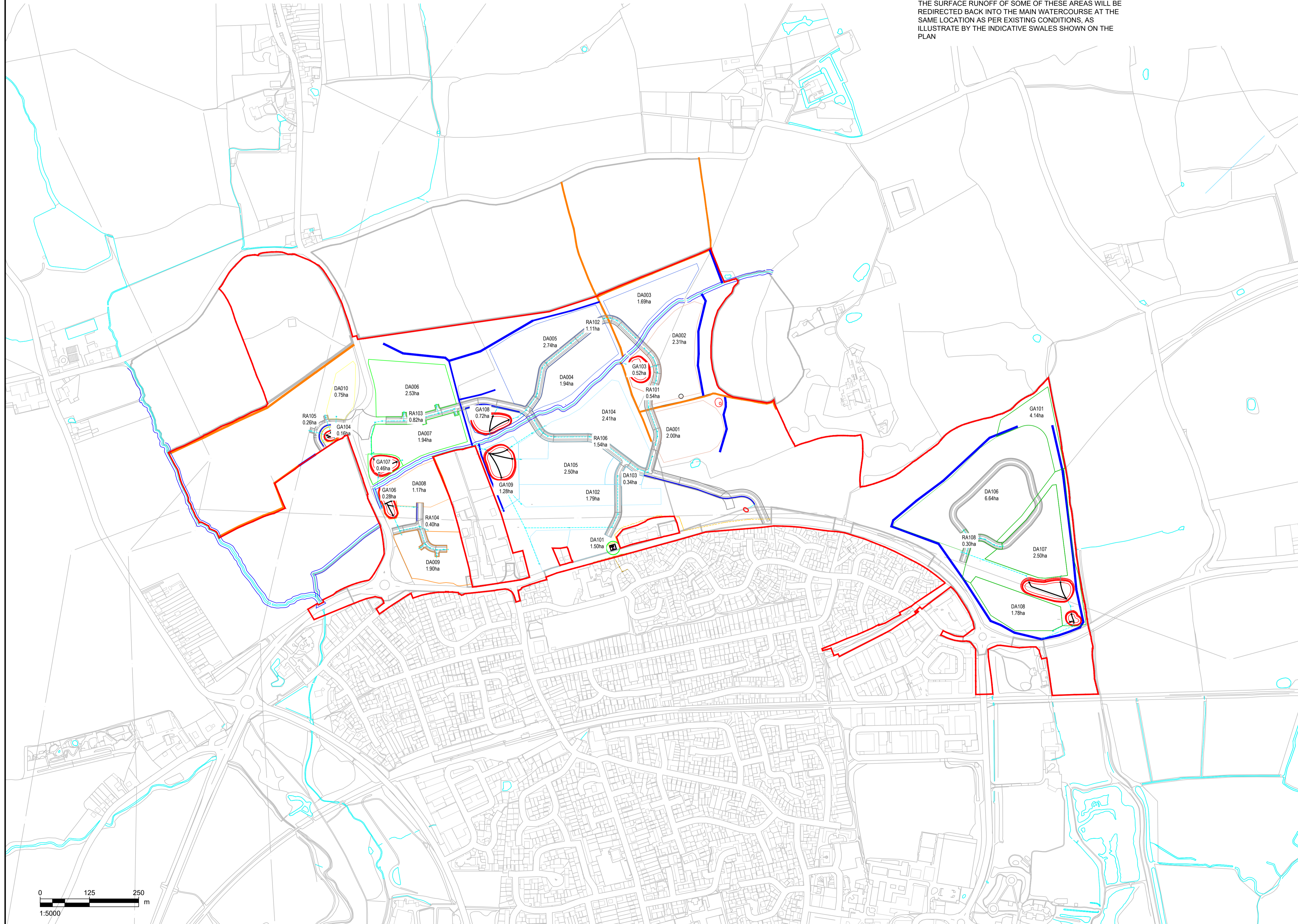
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**KEY PLAN**

- SITE BOUNDARY
- EXISTING WATERCOURSE
- EXISTING DITCH
- PROPOSED SWALE
- PROPOSED SW PIPES
- PROPOSED POND



**ISSUE/REVISION**

Rev	Date	Description	Drn	Chk	App
P03	23/09/21	PROJECT NAME CHANGE	JH	BT	AF
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P01	16/06/21	ISSUED FOR PLANNING	AH	BT	AF

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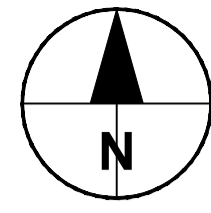
60567432

**SHEET TITLE**

PROPOSED SURFACE WATER CATCHMENT AREAS

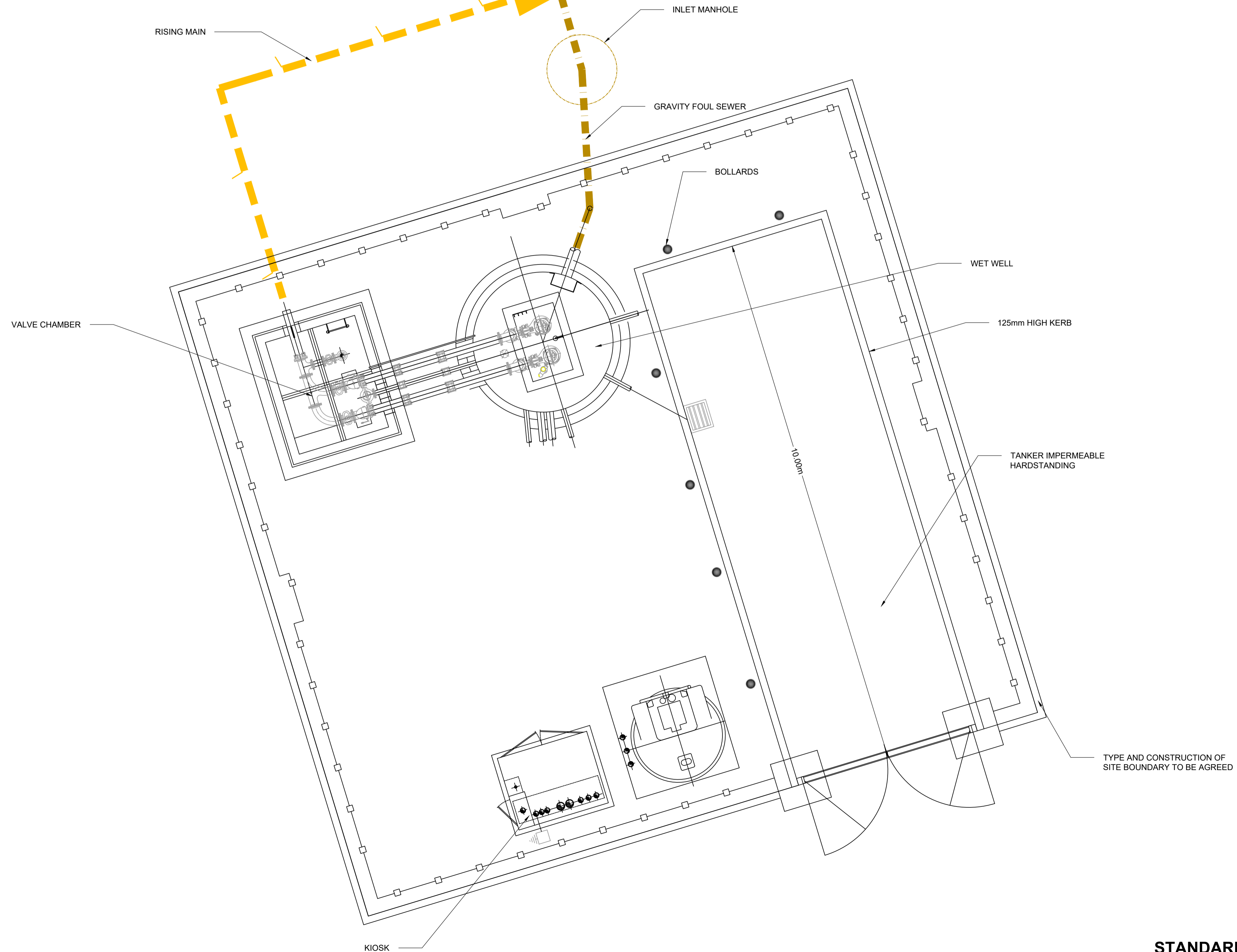
**SHEET NUMBER**

L00005-AEC-NA-NA-DR-C-5005



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 AMENDMENT DURING FINAL DESIGN DEVELOPMENT.

