
**LAND TO THE SOUTH OF REEDS LANE
SAYERS COMMON, MID SUSSEX
FLOOD RISK AND DRAINAGE STRATEGY**



LAND TO THE SOUTH OF REEDS LANE SAYERS COMMON, MID SUSSEX Flood Risk and Drainage Strategy

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SAYERS COMMON, MID SUSSEX
Flood Risk and Drainage Strategy
Revision A**

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Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By
Rev A 06.10.23	Updated drawings and report updated to Client comments	BA	JPC

EXECUTIVE SUMMARY

Create Consulting Engineers Ltd have been instructed by Berkeley Latimer to provide engineering consultancy advice with respect to the delivery of water-based infrastructure required to service a proposed new development located to the west of Sayers Common, Mid Sussex.

In producing this report, we have worked closely with the project architect HTA (Masterplanners) and TPA (Transport Consultants) and the wider project team to ensure that the development proposals at Sayers Common minimise the impact on the surrounding natural environment and existing sewerage infrastructure.

The Sayers Common Development is intended to accommodate up to 2,000 homes and associated educational, employment, and community facilities in a phased development.

The following report concludes that the water-based infrastructure requirements for Sayers Common can be viably provided on land within the control of our client resulting in an attractive sustainable place to live and work, which will help improve the overall water environment.

Wastewater

The proposed foul water strategy involves the construction of a new Waste Water Treatment Works WwTW to be located on land to the north east of Sayers Common to the east of the A23. The proposed WwTW site fronts the Herring Stream, which is a Main River which eventually flows to the west of the site under the A23 before connecting to the River Adur. The WwTW works will be designed to serve the proposed new development of 2000 dwellings, with the additional capacity built in to also serve Sayers Common area. It is understood that there have been flooding issues associated with the existing Sayers Common pumping station, so it is proposed that the foul water flows from this pumping station will be diverted to a new terminal pumping station located on the site which will then pump direct to the new WWTW works. Initial phases of the development may make use of the existing rising main connection across the A23, however a new rising main will be provided to cover later phases of the development.

The new WWTW will adopt the Plantwork Systems Ltd (PWS) NUTREM technology in order to achieve exceptional levels of nutrient removal from wastewater and good quality final effluent which will surpass the water quality requirements of the Water Frameworks Directive WFD. The NUTREM system is a low odour plant and produces considerably less sludge than other forms of treatment and can be designed to look similar to an agricultural facility.

Using these latest treatment methods will ensure that the water quality in the receiving watercourses, and of the groundwater, is not only maintained but significantly improved as it will enable Southern Water to divert some of the flows from smaller, older works and septic tanks in the local area to the new works. The new onsite WwTW will be operated either by Southern Water or by a Specialist Licensed Operator.

Severn Trent Connect have confirmed that they would like to construct and operate the new works, and do not see any issues in securing the necessary discharge consents required by the Environment Agency.

The existing Albourne/High Cross WwTW is located on Reeds Lane adjacent to the western section of the site. Earlier discussions with Southern Water confirmed that there is no spare capacity within this works. However, the feasibility of diverting the existing flows from this works into the new terminal pumping station and then onto the new WwTW, will be explored with Southern Water. This will not only remove the need for any odour mitigation works but will also help to improve the water quality in the surrounding ditch system.

Water Supply

Southeast Water have confirmed that water can be provided to the site and that they have sufficient water resources at source to be able to serve the additional demand. The existing mains network will, however, need to be reinforced to serve the site, and a budget scheme costing was previously prepared for a larger development proposal than currently proposed. An updated quote has been requested for this reinforcement works. It is proposed that a dual pipe system will be laid around the proposed site, providing both potable and grey water recycled supplies. This coupled with rainwater harvesting to be introduced on individual properties along with other water demand management methods such as water efficient appliances, will enable the scheme to achieve the policy requirement of 85 litres/per person/per day.

Surface Water and Flood Risk

We have considered the hydrological setting of the proposed development including surface water management, and flood risk in the development of the site. We propose to make water an attractive key feature integrated into the design of the development. This picks up on the historic importance of water in the establishment of towns and villages and shows how a new development can make the best of the natural features in developing an attractive place for people to live and work.

The general flood management strategy has been developed in accordance with the Environment Agency, West Sussex County Council, and Mid Sussex District Council current standards and policies.

The majority of the site is in an area of low flood risk, with areas of flooding generally confined close to the river corridors. The masterplan will be developed to locate all built development within the EA's defined Flood Zone 1 and clear of the 1 in 100 years plus climate change and 1 in 1000 year surface water flood envelope.

The surface water runoff will be maintained at its current Greenfield rate utilising sustainable drainage systems to provide attenuation, ensuring that the risk of flooding is not increased either for the residents of the proposed site or areas of the surrounding area.

The proposed development will build on the work already completed as part of Operation Watershed and provide a flood alleviation scheme which will incorporate SUDS/Surface Water Drainage features to help solve some of the existing flooding problems in the area. A new wetland area will be designed to ensure that the flooding associated with the low point along the B2118 adjacent to the new roundabout access, will help prevent future flooding of the existing road and adjoining properties.

As the design process progresses, a review of surface water quality runoff from the whole catchment area will be undertaken, with pollution control measures being introduced as part of the new drainage network. The wider management of the natural catchment will provide a net benefit to the water quality of the existing watercourses, significantly improving the runoff characteristics over that of the existing agricultural situation.

Delivery

From reviewing the evidence contained in this report, we can conclude that there are no natural, physical or economic constraints which will prevent the water-based infrastructure required for the new development from being delivered to provide an attractive sustainable environment in which people will want to live, work and play.

1.0 INTRODUCTION

Brief

- 1.1 Create Consulting Engineers Ltd have been instructed by Berkeley Latimer to provide engineering consultancy advice with respect to the delivery of the water-based infrastructure required to service a proposed new development to be located to the west of Sayers Common.
- 1.2 As part of the Masterplanning process, we have worked closely with masterplan architects and the wider project team to ensure that the new development minimises the impact on the adjoining natural environment, acknowledging existing constraints and where possible provide deliverable solutions to some of the existing drainage problems in the area.

Project Context

- 1.3 Berkeley Latimer is promoting a new development that could accommodate up to 2,000 homes and associated, educational, employment, and community facilities. The proposed scheme has been shown allocated in the Mid Sussex District Plan 2021-2039 Consultation Draft (Regulation 18) details of which are outlined in Policy DPSC2; Land to the South of Reeds Lane, Sayers Common.
- 1.4 The following report will demonstrate how the proposed scheme will meet the specific requirements of Policies DPS4 Flood Risk and Drainage as well as DPS5 Water Infrastructure and Water Environment.
 - The site area is generally at low risk from fluvial and surface water flooding.
 - SUDs will be integrated into the proposed development using attenuation ponds to restrict any surface water flows from the site to levels less than previous experienced from the undeveloped catchment.
 - The few areas where minor historic flood events have occurred due to the lack of maintenance of highway drainage infrastructure and drainage ditches, will be picked up as part of the schemes overall SUDs provision, ensuring that these areas no longer flood, providing a benefit to the wider area.
 - A new WwTW works will be provided near to the site on land under the control of Berkeley Latimer
 - Water efficiency, rainwater harvesting, and grey water recycling will be integrated into the scheme to minimise pressure on existing water supply infrastructure.
- 1.5 For the purposes of this report, Drawing 2979/00/001 shows the study area which we have used for the proposed development.

Site Character

- 1.6 The study area is generally rural in character with dispersed farmsteads, small settlements and broad, low lying and gently undulating clay vales, which underlie a small-scale intimate landscape enclosed by an intricate mix of small woodlands, a patchwork of fields and hedgerows. Agricultural uses within the study area are a mix of pasture and arable uses.
- 1.7 The topography is gently rolling with no steep valleys or inclines. Ground levels range from as low as 15m AOD (Above Ordnance Datum) to a high of approximately 35m AOD.

Objectives

- 1.8 The main purpose of this report is to assess the technical deliverability and viability of the development in relation to the disposal and treatment of foul water drainage and the control and management of flood risk and surface water runoff.
- 1.9 The report considers the hydrological setting of the proposed development and suggests how surface water and flood risk could be managed within the overall masterplan and how water can become an attractive key feature integrated into the design of the development. This picks up on the historic importance of water in the establishment of towns and villages and shows how the new development can make the best of the area's natural features in developing an attractive place for people to live and work.
- 1.10 The development provides an exciting opportunity to not only develop an attractive sustainable new community, but it gives us a unique chance to introduce some of the latest technologies in surface water management and water resource management, to protect and enhance the water quality in the natural catchment in the area. A process which is often difficult to achieve when considering development on the urban fringe, due to water companies having to maximise the use of existing networks and treatment facilities before investing in new technology.

2.0 EVIDENCE BASE FOR INFRASTRUCTURE

2.1 The information contained in this report is based on a review of asset plans supplied by utility providers, published information pertinent to the site and consultation with interested parties as set out below.

Records Review

2.2 Key reports, drawings and websites pertinent to this assessment are detailed below in Table 2.1.

Document/Website	Author/Publisher	Date
Fluvial/Tidal Flood Maps - https://flood-map-for-planning.service.gov.uk/	GOV.UK	Accessed September 2023
Groundwater Mapping – https://environment-agency.gov.uk	Accessed September 2023	Accessed September 2023
Surface Water and Reservoir Flood Mapping – https://flood-warning-information.service.gov.uk	GOV.UK	Accessed September 2023
BGS Geindex – Geology and borehole records – www.bgs.ac.uk/geindex	British Geological Survey	Accessed September 2023
Mid Sussex Reg 18 Draft Local Plan	Mid Sussex District Council	2022
Mid Sussex DC SFRA	Mid Sussex District Council	June 2015
West Sussex County Council PFRA	West Sussex County Council	May 2011
Gatwick Sub Region Water Cycle Study (Final Report)	JBA	2020
Water Resources Management Plan 2020-2080	South East Water	2019
Mid Sussex District Council Infrastructure Development Plan	Mid Sussex District Council	October 2022
OS Explorer Map Sheet 122: Brighton and Hove, Lewes & Burgess Hill	Ordnance Survey	2010
Drainage and Wastewater Management Plan Adur and River Ouse	Southern Water	2023

Table 2.1: Key Information Sources

2.3 In addition, copies of asset records have been obtained from all of the suppliers serving the area. These documents are referred to and referenced throughout the report.

Consultation

2.4 The parties consulted as part of this study are detailed in Table 2.2. A proportion of the correspondence relates to the development of the initial masterplan which was submitted in

support of the initial Regulation 18 submissions. Further correspondence has been held with a number of the key authorities since the site was included in the Draft District Plan to discuss the introduction of the new- all- through school and these will evolve further as the scheme develops.