- NOTES**
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  2. DO NOT SCALE FROM THIS DRAWING. ONLY USE PRINTED DIMENSIONS.
  3. ALL LEVELS ARE IN m AOD.
  4. PUMPING STATIONS SHOULD HAVE AN APPROPRIATE CORDON SANITAIRE (15m) FROM THE WET WELL IN ORDER TO PREVENT THE IMPACT OF ODOURS AND NOISE OF THE PUMPING STATION ON THE DEVELOPMENT AND WILL ALSO NEED A COMPOUND AND EMERGENCY STORAGE VOLUME.
  5. FLOW METER CHAMBER MIGHT BE REQUIRED DEPENDING ON THE PUMPING STATION BEING ADOPTED BY A PUBLIC BODY OR MAINTAINED BY A PRIVATE MANAGEMENT COMPANY.



**KEY**

	FW RAISING MAIN
	FW PIPE

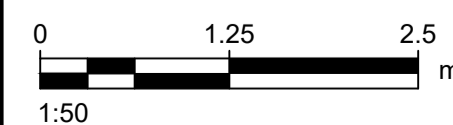
**ISSUE/REVISION**

Rev	Date	Description	Drm	Chk	App
P01	23/09/21	PRELIMINARY ISSUED	GS	BT	AF

**PROJECT NUMBER**  
 60567432

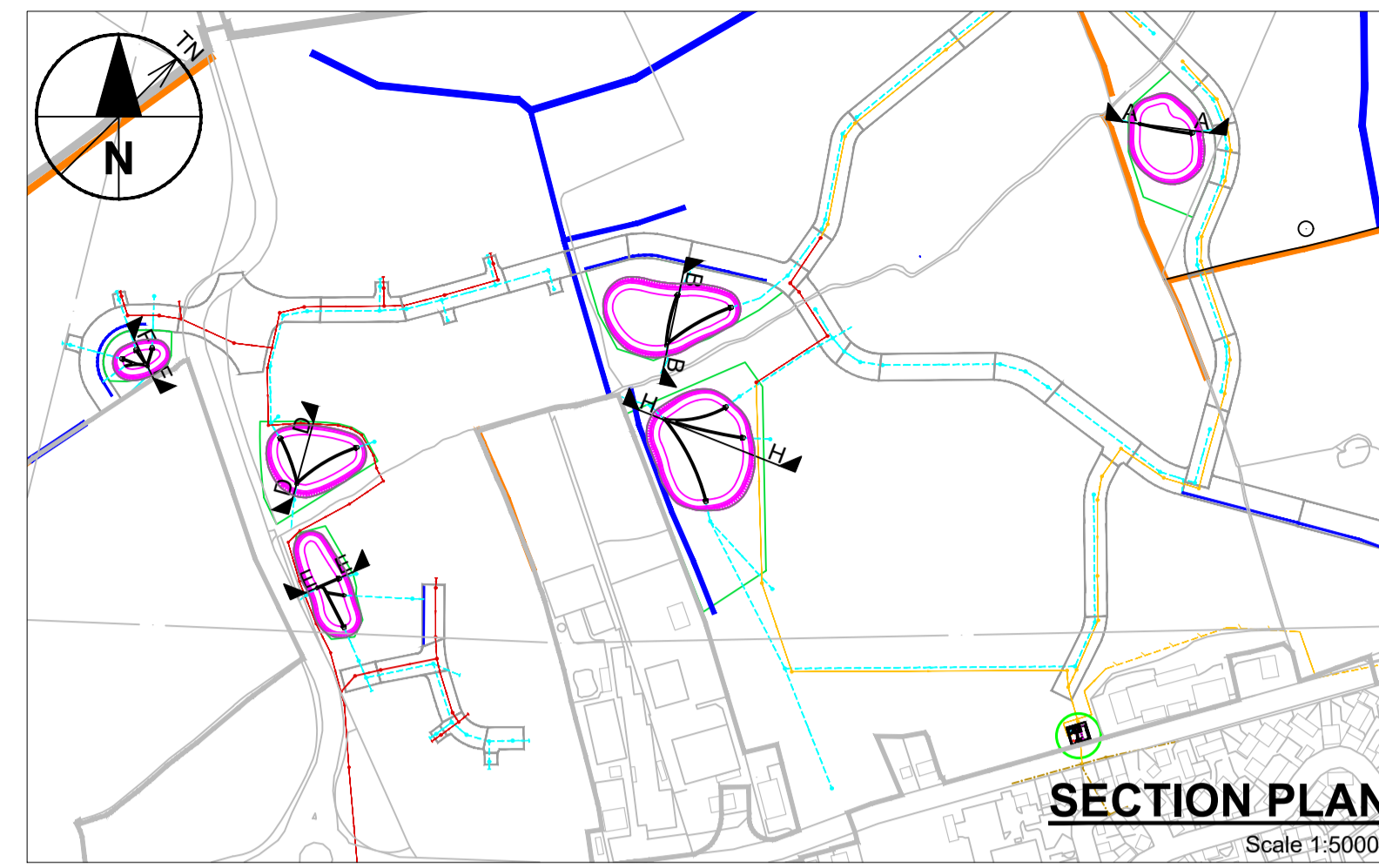
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 FOUL WATER  
 TYPICAL PUMPING STATION DETAILS

**SHEET NUMBER**  
 L00005-AEC-NA-NA-DR-C-5006



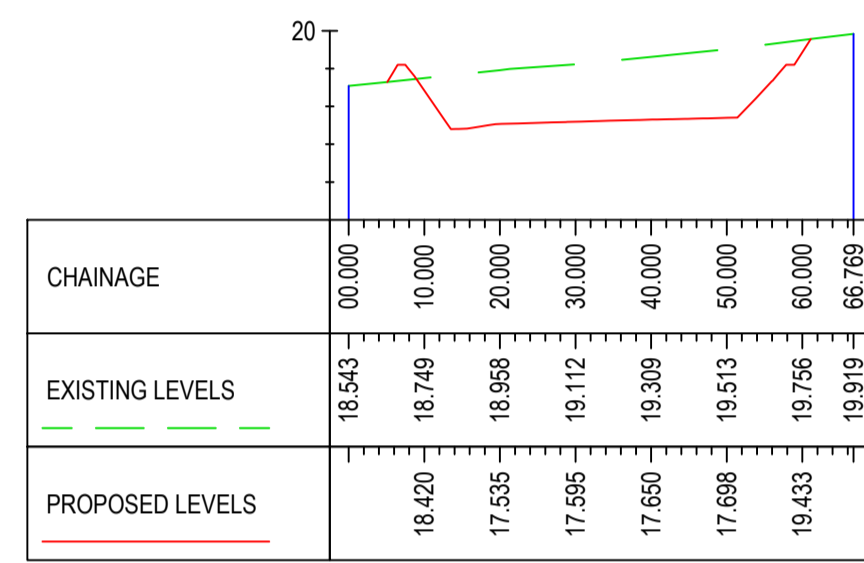
**STANDARD DETAILS**  
 Scale 1:50



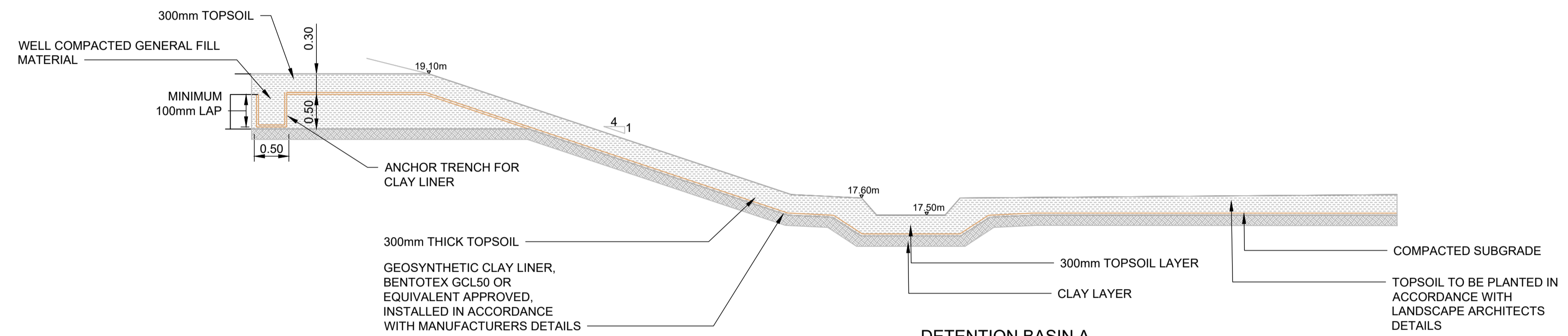


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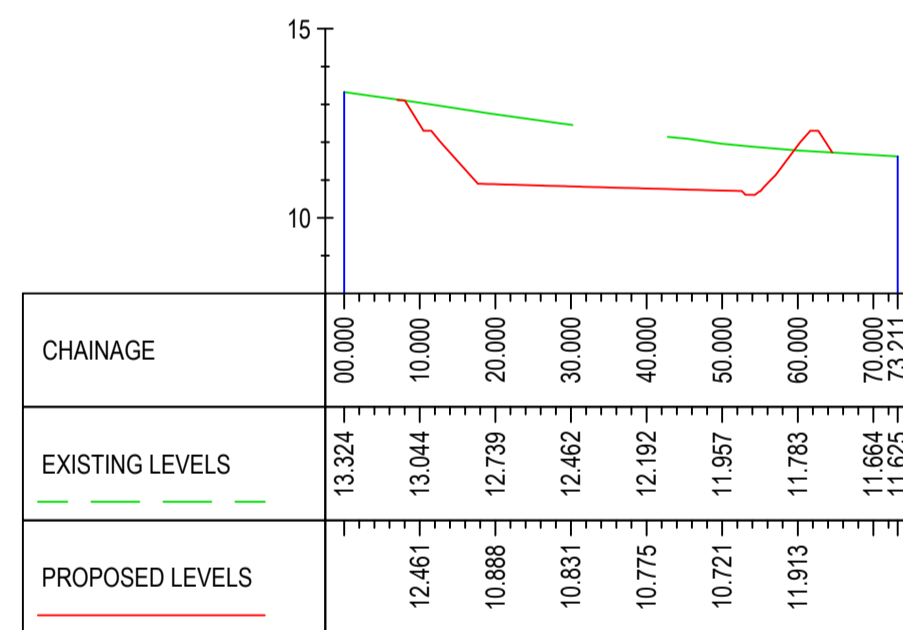
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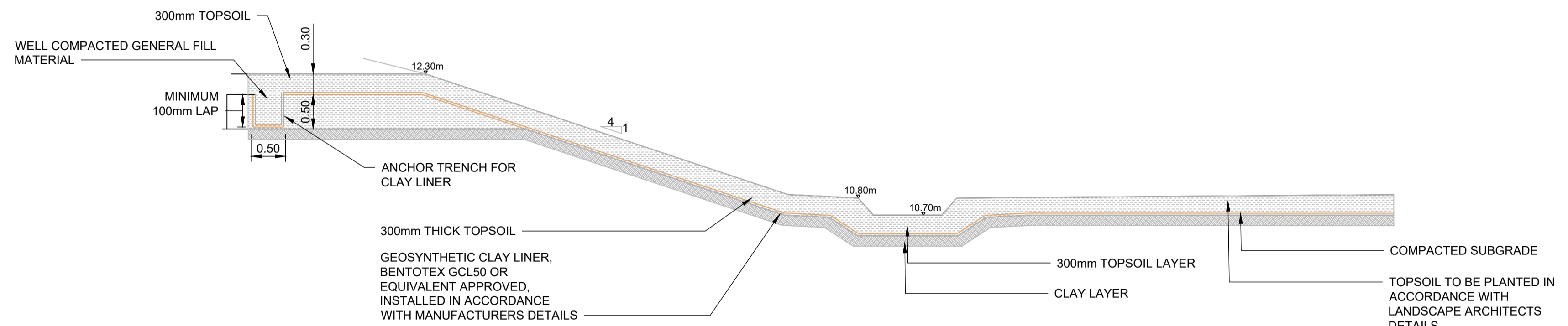
BASIN A LONGSECTION  
 SCALE: H 1:1000, V 1:200



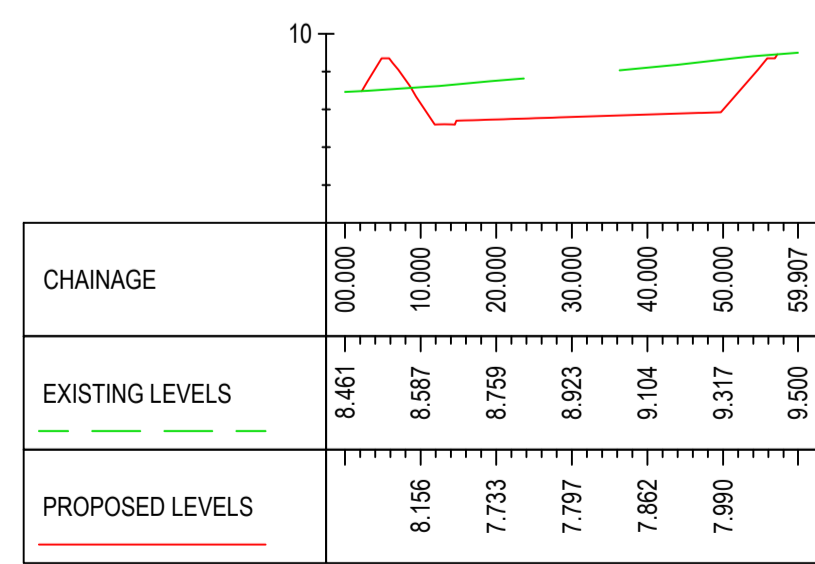
DETENTION BASIN A  
 LOW FLOW CHANNEL DETAIL  
 Scale NTS



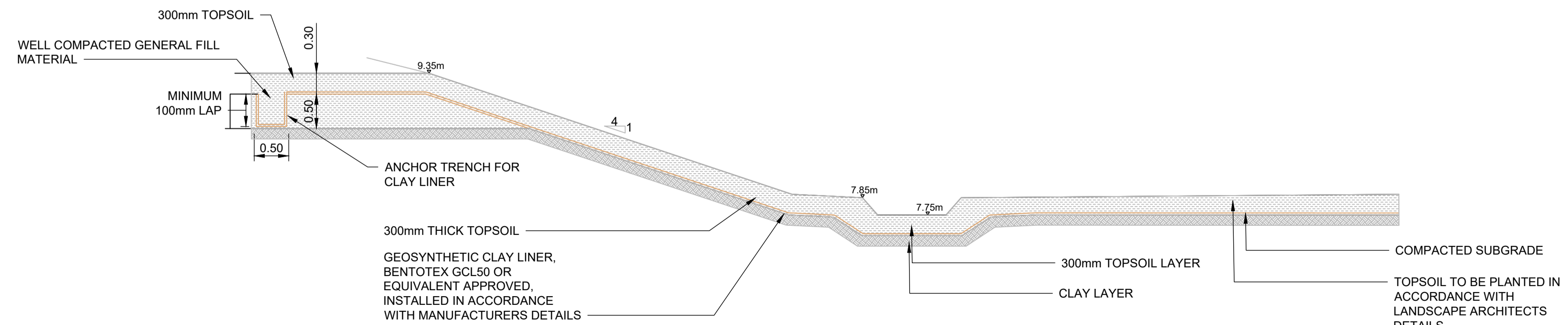
BASIN B LONGSECTION  
 SCALE: H 1:1000, V 1:200