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
South East Water	Developer Services	Email correspondence between 4 th May 2017 and 23 rd October 2017	Contacted to request quote for water supply to development. Quote received along with confirmation that no development can be accommodated without major off-site reinforcement.
	Developer Services, Jamie Annis	Email correspondence between 30 th August 2018 and 17 th September 2018 Further email requesting details of the proposed Blackstone Reservoir dated 14 th February 2022	Request for budget estimate to supply Site. Response stating that no homes can be accommodated without major offsite reinforcement. No requirement for contribution towards offsite reinforcement. Estimate for cost at this stage based on standard connection and infrastructure costs.
Southern Water	Paul Kent, Simon Sharp, Marta Karpezo, Cecile Stanford, Joff Edevane and Kayleigh Sharman	Meeting and email between 2 nd October 2017 and 11 th October 2017	A meeting was held to discuss the foul water strategy proposals for the development. Discussions confirmed that an initial phase of development (i.e. about 750 homes) could be treated using the existing capacity at Henfield Wastewater Treatment Works (WwTW). Upgrades would then be required should Henfield WwTW have to receive additional wastewater discharges from the development (i.e. about 1500 homes). It was advised that an onsite WwTW with an alternative supplier (NAV) could be installed to treat wastewater discharges from remaining homes planned in the development. Confirmation was subsequently received regarding the current

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
			available capacity of Henfield's WwTW (i.e. 750 homes), with a further ca.1250 to Henfield following upgrades.
		Meeting and email between 16 th November 2018 and 19 th December 2018	<p>A meeting was held to discuss the foul water strategy proposals for the development.</p> <p>The strategy in terms of first phase of development draining to Henfield, with new works onsite for further development remained the same. Southern Water however showed interest to adopt a new WwTW if this option has to be carried forward.</p> <p>Confirmation received regarding the current available capacity for ca. 700 homes to Henfield before reinforcement is required.</p>
		Conference call and email correspondence between 9 th March 2020 and 3 rd April 2020	<p>A meeting was held to discuss the latest proposals with respect to the previously discussed foul water strategy.</p> <p>The strategy in terms of first phase of development draining to Henfield, with new works onsite for further development remained the same.</p>
		Email correspondence between 10 th June 2021 and 17 th June 2021	It was confirmed that there is currently capacity for an initial phase of 500 units within the current permit at Henfield before reinforcements/ a new WwTW is required.
	Requisitions Department, James Rowthorn	Email correspondence between 21 st September 2018 and 15 th March 2019	<p>Request for budget estimate to supply water.</p> <p>Response stating that estimate for cost at this stage based on standard connection and infrastructure costs.</p>
		Email correspondence between 12 th March 2020 and 25 th June 2020	<p>Request for budget estimate and capacity check to supply water.</p> <p>Response stated that a Level 2 capacity check would be required to</p>

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
			determine the approximate point of connection. However the Level 2 capacity check requires information regarding the development which cannot be provided at this stage. Southern Water therefore looking into determining the distribution zone for the development.
Severn Trent Connect and Plant Work Systems	Lara Day, William Mackveley, Robert White	8 th October 2018 and 12 th October 2018	Meeting to discuss new waste water treatment works for the development. Received letter of interest with Severn Trent offering their services as prospective Statutory Wastewater Undertaker (including Sustainable Urban Drainage Systems).
		12 th March 2019	Discussion included the requirements for new wastewater treatment works, the benefits of NUTREM technology, the adoption of the future sewer network and treatment works, potential time scale for the implementation considering scheme phasing and constraints.
Severn Trent Connect	Lara Day	25 September 2023	Meeting to discuss proposed new location of WWTW to east of A23 and alternative strategy for 2000 dwelling scheme on land to the south of Reeds Lane Sayers Common
Environment Agency	Jon Denman	Email correspondence on 8 th December 2016	Request for EA's 1D Fluvial Model and the JFLOW Surface Water Flood Model. The models were received and used to produce an updated surface water flood model in TUFLOW.
	Customer Engagement Team	Email correspondence on 1 st March 2017	Request to obtain the latest Product 4 and 5 data packages (i.e. model inputs and updated flood levels). The information was received and used to inform this FRA.
	Hannah Hyland	Email and telephone conversation between	Request for confirmation on the development's approach to fluvial

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
		11 th September and 11 th October 2017	<p>flood risk (i.e. development parcels located within Flood Zone 1 and restriction of surface water runoff to greenfield rates).</p> <p>Receipt of approval confirming agreement in principle that the development proposals are in accordance with both the NPPF and the Sequential Test.</p>
		Technical note 28 th August 2018	<p>Submission of outline design measures that will be incorporated into the development. These included the location of the development, SUDs, and pollution control measures.</p> <p>Receipt of approval confirming agreement in principle to the design approaches outlined above.</p>
		Email correspondence on 24 th January 2018. Received comments on Modelling Report and further information from EA on 9 th July 2020.	<p>Response to requested Pre-application advice included confirmation that the EA would accept in principle a new WwTW within the Site operated by a NAV and will treat any application by a NAV as equivalent to an application for the same activity by the incumbent sewerage undertaker.</p> <p>In regard to outfall from the proposed WwTW the River Adur East (Sakeham) is currently classified as being at Poor status under the Water Framework Directive (WFD) and the Chess Stream is at Moderate status under the WFD. Both watercourses have failures for phosphorous and any discharge would need to ensure that there was no deterioration in these standards and that they would not compromise the ability of the watercourse to achieve good status in the future.</p>

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
Environment Agency	Hannah Hyland	Email to request a meeting to discuss proposed new development masterplan and location of WwTW. October 2023.	Request to organise a meeting with the consents team to discuss new WwTW works proposal.
West Sussex County Council (WSCC) & Mid Sussex District Council (MSDC) & Horsham District Council (HDC)	Kevin Brook, Fiona Bishop, Martin Brightwell	Technical note and email correspondence on 19 th July 2017 to 5 th October 2017.	Submission of surface water modelling assumptions to WSCC for review. Agreement from WSCC on the modelling assumptions. The assumptions were forwarded by WSCC to drainage engineers at MSDC and HDC for further comment. Comments received queried the urban losses, and hydraulic structural information used within the model. These comments were addressed within the surface water flood model. A conservative approach was used for urban losses and the hydraulic structural information was calibrated to the EA's ISIS Flood model.
		Email correspondence 5 th October 2017 to 12 th October 2017	Request for preliminary comments on the surface water strategy for the Site. Response received recommended that infiltration SUDs should be utilised where possible and greenfield run off rates should be restricted to the 1 in 1 year rate. These comments were incorporated into the masterplan and drainage strategy accordingly.
West Sussex County Council (WSCC) & Mid Sussex District Council (MSDC)	Kevin Brook, Fiona Bishop, Martin Brightwell	Technical note via email on 19 th December 2018	Acceptance of updated surface water modelling adjustments completed as a result of previous comments (by MSDC).

Organisation/ Consultee	Individual at Organisation	Form of Consultation and Date	Summary of Consultation
& Horsham District Council (HDC)			Receipt of approval confirming acceptance of the adjustments received. Additional confirmation from HDC was received stating that the department had no historical flooding information for this site.

Table 2.2: List of Parties Consulted

3.0 FLOOD RISK AND SURFACE WATER MANAGEMENT

3.1 The main purpose of this section is to set out how flood risk and surface water runoff has been assessed and any arising issues will be managed as part of the development. This section summarises the following key aspects:

- Hydrological setting.
- Flood risk to the development from all sources.
- Potential for the design, construction and operation of the site to increase the risk of flooding to neighbouring properties.
- Necessary mitigation measures to mitigate identified potential flood risks.
- Climate change.
- Residual risks.

3.2 In addition, an outline summary of the proposed surface water drainage strategy is also provided.

Hydrological Setting

Surface Watercourses

3.3 There are several land drains located within the site boundary. Including a small watercourse (located in the eastern parcel of the site) that drains northwards before adjoining with the River Adur approximately 4km to the north west of the site.

Ground Conditions

3.4 British Geological Survey mapping and borehole records show the underlying bedrock geology at the site to be Weald Clay Formations which are generally of very low permeability. The primary formation found on the site is Weald Clay Mudstone with two strips of Weald Clay Sandstone in the northern part of the eastern parcel.

3.5 There are no superficial deposits located on the site with exception to an area of Head (clay silt sand and gravel) deposits located in the south east of the eastern parcel of the site.

Groundwater

3.6 The site does not lie within any groundwater source protection zones, as identified by the Environment Agency mapping (EA website, accessed September 2023).

3.7 Environment Agency mapping classes the Weald Clay Mudstone as a 'Non-Aquifer', this is because although it may contain water it does not hold amount which can sustain significant extractions at local or national scales.

- 3.8 The two strips of Weald Clay sandstone (bedrock) and the Head clay, silt, sand, and gravel) deposits (superficial) are classified as 'secondary A aquifers. These deposits are however very sparse; therefore, the aquifers tend to take the form of linear features following the general paths of the watercourses. Aquifers of this type have the potential to provide supplies at a local rather than strategic scale.
- 3.9 A BGS borehole record (accessed online at BGS GeoIndex, September 2023) located approximately 1km to the east of the site recorded water levels at 1.50 mbgl and 2.70 mbgl. These levels are likely a result of perched groundwater present within the underlying Weald Clay rather than a reflection of groundwater.

Artificial Waterbodies

- 3.10 There is a small pond located in the north western extent of the eastern parcel (on site). There are no other artificial waterbodies located on the site, however, there are several small ponds located in a 1km radius of the site.

Fluvial Flood Risk

- 3.11 The site is located within the Environment Agency's (EA) Flood Zone 1 (low probability of fluvial and tidal flooding), as shown in Figure 3.1. Flood Zone 1 is described within the NPPF Technical Guidance as having less than a 1 in 1000 (<0.1%) annual probability of river or sea flooding in any one year.

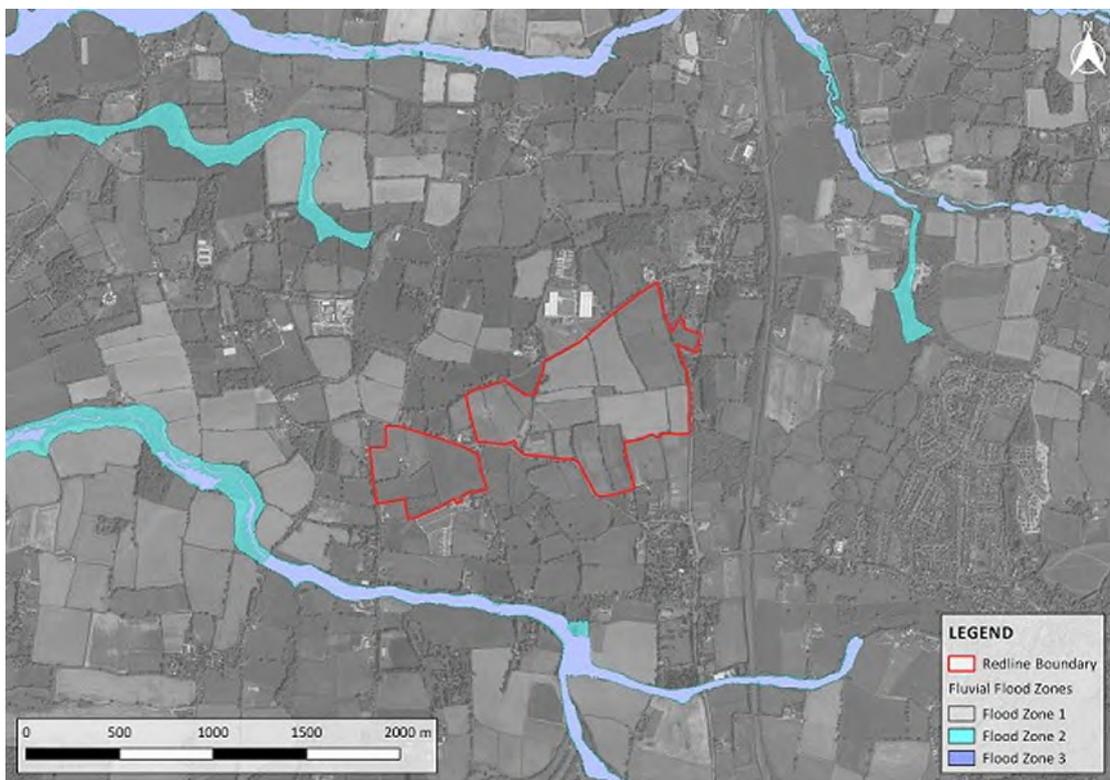


Figure 3.1: Flood Extents as provided by the EA

Reservoir Flood Risk

- 3.12 A review of the Environment Agency reservoir flood maps confirm that the site is not at risk from breach or overtopping in the unlikely event of a reservoir failure.

Surface Water Flood Risk

- 3.13 A surface water modelling assessment was undertaken to assess the risk of flooding to the site from surface water, with an inclusion for climate change. A model was developed utilising the EA's JFLOW Surface Water Flood Model inputs to create a detailed TUFLOW rainfall on cell model. The model was based on 2 m resolution LiDAR data.
- 3.14 Rainfall data (FEH, 2013) was abstracted for the 30 year, 100 year, 100 year, and 1000 year return period and applied as rainfall on cell in the TUFLOW model. A 40% inclusion for climate change was included for the 100 year return period, which is in excess of the 37% Central Allowance required for this catchment.
- 3.15 Correspondence was held with West Sussex County Council, Mid Sussex District Council, and Horsham District Council (between June and October 2017) to obtain an agreement on the assumptions and methodology utilised for the surface water modelling assessment. The model was updated accordingly with the comments provided. As requested by the local councils, the following assumptions were incorporated into the model:
- There will be no surface water will be lost to the stormwater network within urban areas. This is considered to be a worst case scenario given that the online EA model surface water flood maps assume a loss of 12mm/hr in urban areas to account for drainage¹.
 - The hydraulic structures in the TUFLOW model (represented using layer flow constriction files) have been calibrated to the EA's ISIS 1D fluvial flood model to ensure that they behave in a hydraulically similar manner to the EA's ISIS 1D fluvial flood model.
- 3.16 The results of the TUFLOW modelling for the Site for the 1 in 100 year plus climate change and the 1 in 1000 year events are shown in Figures 3.2 and 3.3 respectively.
- 3.17 Depths below 150 mm have been excluded from the mapped results in line with EA Standards (Environment Agency, 2013).