DETENTION BASIN B  
 LOW FLOW CHANNEL DETAIL  
 Scale NTS



BASIN D LONGSECTION  
 SCALE: H 1:1000, V 1:200



DETENTION BASIN D  
 LOW FLOW CHANNEL DETAIL  
 Scale NTS

**ISSUE/REVISION**

Rev	Date	Description	Dm	Chk	App
P02	23/09/21	PROJECT NAME CHANGE	JH	BT	AF
P01	16/06/21	ISSUED FOR PLANNING	AH	BT	AF

**PROJECT NUMBER**

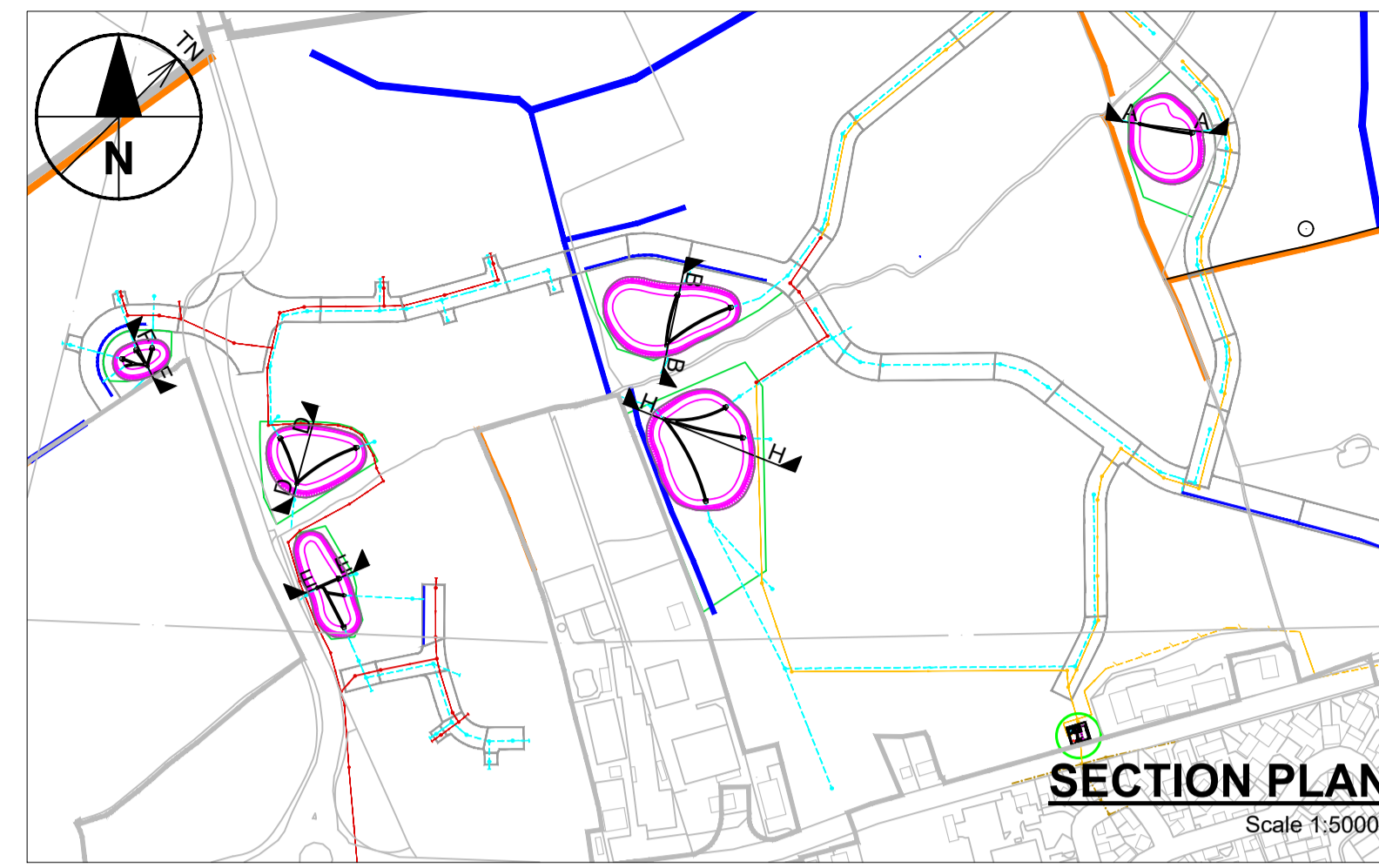
60567432

**SHEET TITLE**

DETENTION BASIN SECTIONS  
 SHEET 1 OF 3

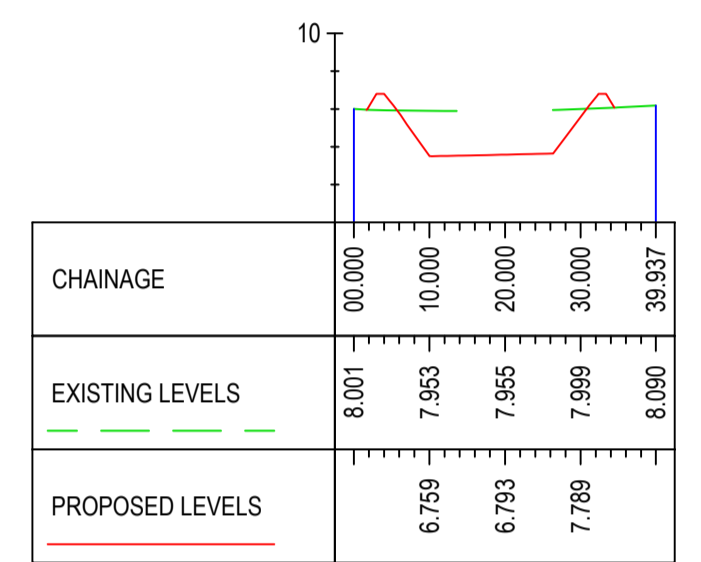
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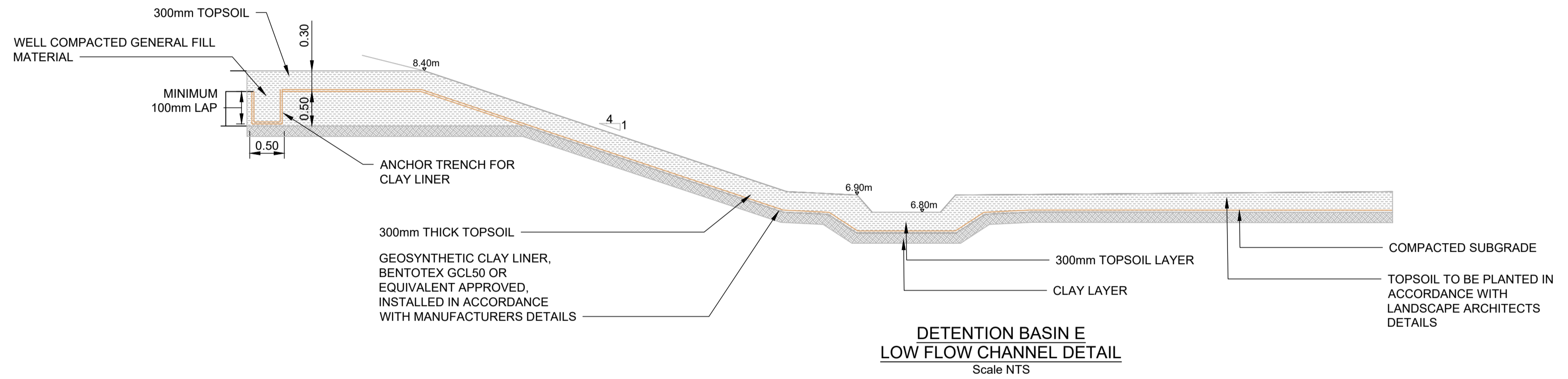