¹ Environment Agency, (2013), What is the updated Flood Map for Surface Water?

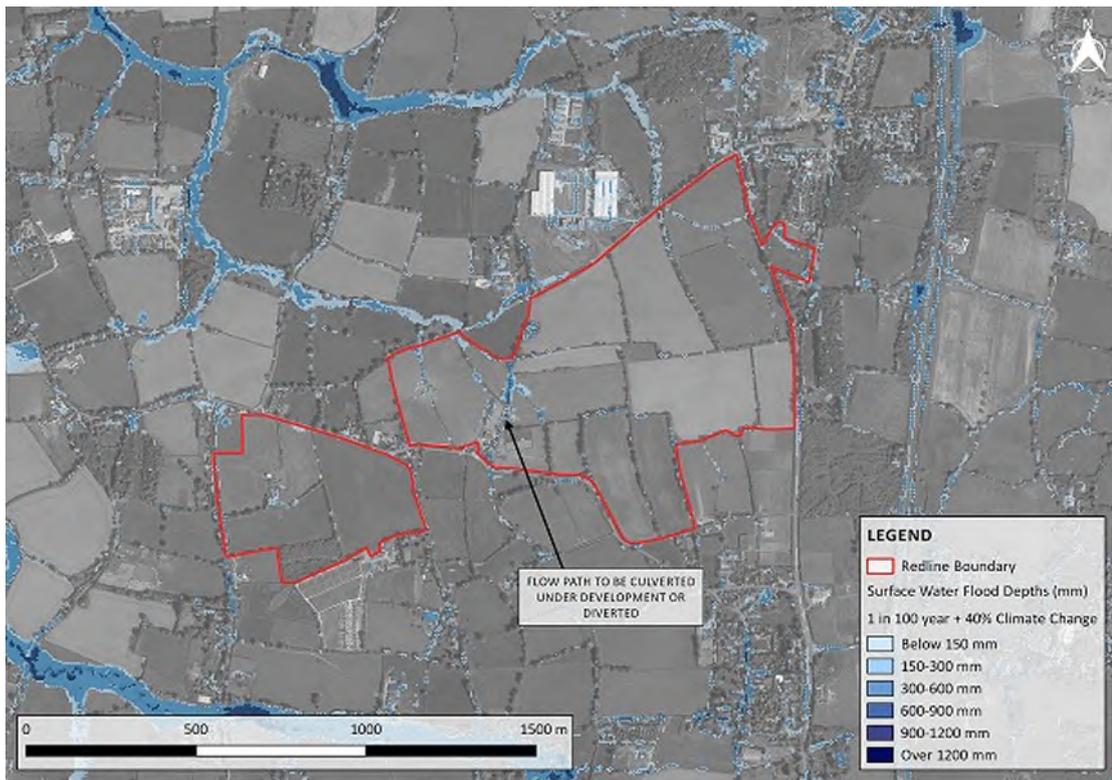


Figure 3.2: Modelled Surface Water Flood Extent for the 1 in 100 year + 40% Climate Change Event

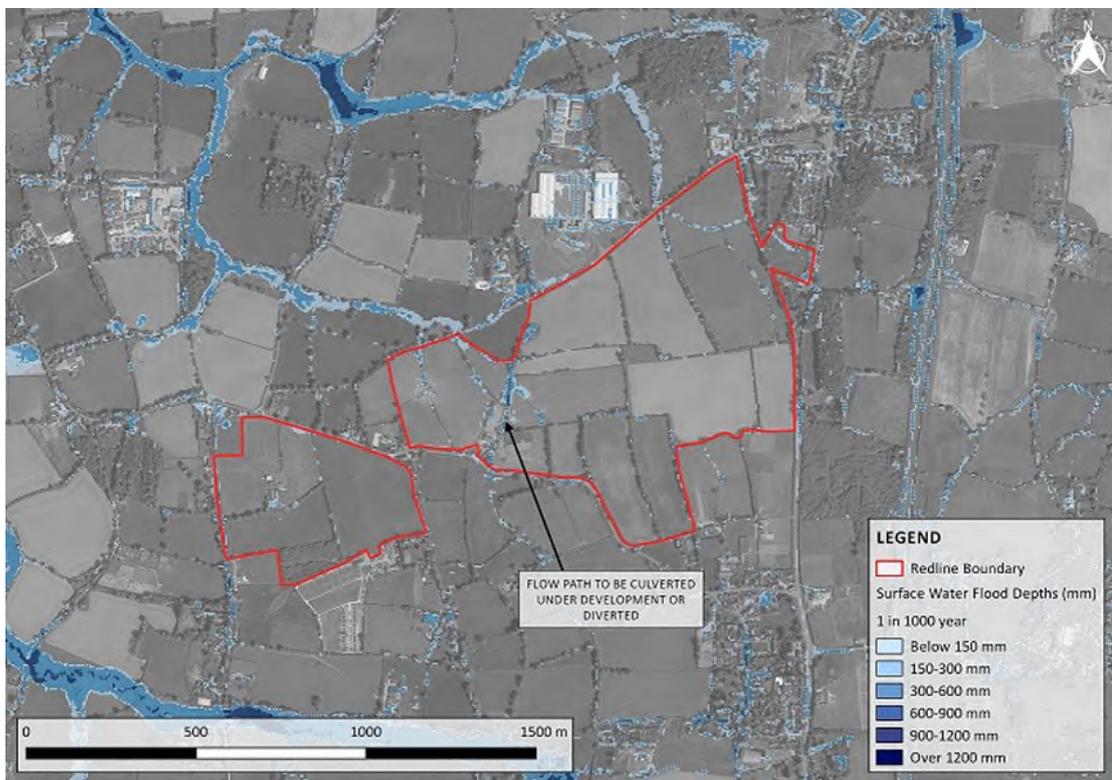


Figure 3.3: Modelled Surface Water Flood Extent for the 1 in 1000 year Event

- 3.18 The results of the TUFLOW modelling for both the 1 in 100 year plus climate change event and the 1 in 1000 year event shows that surface water flood depths on the site primarily remain below 150 mm.
- 3.19 There are several areas where surface water flood depths are between 0-900 mm, however, these depths are restricted to the land drains/ditches across the site. This includes a flow path located in the western part of the eastern parcel (draining northwards) which is predominantly restricted to the land drain/ditch.

Historical Flood Risk

- 3.20 There are several records of historical flooding in and around Sayers Common predominantly due to sewer flooding on Reeds Lane (located immediately north of the site) according to the Mid Sussex SFRA. Based on records supplied by Mid Sussex District Council, a number of flooding records were reported off site at Sayers Common, which can be summarised as follows:
- Fluvial flooding of flats numbered 9,17,19,21 Oakhurst Flats, Sayers Common on 30th December 1993;
 - Sewer Flooding as a result of highway drainage blocking at 1 Kingsland Cottages, Reeds Lane, Sayers Common on 30 December 1993;
 - Fluvial flooding to the gardens, driveway or garage to a property on Reed Lane on 9-12 October 2000;
 - Flooding from overland flow October-November 2000 affected drainage at 413 Furzeland, Sayers Common;
 - Flooding in the area on and around Reeds Lane was reported approx 12 years ago [*sic*] and ongoing (as at 2006) as a result of sewer flooding which were due to be upgraded in 2010 at latest – it is understood that a holding tank beneath the playing fields on Reeds Lane was installed by Southern Water to improve the situation. It is noted that a lot of minor water courses in this area are overgrown which exacerbates their risk of flooding. Further isolated flooding was experienced at Reeds Lane in early 2014 during January/February. This appears to have been caused by a blocked culvert.
 - A further more recent flood event has been recorded on the B2118 which was caused by the existing road gullies becoming blocked with no clear outfall
- 3.21 The records reviewed do not report any flooding of dwellings.
- 3.22 The Environment Agency's online web mapping service layers (WMS layers) (accessed at: Data.gov.uk) confirms that there have been no Environment Agency historic records of flooding on the site. The closest historic record of flooding to the site is located 500 m to the east (within the river corridor).

- 3.23 West Sussex County Council PFRA identifies historical flooded incidents across West Sussex. The mapping confirms that WSCC hold no records of flooding on the site.

Flood Risk to the Proposed Development

- 3.24 Based on our understanding of the scheme and the site setting, the potential sources of flooding have been identified in Table 3.1.

Potential Source	Pathway	Potential Linkage to Site	Justification
Tidal Flooding	Breach of defences/ overtopping	No	The site is not located in close proximity to a tidal watercourse and therefore is not considered at risk from tidal flooding.
Fluvial flooding	Exceedance of channel capacity/overland flow	No	The site is located wholly within Flood Zone 1 (less than 1 in 1,000 annual probability of fluvial flooding (<0.1%)) flooding from this source will not be considered further in this report.
Groundwater (perched)	Perched groundwater	Yes	Perched groundwater (pockets of groundwater trapped within impermeable soils i.e. clay) may be present in locations within the site boundary and will require consideration as part of the detailed design.
Groundwater (shallow)	Shallow Groundwater	Yes	Shallow groundwater may be present in locations (where the geology is sandy/gravel e.g. Head deposits) and will require consideration as part of the detailed design.
Artificial water Bodies	Breach of reservoir embankments and overland flow	No	The site is not at risk of flooding from a breach in a reservoir and therefore flooding from this source will not be considered further in this report.
Infrastructure failure from water mains and internal water supply system	Failure of the public water supply network and/or internal water supply and distribution system may result in flooding of the internal building as well as the surrounding area	Yes	Flooding from water supply infrastructure (water mains – public & private) within the site boundary/vicinity of the site is a residual risk. No other significant sources of flooding are identified.
Sewer flooding from public and private site drainage (foul	Surcharge in site drainage and public sewer network due to	Yes	A new separate foul and surface water sewer network will be developed as part of the proposed scheme. Sewer flooding (including flooding from SUDS) from

Potential Source	Pathway	Potential Linkage to Site	Justification
and surface water including site drainage	blockage or exceedance of capacity		surcharge and blockage is however a residual risk that will need to be considered as the design of the drainage progresses and managed during the life of the development through regular inspection/maintenance.
Surface water flooding as a result of extreme rainfall and runoff from overland flow	Flooding of the surrounding area due to extreme rainfall and overland flow to the site from un-drained areas up-gradient of the site	Yes	<p>A hydraulic modelling assessment was undertaken to assess the risk of flooding to the site from surface water, with an inclusion for climate change. The results of the 1 in 100 year plus (40%) climate change and 1 in 1000 year event show that the site is primarily at a low risk from surface water flooding.</p> <p>There are areas where flood depths of between 0-900 mm, these are generally confined to the existing land drains/ditches on the site.</p> <p>Surface water flooding from extreme rainfall remains a residual risk.</p>

Table 3.1: Potential sources of flooding to the development

- 3.25 Based on this assessment, site drainage, public sewers and public and private water supply networks along with surface water flooding (from overland flow and extreme rainfall) pose risks that will require mitigation. Appropriate mitigation measures to protect the development are set out in Table 3.2 of this report.

Flood Risk from the Development

- 3.26 There is the potential for hydrological impacts to occur which may increase the risk of flooding to neighbouring or downstream property if appropriate mitigation measures are not introduced. These impacts are discussed below, and the various measures to manage them are set out in Table 3.2.

Potential Impact on Surface Water Runoff

- 3.27 As the site is currently free draining, it is assumed that under current conditions, any surface water will currently runoff overland to nearby land drains/watercourses.
- 3.28 To ensure that there are no adverse impacts following development, the surface water runoff from the proposed development will be restricted to that of the undeveloped site, with the

appropriate surface water attenuation incorporated into the overall development. Attenuation requirements are considered further in the outline drainage strategy set out below.

Potential Displacement of Floodwater

- 3.29 All of the developable area will be located within Flood Zone 1, as a result there will be no displacement of flood water from the development.

Impacts to the Foul Sewer Network

- 3.30 The capacity of the existing sewer network is discussed in more detail in Section 5, where an outline strategy for wastewater management is presented in more detail.
- 3.31 In summary, the increased flows generated by the proposed development will be directed to a new pumping station on site and subsequently pumped to a new Waste Water Treatment Works to be located to east of the A23. The new pumping station on the site will also be designed to pick up the flows from the existing Sayers Common pumping station effectively dealing with the localised flooding issues that have occurred in the area. The flows will then be pumped across the A23 initially using the existing rising main, with an additional main being constructed for later phases.
- 3.32 The foul water drainage strategy has been developed to ensure that the scheme does not increase the risk of flooding in the public sewer network and increase risk of sewer flooding in the wider community.

Impacts to Ground Water Levels

- 3.33 Basements, structures, or excavations that extend below the water table may increase risk of flooding to neighbouring properties by locally raising the water table level. No significant impacts are anticipated based on the current understanding of the site and the proposals. However, if significant basement structures are proposed, then appropriate basement impact assessment will be required.

Risk Assessment and Mitigation Measures

3.34 Flood risk management measures are proposed in Table 3.2 in order to both mitigate flood risk posed to the development and to assist with alleviation of the downstream flooding.

Type of Flooding (Source)	Mitigation Measures
Flooding from surface water runoff – overland flow	<ul style="list-style-type: none"> • A hydraulic modelling assessment was undertaken to assess the risk of flooding to the site from surface water. The site is at a low risk of surface water flooding. • The flow path in the western part of the eastern parcel (on the site) will either be culverted under the development or diverted. • The development will be located outside of the 1 in 100 year + Climate Change extent. • Inclusion of sustainable drainage to ensure attenuation is provided to ensure the site or surrounding area does not flood during the 100 year plus 40% climate change event. • Provide maintenance plans and schedules for all sustainable drainage utilised in the scheme including routine inspections throughout the development lifetime (maintenance by site Management Company or adopting authority). • Consideration of flood routing at the detailed design stage will ensure any rainfall in excess of the extreme event will be retained on site within the kerb lines, therefore posing low risk to off-site property. • The detailed design of the external areas of the development plots should ensure that any potential flood waters will be directed away from dwelling entrances and all access points. • Recent Local Flood Event in 2022 on the B2118 was investigated and the cause appears to be blocked road gullies with no apparent outfall. A new wetland area is to be provided within the site which will be designed to take the water from these gullies along with the drainage for the new site access roundabout
Risk of Flooding from the foul water network – Sewer Flooding	<ul style="list-style-type: none"> • Careful design of connection to the public sewer as part of detailed design of the drainage. • Regular inspection and maintenance of the public sewer network by Southern Water. • Routine inspection and maintenance of both the foul and surface water drainage systems by the site maintenance or adopting authority.
Flooding from perched Groundwater (majority of the site)	<ul style="list-style-type: none"> • Include appropriate waterproofing in the design of all below ground structures/services substructure design and consider the need for dewatering during construction.
Flooding from shallow Groundwater (in the eastern part of the eastern parcel – Head Deposits)	<ul style="list-style-type: none"> • Confirm groundwater levels through site investigation in these areas and undertake appropriate basement impact assessment to ensure design is appropriate.

Table 3.2: Proposed Mitigation Measures and Residual Risk Assessment

Residual Risks

- 3.35 Assuming the mitigation measures are adopted (Table 3.2), the principal residual risks are likely to relate to surcharges, blockages and/or pump failure in private or public sewer networks, onsite burst water mains, and surface water flooding from extreme rainfall in excess of the design of the site drainage.
- 3.36 As long as the water supply infrastructure, public sewers and site drainage are routinely inspected and maintained by site management and Southern Water/Southeast Water the residual risk to the site downstream properties will be minimised.

Climate Change

- 3.37 Climate change has important implications for the assessment and management of flood risk. The NPPF requires that climate change is considered when making an assessment of flood risk posed to future development.
- 3.38 Climate change has the potential to affect all identified sources of flooding at the site. The likely impacts of climate change include increased severity of rainfall events as well as wetter winters leading to higher groundwater levels and increased frequency and severity of surface water flooding.
- 3.39 The influence of climate change on rainfall intensity has been taken into account by the surface water drainage strategy here as an inclusion of 45% has been made for climate change for all rainfall events up to and including the 1 in 100-year event in accordance with NPPF requirements, and 'Flood Risk Assessments: Climate Change Allowances'².

Outline Surface Water Drainage Strategy

- 3.40 Based on published geological records, the site is generally underlain by Weald Clay formations. Therefore, opportunities for introducing infiltration forms of sustainable drainage systems are very limited. An area underlain by Head superficial deposits (eastern extent of the eastern parcel) on the site may be suitable for infiltration SUDS, however, this area is located on a high point of the site and therefore will not be feasible.
- 3.41 Surface water is assumed to drain informally via the network of field drains and watercourses on or in close proximity to the site.
- 3.42 The surface water management strategy for the site will ensure that the scheme can be developed without increasing flood risk and will ensure that sustainable drainage systems can
-

be incorporated as attractive, multi-functional and sustainable features within the green infrastructure framework of the site.

- 3.43 Inclusion of sustainable drainage to ensure attenuation is provided to ensure the site or surrounding area does not flood during the 100 year plus 45% climate change event. Surface water will be retained in green landscaped areas where possible with any exceedance flows directed away from property and strategic infrastructure.

Sustainable Drainage Systems

- 3.44 Table 3.3 outlines the sustainable drainage systems that are currently envisaged to be suitable to be incorporated into the surface water drainage strategy for the site.

SUDS Option	Suitability	Comments
Soakaways and porous paving (infiltration)	X	Based on our understanding of the ground conditions it is assumed that the underlying geology across the majority of the site will not be suitable for infiltration systems. An area underlain by Head superficial deposits (eastern extent of the eastern parcel) on the site may be suitable for infiltration SUDS, however, this area is located on a high point of the site and therefore will not be feasible.
Porous paving (storage)	✓	Could be included to provide storage and treatment of surface water runoff in paved areas.
Rainwater Harvesting	✓	This could be incorporated as part of the detailed design to provide some reduction in the total surface water runoff and reduce potable water demand.
Swales	✓	Swales could be incorporated into the design for both land drainage and conveyance/attenuation of surface water runoff wherever possible. Piped drainage will only be used where absolutely necessary (i.e. building footprints and hardstanding areas and under roads / infrastructure).
Open ponds/wetlands/detention basins (above ground storage)	✓	Open ponds/wetlands/detention basins could be provided on site to attenuate / infiltrate surface water runoff. Ponds, swales and balancing ponds could be included to provide conveyance and storage/attenuation of surface water where necessary. Depending on ground conditions and water quality issues, these swales may be designed to infiltrate. Opportunities for ecological enhancement/ enhancement of amenity value will be considered further at the detailed design stage in consultation with the project ecologist and landscape architect. Appropriate maintenance requirements will be included in detailed design specifications and management procedures.
Below ground storage in cellular systems	✓	Will be considered as part of the detailed design of each plot where above ground storage/swales are not practicable.

SUDS Option	Suitability	Comments
Flow Control Devices	✓	The peak flow rates will be managed by orifice/weir arrangements or Hydrobrakes. This will restrict flows to greenfield runoff rates.
Green Roofs/Brown Roofs/Blue Roofs	✓	Should be considered further as part of the detailed design and included where practicable

Table 3.3: Sustainable drainage systems appraisal

Key:

- ✓ Suitable for use - should be considered further as part of the detailed design.
- * Potentially suitable for use – should be investigated further as part of the detailed design
- X Unlikely to be suitable for use

Pollution Control Measures

- 3.45 A series of pollution control measures will be introduced to ensure that the quality of the surface water runoff can be managed and improved where possible. The surface water drainage strategy should ensure that the existing hydrological regime is maintained as closely as possible by ensuring that each plot drains to the same catchment as they did prior to development.
- 3.46 As the design progresses, a detailed surface water management plan will be prepared to be including adequate pollution control measures. An initial surface water strategy is shown on Drawing No 2979/02/005. The design shows a number of open attenuation ponds, along with a network of interconnecting swales.

Future Management of Surface Water Drainage Systems

- 3.47 Where possible, any surface water piped network connecting the development to the attenuation features will be designed to adoptable standards and offered for adoption to Southern Water as public sewers.
- 3.48 A maintenance schedule will be developed for the SuDS as part of more detailed design which will be implemented as part of the operation of the site.

Summary

- 3.49 Based on our understanding of the Site setting and the development proposals, it is considered that the risk of flooding from all sources is generally low, and the development can be operated safely and without significantly increasing flood risk elsewhere.
- 3.50 Assuming the mitigation measures are adopted, the principal residual risks relate to surcharges, blockages and/or pump failure in private or public sewer networks, onsite burst water mains, and surface water flooding from extreme rainfall events in excess of the design parameters utilised for specification of the site drainage.

- 3.51 As long as the water supply infrastructure, public sewers and site drainage are routinely inspected and maintained, then the residual risk to the site and downstream properties will be minimised.
- 3.52 The proposed development will have the potential to improve the existing situation in relation to flood risk on both Reeds Lane and the B2118, which have both had historic instances of localised flooding primarily due to poor maintenance of the highway drainage system or the lack of any positive outfall for the water to drain to. The SUDs scheme proposed as part of the development will pick up these areas and ensure that sufficient capacity is provided to ensure that any future flooding is minimised.
- 3.53 The inclusion of sustainable drainage systems/attenuation features into the development will ensure that surface water can be managed on site without increasing off-site flood risk, whilst creating attractive landscape and enhanced ecological habitats.

4.0 WASTEWATER STRATEGY

- 4.1 This section provides a review of the current foul water infrastructure structure and sets out a deliverable strategy for providing wastewater treatment for the new development.
- 4.2 As the safe treatment of our wastewater and its return to the natural environment (rivers or the sea) is a key part of the water cycle, the strategy has been developed to suit the hydrological setting which is summarised in Chapter 3.

Foul Water Infrastructure

- 4.3 Southern Water is the sewerage undertaker for the whole study area.
- 4.4 According to public sewer records, foul water sewers (owned and maintained by Southern Water) are present in the larger settlements including Sayers Common, Henfield and Cowfold as well as the smaller settlements of Albourne, High Cross, Wineham, Shermanbury and Blackstone.
- 4.5 Sewage from Sayers Common and Albourne is pumped east via rising main to the site of the decommissioned Hurstpierpoint sewage treatment works approximately 3.5 km east of Sayers Common. At this location, there is a second pumping station operated by Southern Water which collects foul water from Sayers Common and Albourne as well as Hassocks and Hurstpierpoint, and pumps wastewater to Goddards Green wastewater treatment works (WwTW) via a rising main approximately 3km to the north.
- 4.6 The second largest treatment works serving the study area is the Henfield WwTW (serving Henfield and Shermanbury via several pumping stations/rising mains from each of the settlements). The works discharges via a ditch network to Chess Stream.
- 4.7 Smaller WwTW are located in Blackstone, Wineham and Albourne High Cross and Reeds Lane which serve smaller populations with outfalls to the local ditch network.
- 4.8 Smaller hamlets and farmsteads across the district are not served by mains drainage and are likely to be served by cess pits, septic tanks or small privately managed package treatment plants.
- 4.9 A review of the water cycle study, draft infrastructure plan and consultation with Southern Water and the Environment Agency (EA) indicates that that there is currently limited spare capacity of in the public sewer network, and that a development of this size, in this location could not be accommodated without considerable strategic level upgrades.
- 4.10 Previous discussions with Southern Water and investigations into existing capacity confirmed that there is some spare capacity within the existing nearby works at Henfield (500 homes) which will enable an initial phase of development to be released. Southern Water have

confirmed that with some improvements to Henfield up to 2,250 houses could be served by the existing works.