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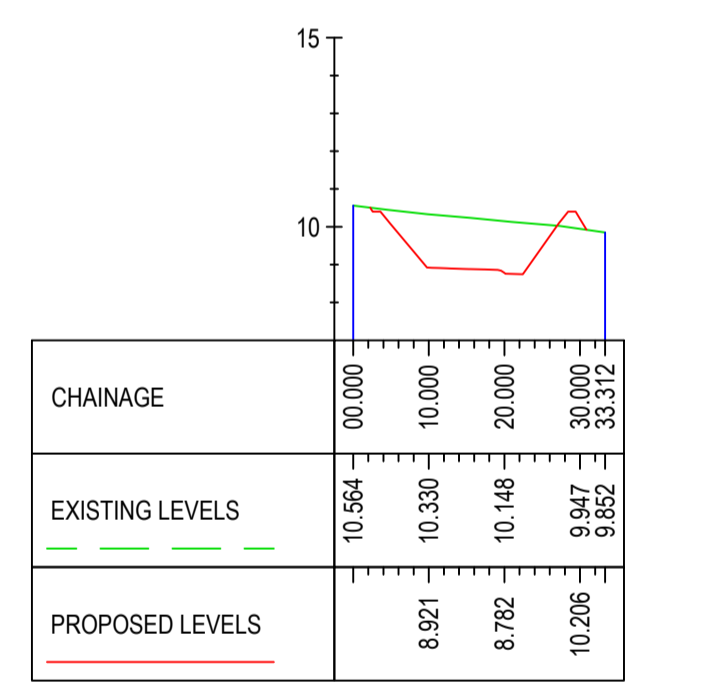
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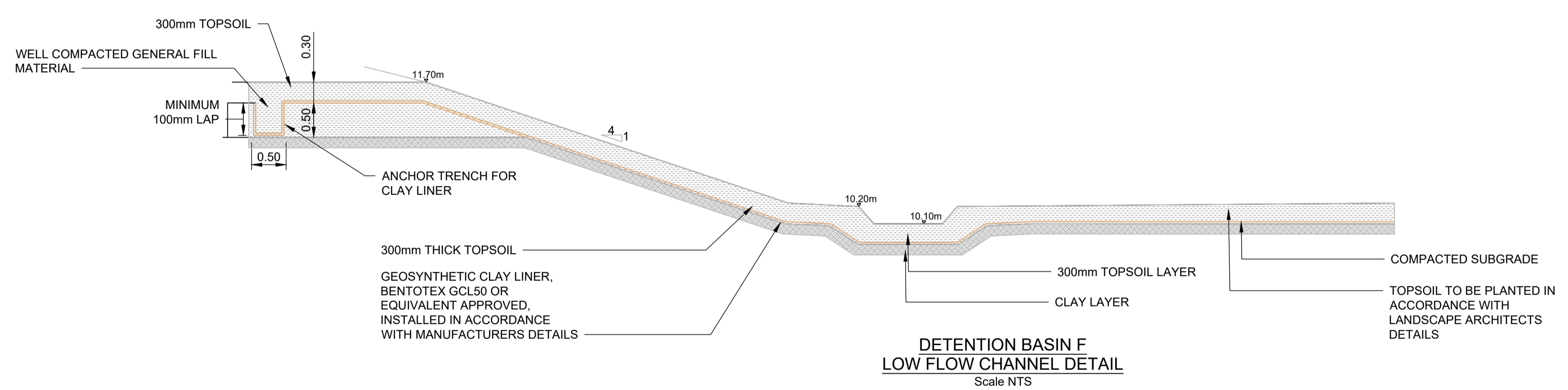
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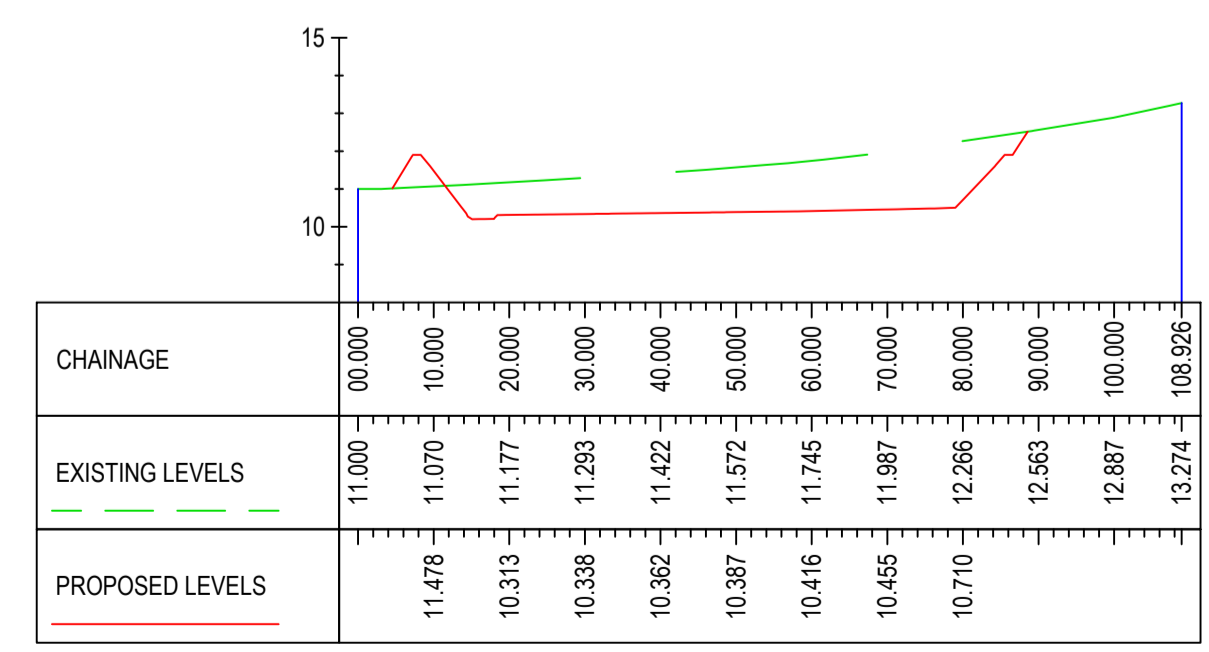
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 LOW FLOW CHANNEL DETAIL**  
 Scale NTS



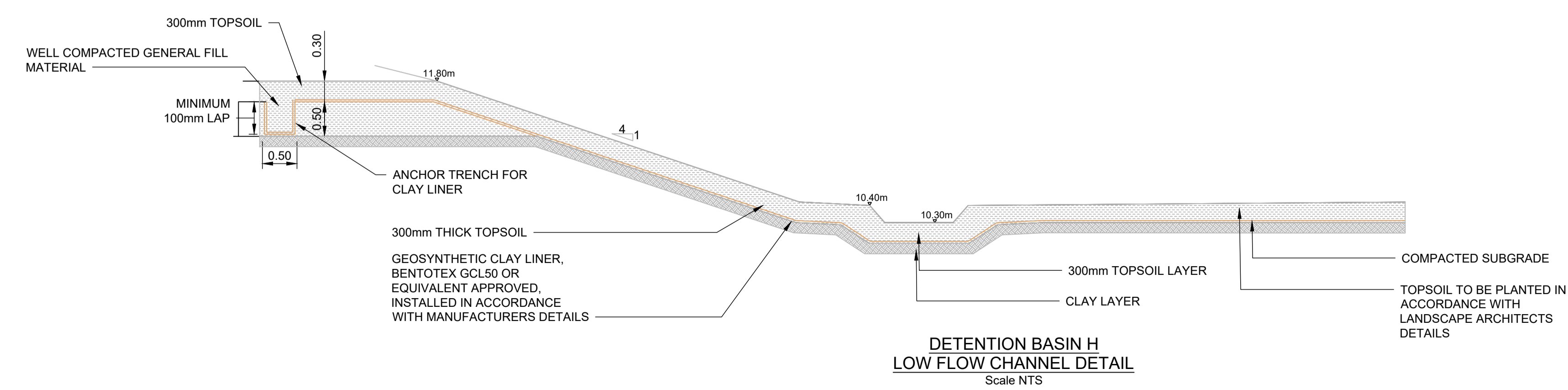
**BASIN F LONGSECTION**  
 SCALE: H 1:1000, V 1:200