- 4.11 For the proposed development to connect to the Henfield works a new rising main would be required approximately 6 km long, running in a westerly direction along the B2116. The construction of this main would cause major disruption, requiring lengthy road closures, and would require chemical dosing to be introduced at the onsite terminal pumping station to avoid septicity in the system.

Proposed New WWTW Works Site to the east of the A23

- 4.12 A proposed site for a new works has been identified on land to the north east of Sayers Common to the east of the A23 that's controlled by Berkeley Latimer and is therefore deliverable without affecting the current development capacity on the land to the South of Reeds Lane. The site is immediately adjacent to the Herrings Stream which is classified as Main River. Herrings Stream from this location then flows in a westerly direction under the A23 before eventually connecting to the river Adur. See Drawing No 2979/02/004
- 4.13 Herrings Stream has a 'poor' ecological status and a 'fail' in chemical status, with the nearby monitoring station for the site showing High Ammonia, dissolved oxygen and Temperature as well as 'Moderate' Phosphates. Previous discussion with the Environment Agency regards potential discharge consents to watercourses in this area have concluded that new discharge consents would be permitted, as long as they didn't detrimentally impact on the overall river quality and prevent the water course from achieving very good status in the future.
- 4.14 The new WWTW will adopt the Plantwork Systems Ltd (PWS) NUTREM technology in order to achieve exceptional levels of nutrient removal from wastewater and good quality final effluent which will surpass the water quality requirements of the Water Frameworks Directive WFD. The NUTREM system is a low odour plant and produces considerably less sludge than other forms of treatment and can be designed to look similar to an agricultural facility.
- 4.15 Using these latest treatment methods will ensure that the water quality in the receiving watercourses, and of the groundwater, is not only maintained but significantly improved as it will enable Southern Water to divert some of the flows from smaller, older works and septic tanks in the local area to the new works. The new onsite WWTW will be operated either by Southern Water or by a Specialist Licensed Operator. Severn Trent Connect have confirmed that they would like to construct and operate the new works, and do not see any issues in securing the necessary discharge consents required by the Environment Agency.

Outline Wastewater Strategy – Sayers Common Development

- 4.16 All networks and location of pumping stations shown in this report are provided for illustrative purposes to demonstrate possible means of providing adequate sewerage for the new

development. The programme for construction/upgrade of any new/existing sewerage infrastructure including the siting and form of new infrastructure will be determined by ongoing consultation with the EA and Southern Water, further development of the masterplan, and any detailed topographic and environmental assessment studies.

4.17 The option of diverting the existing foul flows currently draining to the existing Sayers Common pumping station is being considered, as we are aware that there have been localised flooding issues around this station. A new Terminal Pumping Station is being proposed in the western section of the site, which will be sized to receive the additional flows providing extra wet well storage to ensure that there are no future capacity issues. The new pumping station will then pump across the A23 to the proposed new WWTW site to the north of Mill Lane approximately 2.5km north east of the site. By diverting the existing Sayers Common foul flows to a new Terminal Pumping Station, it will be possible to provide additional wet well storage which would then allow a limited amount of development to be released prior to the establishment of the new WWTW. See Drawing No 2979/02/004

4.18 The initial layouts are based on the following general principles:

- Minimise pumping where possible, using gravity drainage systems;
- Minimising the impact on existing infrastructure.
- Improving water quality and minimising risk of future pollution events.

4.19 Drawing 2979/02/003 provides an indicative overview of how wastewater infrastructure could be provided for the development.

4.20 The key wastewater assets required can be summarised as follows:

- New on-site terminal pumping station;
- Series of smaller catchment pumping stations
- New rising main from Terminal Pumping Station to WwTW;
- New WWTW to serve development located to the East of the A23, to the north of Mill Lane.

Summary

4.21 Discussions with Southern Water have confirmed that an initial phase of development could be taken to the existing Henfield works.

4.22 For the development of homes above and beyond 500 dwellings a new WwTW will be required.

- 4.23 The provision of a new Terminal Pumping Station with additional wet well storage within the land to the south of Reeds Lane, Sayers Common would allow additional development to be released in advance of the new WWTW being provided.

5.0 WATER SUPPLY

- 5.1 Land to the south of Reeds Lane, Sayers Common sits within western section of South East Waters Water Resource Zone 2, Haywards Heath. As shown on Figure 21 of the South East Water Water Resources Management Plan 2020-2080 WMRP19.
- 5.2 South East Water WMRP19 sets out a strategy on how they intend to ensure that adequate supplies can be provided for both the existing population as well as allowing for future growth in the plan period. Their preferred plan is split into a range of initiatives for varying time periods. The two key periods of the plan which relate to this proposed development are 2020-2025 and probably more importantly 2025-2045.
- 5.3 Within the 2020-2025 period the plan includes a mix of demand management initiatives (leakage and water efficiency) that is predicted to save an additional 26.6Ml/d. The plan targets a per capita consumption figure of 118 litres/per head /per day in 2045 and 90 litres/per head/per day by 2080.
- 5.4 The 2025-2045 continues the demand management programme targeting a further saving of 66.7Ml/day. This period of the plan will also need the introduction of a number of water supply options. These will ensure that South East water continue to meet their supply demand balance and deliver good performance in terms of resilience.
- Developing and improving an existing water treatment works at Bewl WTW Kent, with transfer to our WRZ3 (8 MI/d)
 - Developing regional water transfer schemes importing water from SES Water to WRZ2 (Haywards Heath) (9MI/d) and exporting water from WRZ8 (Ashford) to Southern Water (2MI/d)
 - Carrying out a targeted catchment management programme at Woodgarston (3.0 MI/d) and Pembury (0.3 MI/d)
 - Building a new reservoir at Broad Oak, Kent (19.6 MI/d)
 - Building a new reservoir at their existing Arlington Reservoir, East Sussex (16.1 MI/d)
 - Developing two new company transfers between our water resource zones and three improvement schemes to our pipe network to improve connectivity.

Proposed Demand Management

- 5.5 It is proposed that the development should incorporate water efficiency measures, this will restrict water demand to 85 l/p/d in the first phase of development, and to any best practice standard that may supersede and improve on this for the majority of the site in later phases.
- 5.6 It is proposed that a grey water recycling scheme will also be developed for the site, with a dual supply pipe system being provided throughout the development, providing both, potable

and recycled water to each of the buildings, therefore reducing the demand on surface and ground water resources.

Existing Apparatus

- 5.7 Both Southern Water and South East Water have existing mains located in the vicinity of the site, as shown on Drawing 2979/07/016. Both companies have confirmed that the existing mains do not have sufficient capacity to serve the proposed site without offsite reinforcement.

New Supply

- 5.8 Following discussions with South East Water, they have confirmed that a water supply can be made available to the proposed development. South East Water have estimated that approximately 9.4km of mains reinforcement will be required to link the site with the company's DMA Meter at Malthouse Lane, Burgess Hill. The area is supplied from the Barcombe Water Treatment Works via Butters Green and St Francis Service Reservoirs. Details of the offsite reinforcement works proposed are shown on Drawing 2979/07/022.

Summary

- 5.9 South East Water have previously confirmed that they have sufficient water resources to serve a proposed new development of 2,000 dwellings in this area.
- 5.10 The dwellings will be designed and provided with the highest level of water efficient appliances significantly reducing the demand on the potable water resources. Offsite reinforcement works are required to serve the site and an initial scheme has been designed for budget cost purposes.

6.0 CONCLUSIONS AND RECOMMENDATIONS

- 6.1 The land to the south of Reeds Lane Sayers Common development has been proposed to meet the growing housing shortage in the Mid Sussex District. The development is included in the Reg 18 Draft Local Plan in Policy DPSC2 for up to 2,000 homes and associated educational, and community facilities in a phased development.
- 6.2 South East Water has confirmed that water can be provided to the site and that they have sufficient water resources at source to be able to serve the additional demand. The existing mains network will however need to be reinforced to serve the site and an initial scheme and costing has been provided for this work. Initial modelling has shown that the existing mains may struggle with pressure to serve the anticipated demand from the overall site, however, it is anticipated that an initial phase will be able to be released without the reinforcement works from the existing network. Water efficient appliances will be provided in each dwelling as part of the overall water supply management strategy, this coupled with a dual pipe supply system of potable/recycled water will enable water usage demands to be managed efficiently targeting 85 litres/per person/per day water usage for the development.
- 6.3 The proposed foul water strategy for the Site, is to include a new WWTW which is to be located on land to the east of the A23 with access taken from the Mill Lane. The land is controlled by Berkeley Latimer and is therefore deliverable and can be brought forward alongside the current proposals without affecting development capacity on site.
- 6.4 The new works will be designed initially to serve the land to the south of Reeds Lane Sayers Common, however additional capacity will be provided on a phased basis to allow existing Sayers Common flows to be diverted into the works. The new works will adopt the Plantwork Systems Ltd (PWS) NUTREM technology in order to achieve exceptional levels of nutrient removal from the wastewater and good quality final effluent which will surpass the water quality requirements of the Water Frameworks Directive WFD. The NUTREM system is a low odour plant and produces considerably less sludge than other forms of treatment and can be designed to look like an agricultural facility.
- 6.5 Using these latest treatment methods will ensure that the water quality in the receiving watercourses, and of the groundwater, is not only maintained but significantly improved as it will enable Southern Water to divert some of the flows from smaller, older works and septic tanks in the local area to the new works. In the absence of an agreement with Southern Water the new WwTW could be operated by a Specialist Licensed Operator. Severn Trent Connect have confirmed that they would like to construct and operate the new works, and do not see any issues in securing the necessary discharge consents required by the Environment Agency.
- 6.6 The development of the scheme will help reduce potential flood risk in the wider area, with an appropriately designed managed SUDs system controlling the surface water run off from the catchment, considerably better than the unmanaged natural catchment. In addition,

measures will be introduced in a number of areas around the site to prevent some localised flooding which has been associated with blocked road gullies and filled in drainage ditches. This will include the development of a wetland area adjacent to the new roundabout access on the B2118 which will be designed to drain the existing road as well as the new roundabout removing an existing flooding problem. Further improvements will also be provided at Reeds Common including the clearing of ditches and the linking up with the new onsite SUDs system to again remove an existing flooding issue.

6.7 The proposals have been developed in line with guidance of the EA, West Sussex County Council (the LLFA) and the NPPF and as a result the development features:

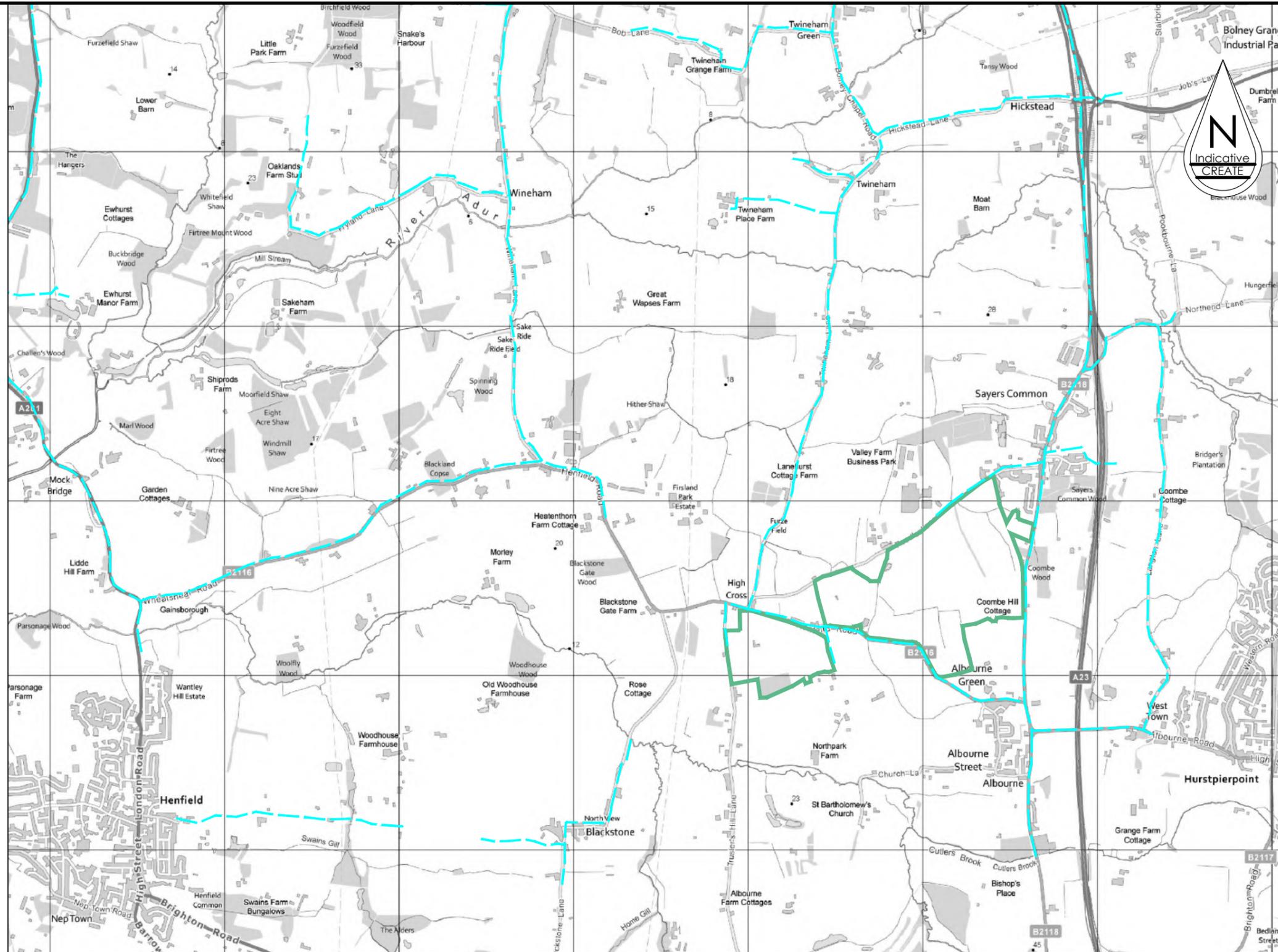
- **Low flood risk:** Development on the site will be restricted to areas of low flood risk;
- **Safe and dry access and egress:** Safe access and egress from the site will be provided with the inclusion of a new road designed to the 1 in 100 year plus climate change event;
- **No increase to flood risk elsewhere:** The testing of proposed bridges using hydraulic modelling and the inclusion of stormwater attenuation (or infiltration where possible) will make sure the development does not increase flood risk elsewhere, and;
- **No net loss of floodplain storage:** Any proposals that extend into Flood Zone 2 or 3 (proposed bridge) will be hydraulic modelled to confirm that there is no net loss of floodplain storage from the development.

Summary

6.8 This Flood Risk and Drainage Strategy shows that all of the key water-based infrastructure requirements of the proposed Sayers Common development can be provided. A new Waste Water Treatment Works is required to serve the site, which can also provide an environmental benefit to the wider surrounding area, if existing flows from Sayers Common are also diverted to the new works. The works WWTW will be designed to enable a phased development to be brought forward and will be managed by either Southern Water or a Specialist Licensed Contractor such as Severn Trent Connect.

6.9 This report shows that there are viable, practical, sustainable and deliverable solutions available for wastewater treatment, general flood risk and overall water quality management.

DRAWINGS



KEY:

- EXISTING WATER SUPPLY NETWORK
- DEVELOPMENT BOUNDARY

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REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE 05.10.23	DRAWING STATUS INFORMATION	
	SCALE(S)	DESIGNED -	DRAWN JPP
DRAWING TITLE EXISTING WATER SUPPLY NETWORK	1:25,000	CHECKED PL	APPROVED JPC
	JOB No 2979	REVISION -	
CLIENT BERKELEY LATIMER	DRAWING No 07/016		

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ORIGINAL SHEET SIZE - A3 Landscape
DO NOT SCALE

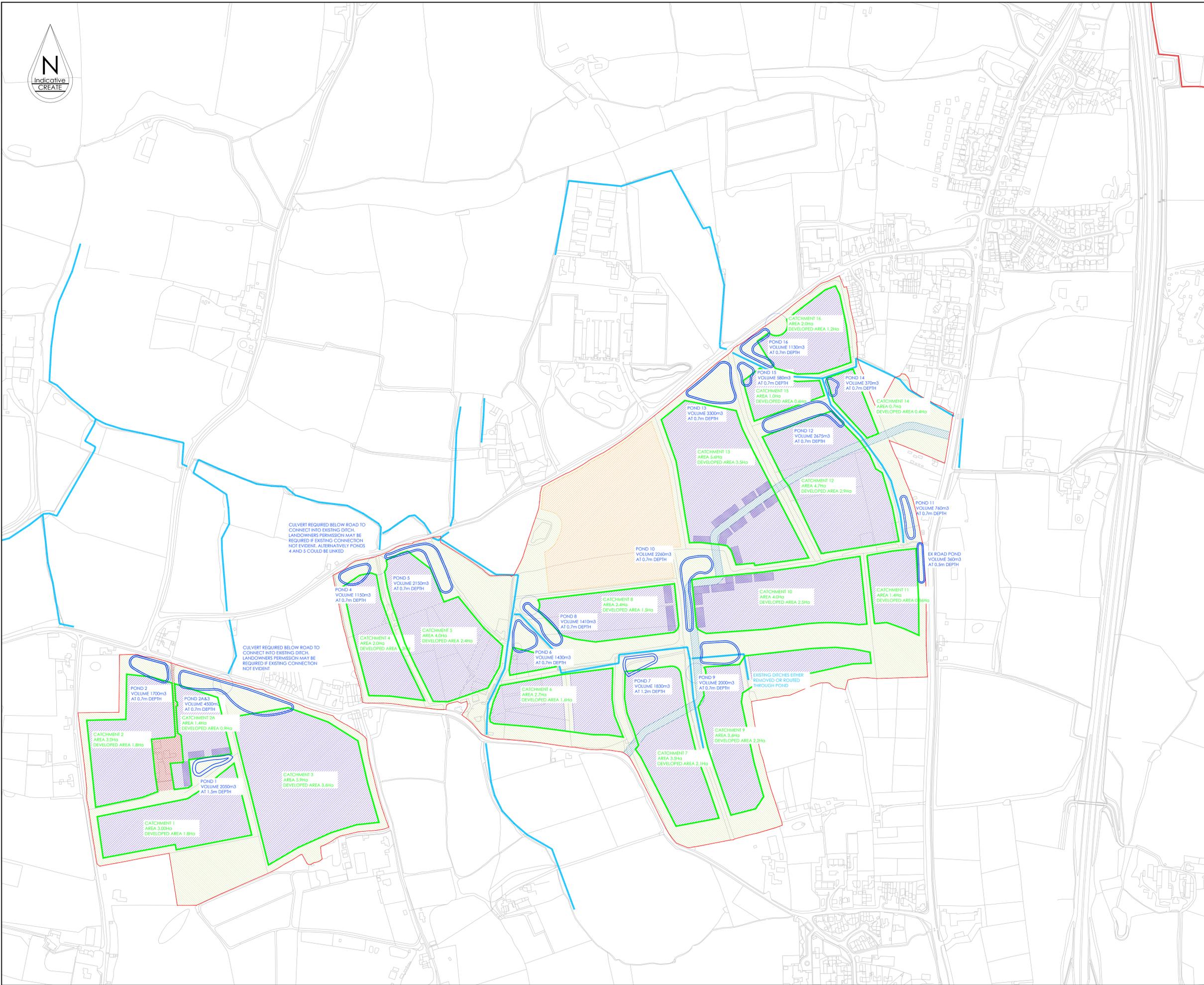


NOTES

1. ALL PONDS SIZED BASED UPON GREENFIELD RUNOFF RATES AND A 100 YEAR RETURN PERIOD WITH A 45% CLIMATE CHANGE ALLOWANCE

KEY

- EXISTING DRAINAGE DITCHES/WATERCOURSES
- CATCHMENT BOUNDARY
- PROPOSED BOND/BASIN



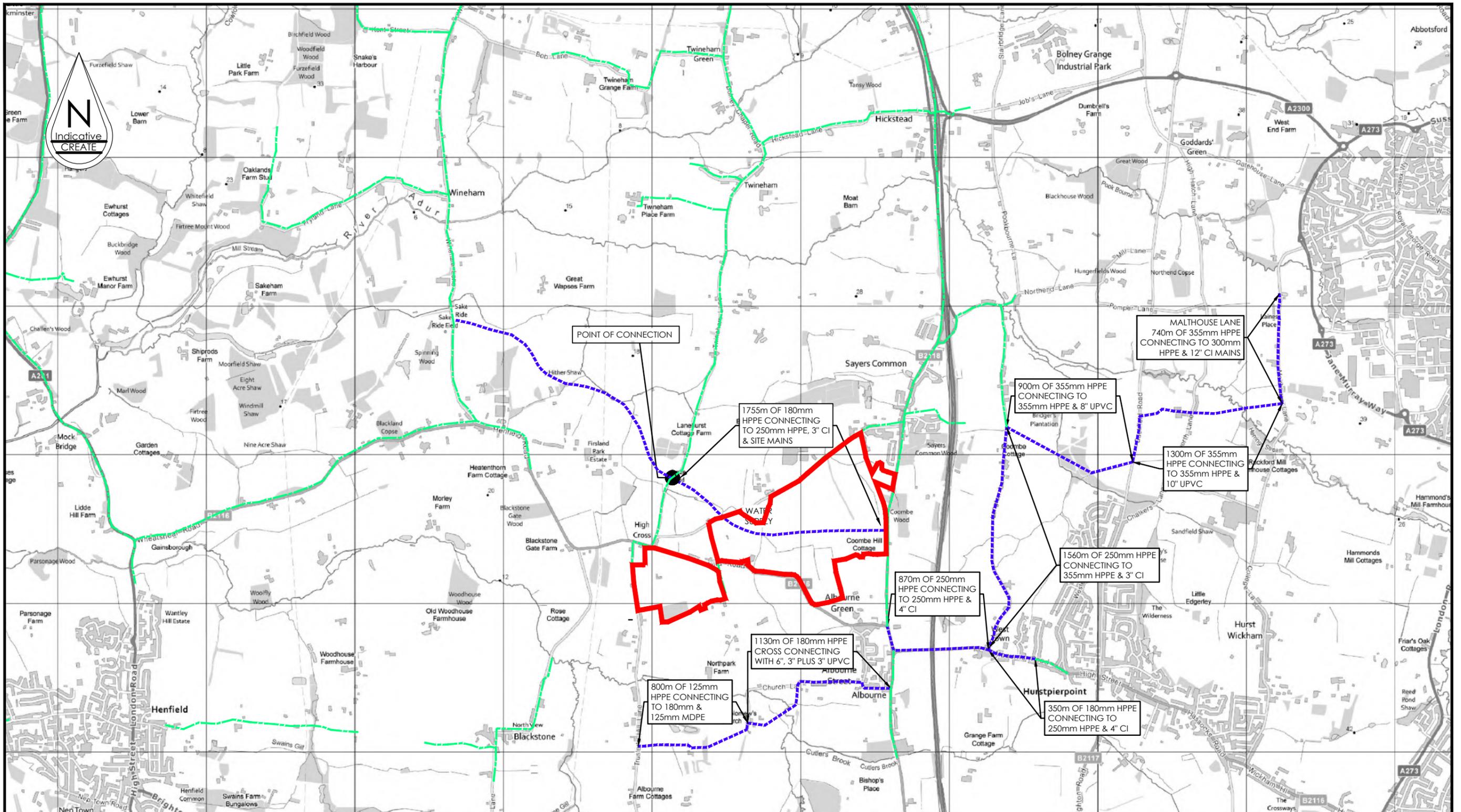
CULVERT REQUIRED BELOW ROAD TO CONNECT INTO EXISTING DITCH. LANDOWNERS PERMISSION MAY BE REQUIRED IF EXISTING CONNECTION NOT EVIDENT. ALTERNATIVELY PONDS 4 AND 5 COULD BE LINKED