**DETENTION BASIN F  
 LOW FLOW CHANNEL DETAIL**  
 Scale NTS



**BASIN H LONGSECTION**  
 SCALE: H 1:1000, V 1:200



**DETENTION BASIN H  
 LOW FLOW CHANNEL DETAIL**  
 Scale NTS

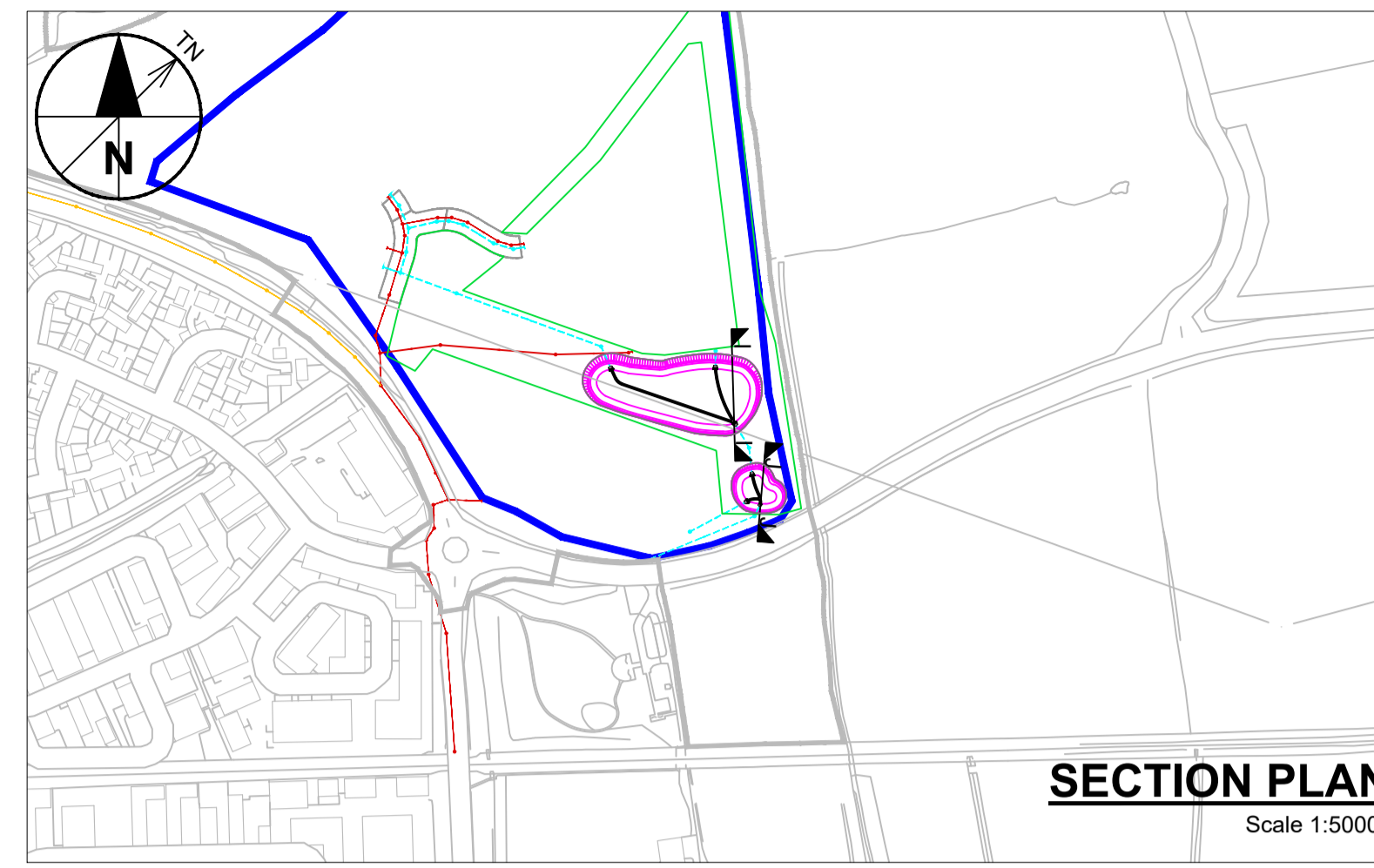
**ISSUE/REVISION**

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P02	23/09/21	PROJECT NAME CHANGE	JH	BT	AF
P01	16/06/21	ISSUED FOR PLANNING	AH	BT	AF