CULVERT REQUIRED BELOW ROAD TO CONNECT INTO EXISTING DITCH. LANDOWNERS PERMISSION MAY BE REQUIRED IF EXISTING CONNECTION NOT EVIDENT

EXISTING DITCHES EITHER REMOVED OR ROUTED THROUGH POND

REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED
B	04.10.23	LAND PARCELS REVISED	BWA	JFC
B	05.10.23	TITLE BLOCK AMENDED	JG	BWA

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE 02.10.23	DRAWING STATUS INFORMATION	
DRAWING TITLE PROPOSED SURFACE WATER DRAINAGE STRATEGY	SCALE(S) 1:2500	DESIGNED BWA	
CLIENT BERKELEY LATIMER	DRAWING NO. 02/005	CHECKED BWA	2979 REVISION B



KEY:

- - - - - PROPOSED REINFORCEMENT OF SOUTH EAST WATER LOCAL WATER SUPPLY NETWORK
- - - - - EXISTING UNAFFECTED LOCAL WATER SUPPLY NETWORK
- DEVELOPMENT BOUNDARY

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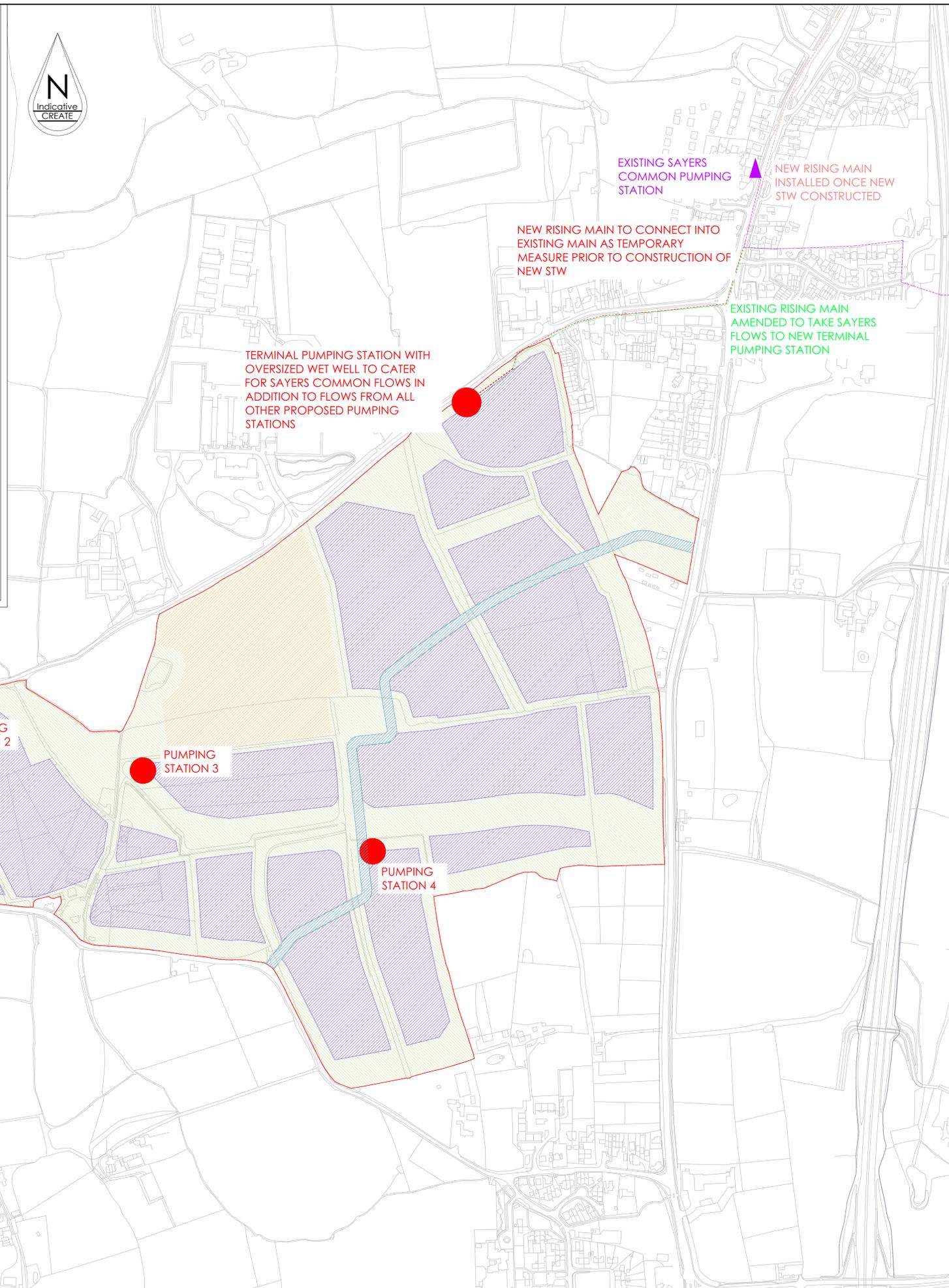
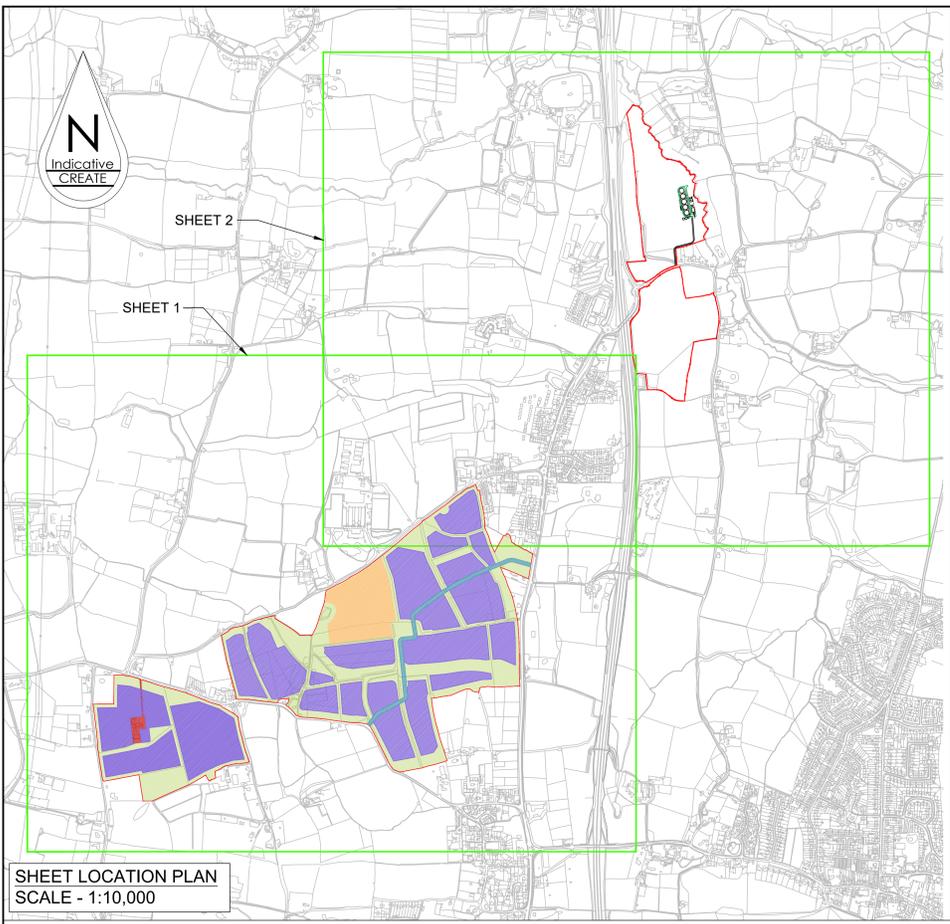
REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE	05.10.23	DRAWING STATUS	INFORMATION
	SCALE(S)	1:25,000	DESIGNED	DRAWN
DRAWING TITLE WATER SUPPLY POINT OF CONNECTION & OFF-SITE REINFORCEMENT OF LOCAL NETWORK	CHECKED	PL	APPROVED	JPC
	JOB No	2979	DRAWING No	07/022
CLIENT	BERKELEY LATIMER	REVISION	-	



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ORIGINAL SHEET SIZE - A3 Landscape DO NOT SCALE



NOTES

- ALL PONDS SIZED BASED UPON GREENFIELD RUNOFF RATES AND A 100 YEAR RETURN PERIOD WITH A 45% CLIMATE CHANGE ALLOWANCE

KEY

- PROPOSED PUMPING STATION SHOWING LOCATION WITH SIZE DENOTING REQUIRED EXTENT OF CLEARANCE ZONE
- PROPOSED RISING MAIN

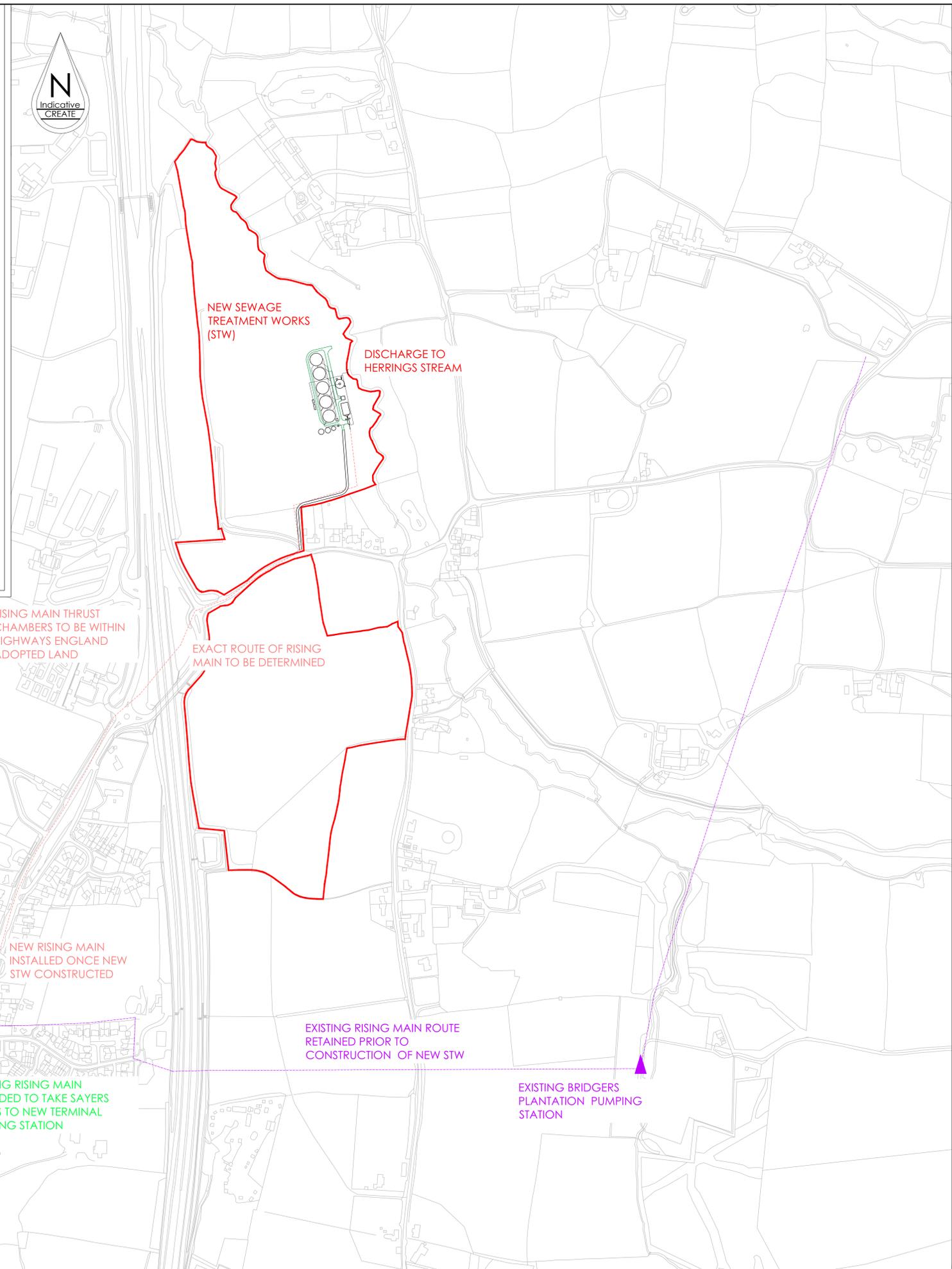
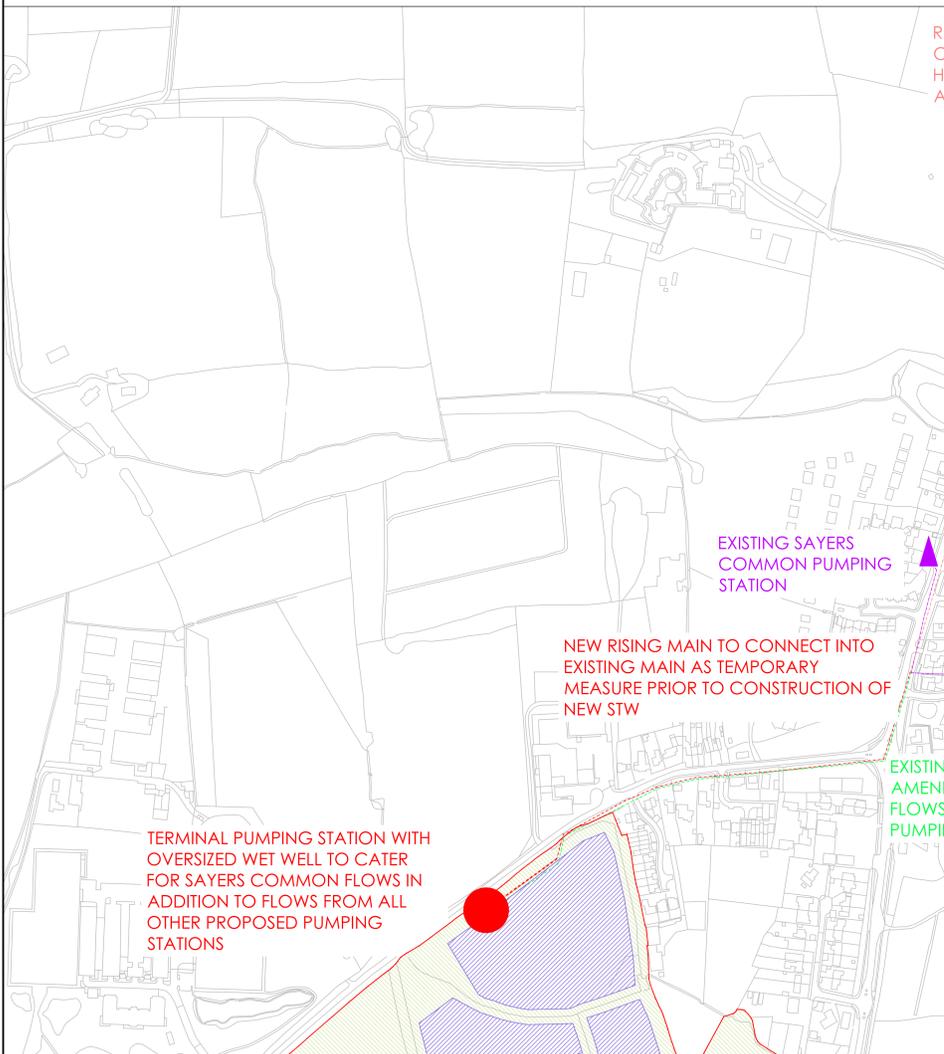
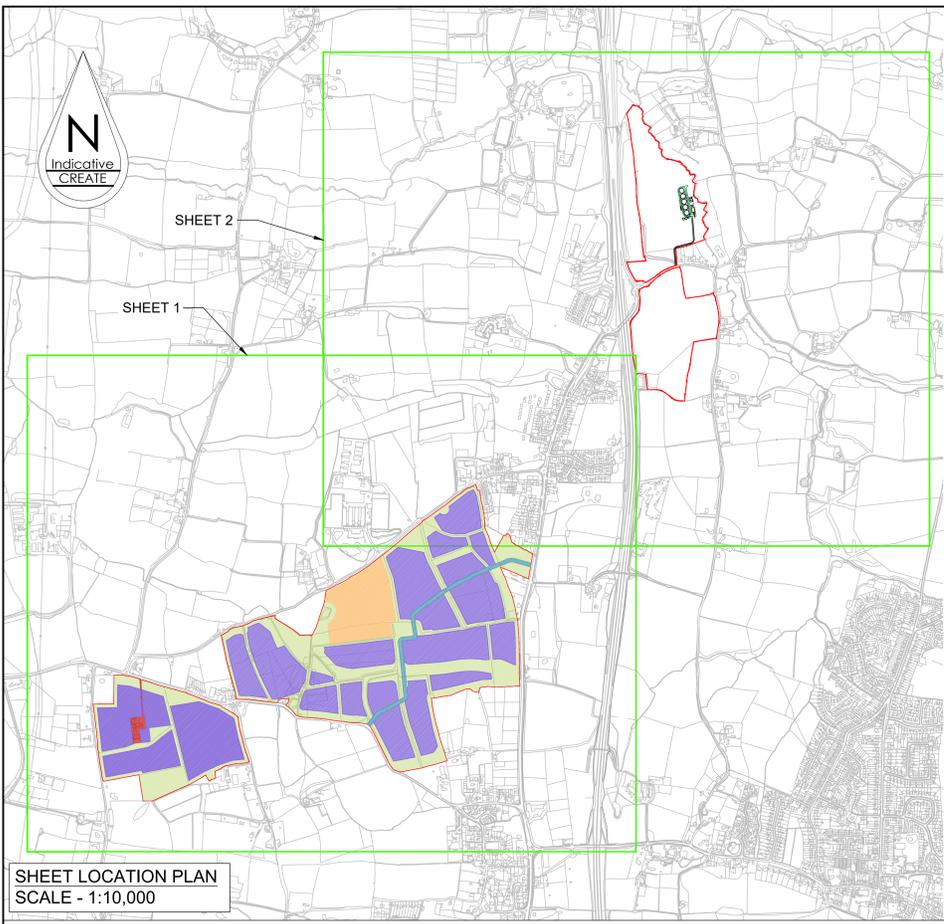
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REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE 26.09.23	DRAWING STATUS INFORMATION	
DRAWING TITLE PROPOSED FOUL WATER DRAINAGE STRATEGY SHEET 1 OF 2	SCALE(S) 1:2500	DESIGNED BWA	
CLIENT BERKELEY LATIMER	DRAWING No 2979	CHECKED JPC	APPROVED BWA
		REVISION 02/003	

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ORIGINAL SHEET SIZE - A0 Landscape
DO NOT SCALE



NOTES

1. ALL PONDS SIZED BASED UPON GREENFIELD RUNOFF RATES AND A 100 YEAR RETURN PERIOD WITH A 45% CLIMATE CHANGE ALLOWANCE

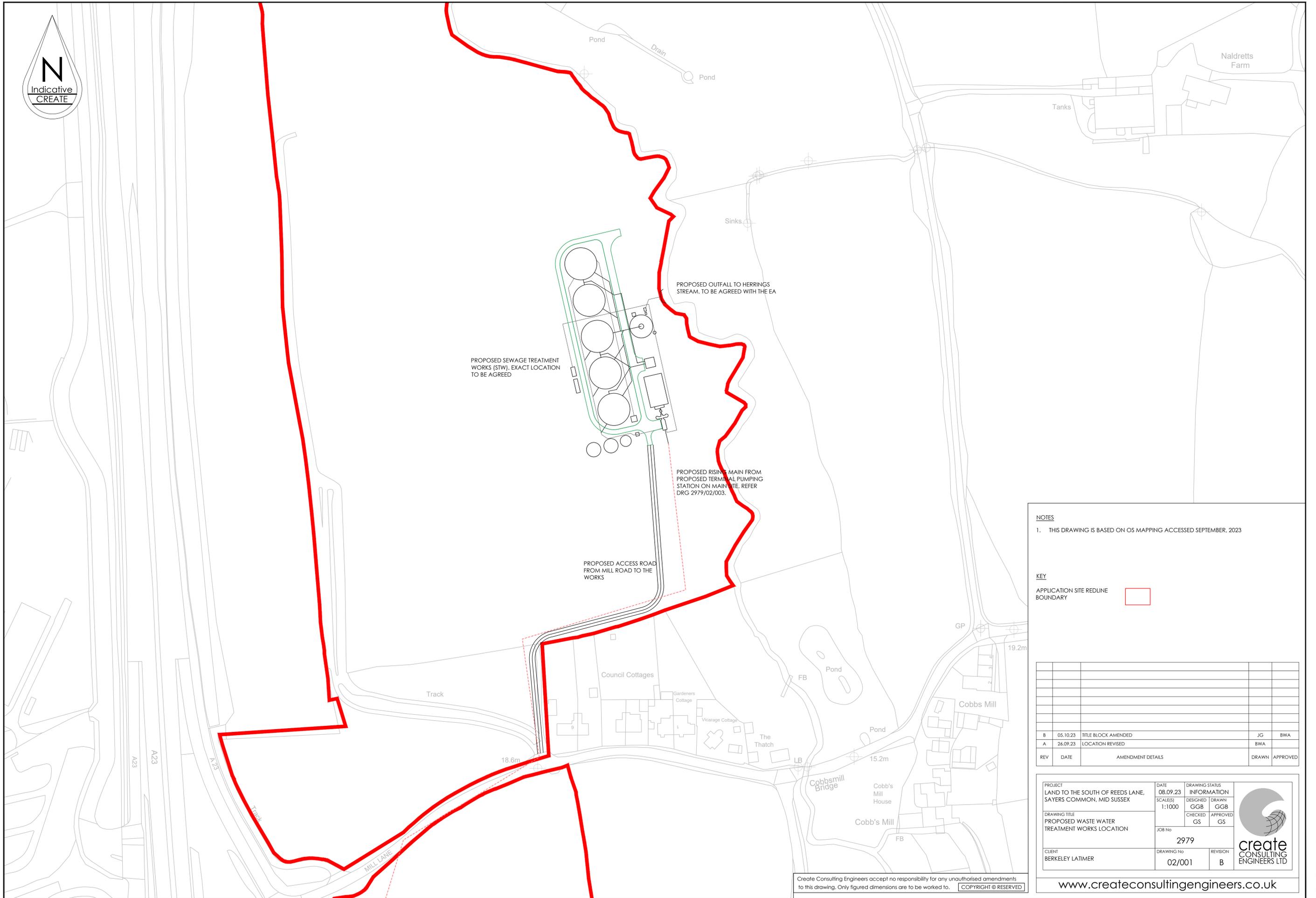
KEY

- PROPOSED PUMPING STATION SHOWING LOCATION WITH SIZE DENOTING REQUIRED EXTENT OF CLEARANCE ZONE
- PROPOSED RISING MAIN

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REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED
B	04.10.23	LAND PARCELS REVISED	BWA	JPC
A	05.10.23	TITLE BLOCK AMENDED	JG	BWA

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE 02.10.23	DRAWING STATUS INFORMATION	
DRAWING TITLE PROPOSED FOUL WATER DRAINAGE STRATEGY SHEET 2 OF 2	SCALE(S) 1:2500	DESIGNED BWA	
CLIENT BERKELEY LATIMER	DRAWING No. 2979	APPROVED BWA	
	REVISION 02/004	APPROVED JPC	
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NOTES

1. THIS DRAWING IS BASED ON OS MAPPING ACCESSED SEPTEMBER, 2023

KEY

APPLICATION SITE REDLINE
BOUNDARY



REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED
B	05.10.23	TITLE BLOCK AMENDED	JG	BWA
A	26.09.23	LOCATION REVISED	BWA	

PROJECT LAND TO THE SOUTH OF REEDS LANE, SAYERS COMMON, MID SUSSEX	DATE 08.09.23	DRAWING STATUS INFORMATION	
DRAWING TITLE PROPOSED WASTE WATER TREATMENT WORKS LOCATION	SCALE(S) 1:1000	DESIGNED DRAWN GGB GGB CHECKED APPROVED GS GS	
CLIENT BERKELEY LATIMER	JOB No 2979	DRAWING No 02/001	REVISION B

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