**PROJECT NUMBER**  
 60567432

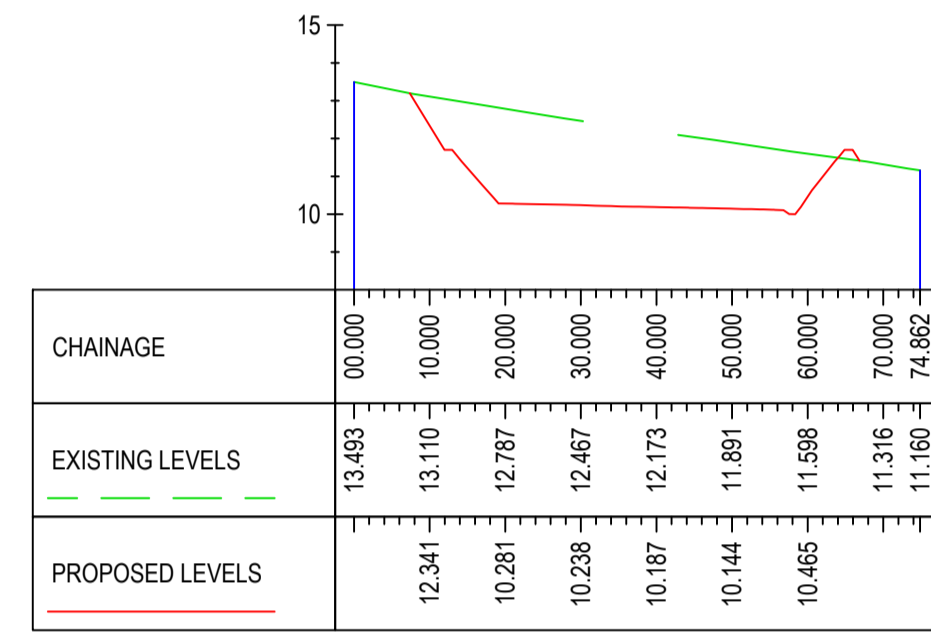
**SHEET TITLE**  
 DETENTION BASIN SECTIONS  
 SHEET 2 OF 3

**SHEET NUMBER**  
 L00005-AEC-NA-NA-DR-C-5101

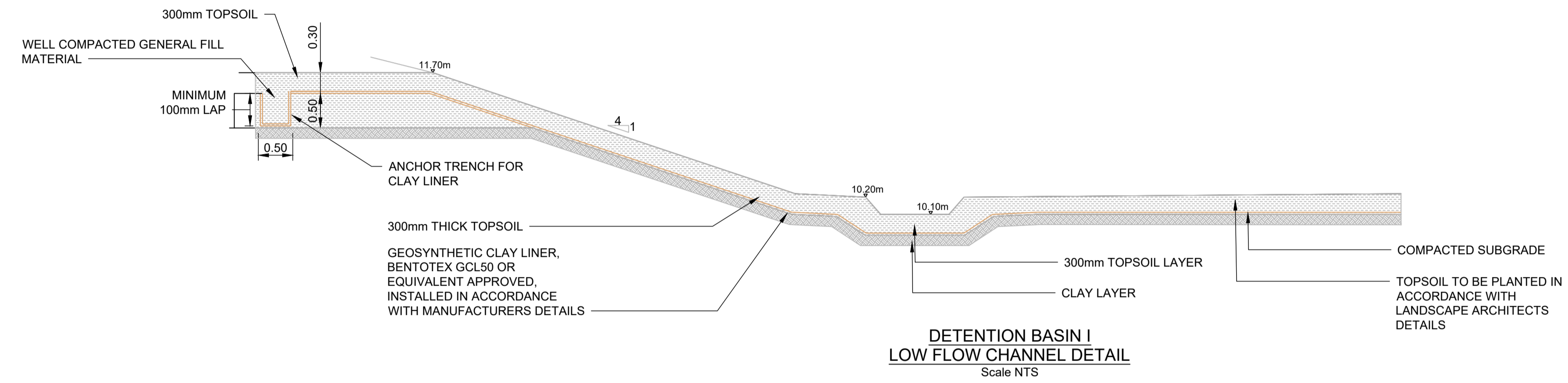


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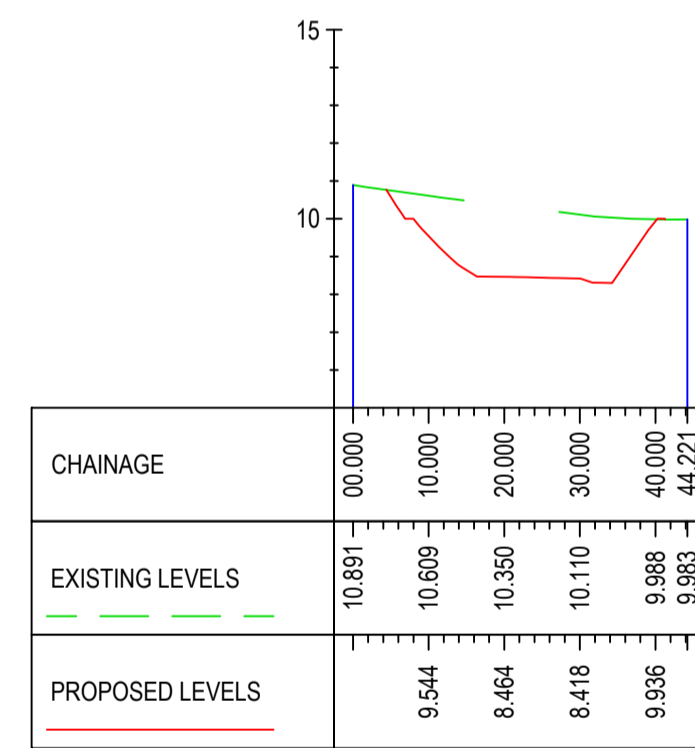
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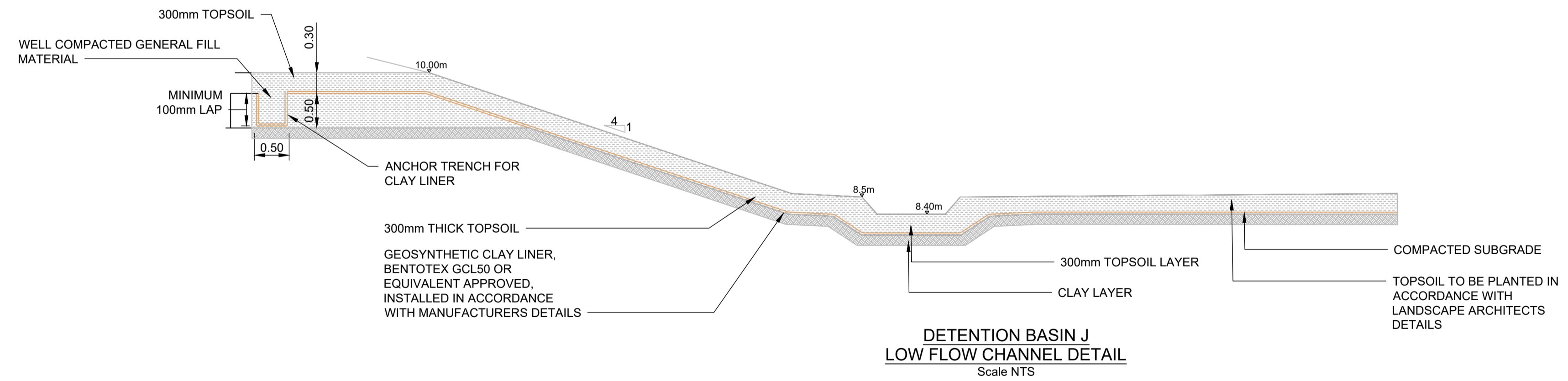
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 SCALE: H 1:1000, V 1:200



**DETENTION BASIN I  
 LOW FLOW CHANNEL DETAIL**  
 Scale NTS



**BASIN J LONGSECTION**  
 SCALE: H 1:1000, V 1:200



**DETENTION BASIN J  
 LOW FLOW CHANNEL DETAIL**  
 Scale NTS

**ISSUE/REVISION**

Rev	Date	Description	Dm	Chk	App
P02	23/09/21	PROJECT NAME CHANGE	JH	BT	AF
P01	16/06/21	ISSUED FOR PLANNING	AH	BT	AF

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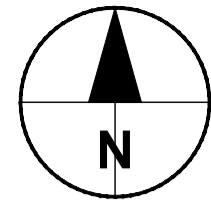
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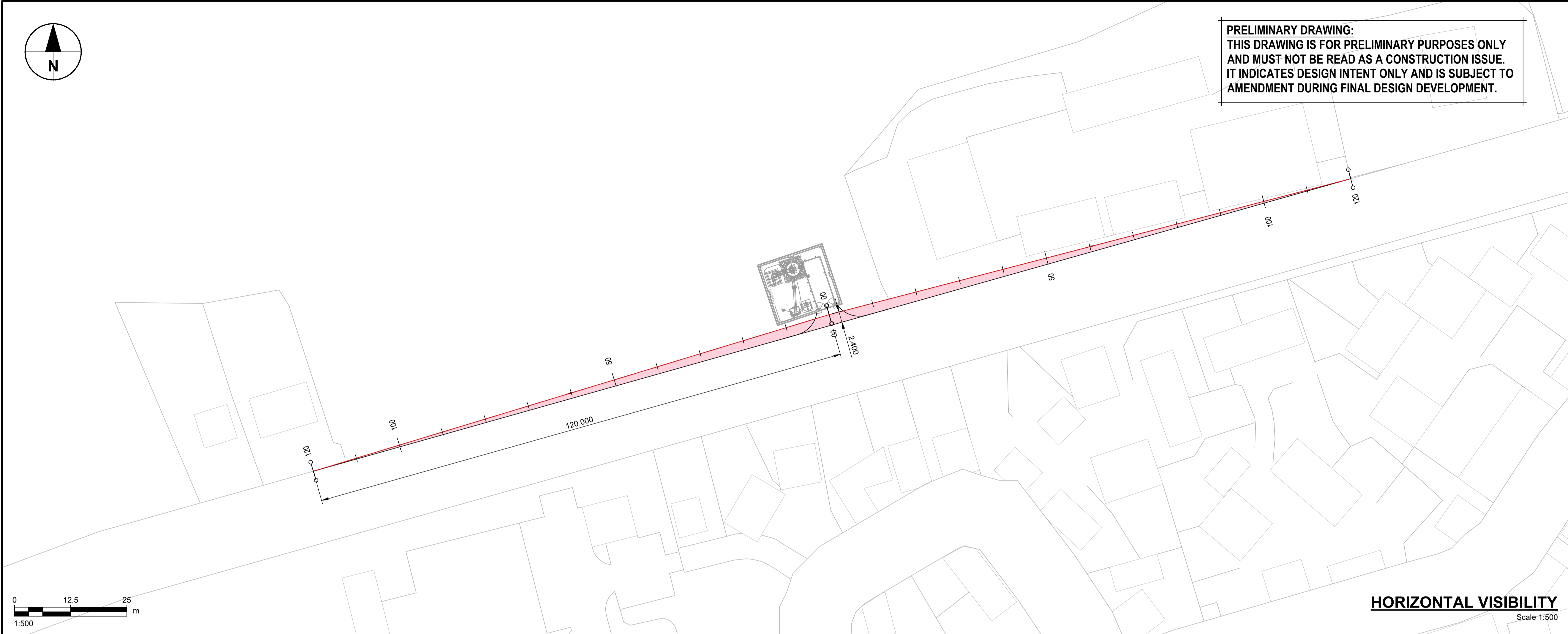
DETENTION BASIN SECTIONS  
 SHEET 3 OF 3

**SHEET NUMBER**

L00005-AEC-NA-NA-DR-C-5102



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**HORIZONTAL VISIBILITY**  
 Scale 1:500

**AECOM**

PROJECT  
 Oaklands Meadows

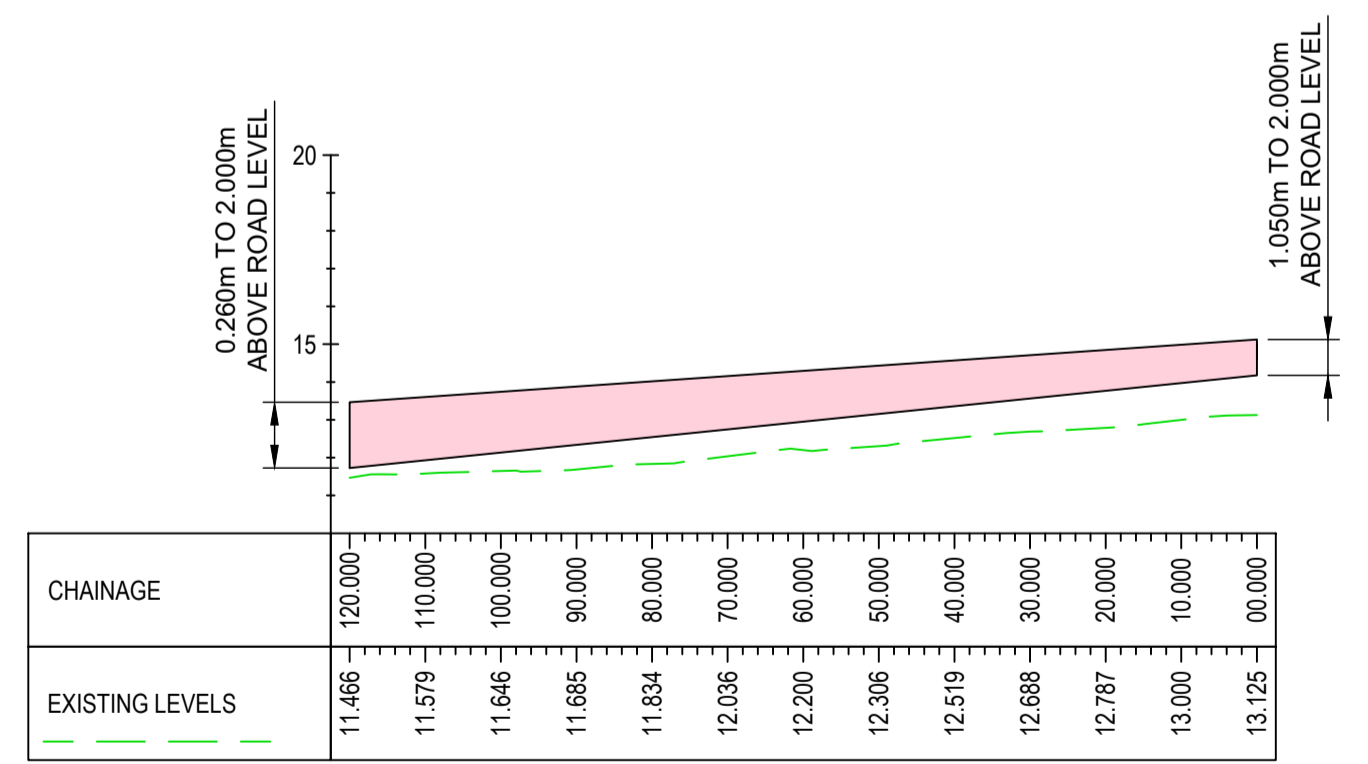
CLIENT  
 Countryside Properties

CONSULTANT  
 AECOM  
 The Colmore Building, Colmore Circus  
 Queensway, Birmingham, B4 6AT  
 0121 262 1900  
 www.aecom.com

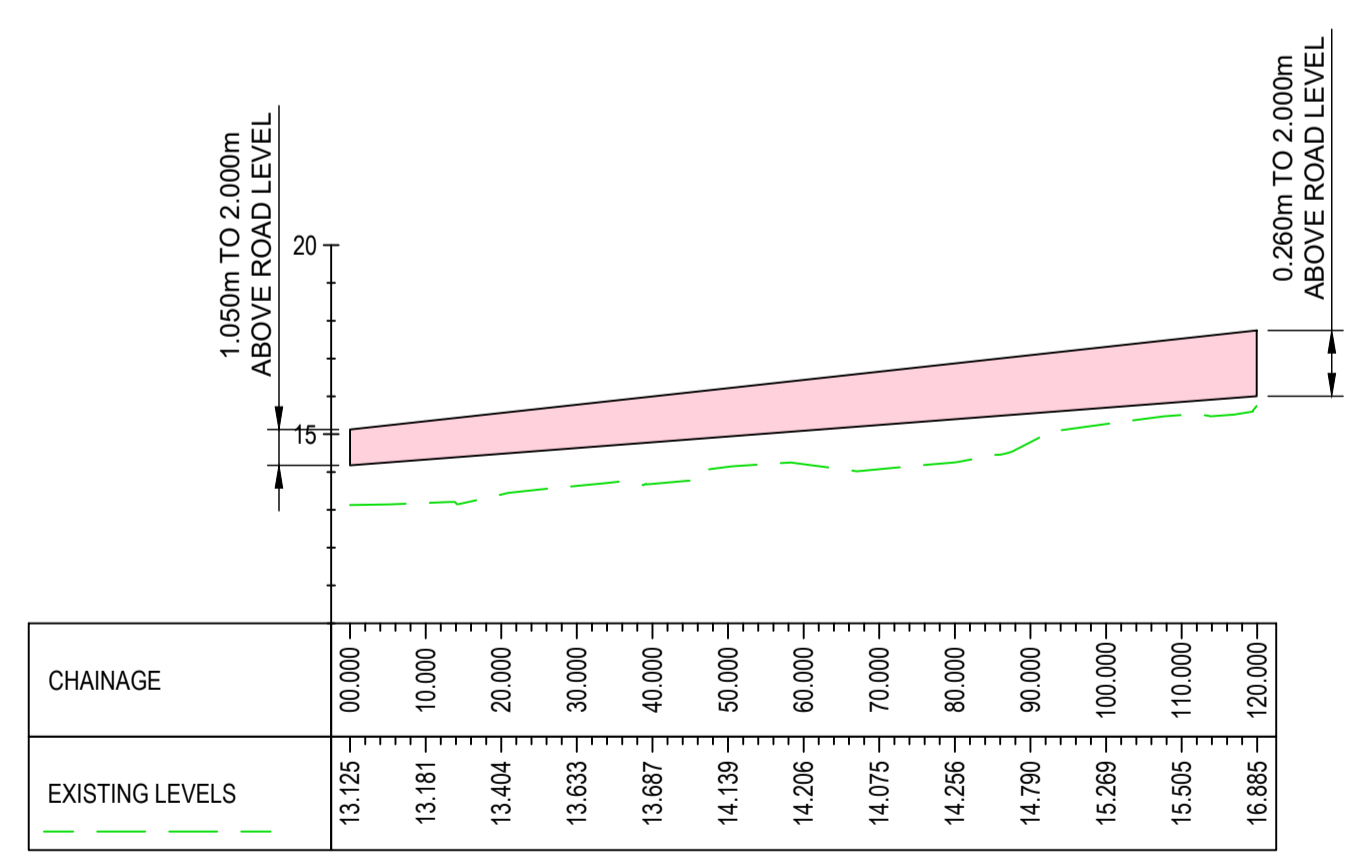
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**KEY**

VISIBILITY SPLAY 2.4m x 120m FOR 40MPH ROAD IN ACCORDANCE WITH DMRB



PUMPING STATION WEST SPLAY LONGSECTION  
 SCALE: H 1:1000, V 1:200



PUMPING STATION EAST SPLAY LONGSECTION  
 SCALE: H 1:1000, V 1:200

**VERTICAL VISIBILITY**  
 Scale 1:1000 Horizontal 1:200 Vertical

**ISSUE/REVISION**

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**PROJECT NUMBER**  
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**SHEET TITLE**  
 PUMPING STATION ACCESS  
 VISIBILITY SPLAYS

**SHEET NUMBER**  
 L00005-AEC-NA-PH1-DR-C-7002