

Land at Hollingworth Road, Littleborough
Habitats Regulations Assessment
Countryside Partnerships

November 2023



envance
SUCCESS THROUGH SUSTAINABILITY



Envance

Report to: Countryside Partnerships
Report Title: Land at Hollingworth Road, Habitats Regulations Assessment

Revision: V8

Issue Date: 15/12/2022

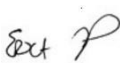
Document Ref: 0170HRA

Originated By:

Dermot McKee
Senior Ecologist

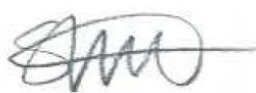
Date: 27/06/2022

Reviewed By:


Erica Kemp
Director

Date: 27/06/2022

Revised By:



Stuart Robinson
Associate Director

Date: 28/11/2023

Approved By:


Chris John
Director

Date: 05/12/2023

Prepared by:
Envance
Houldsworth Mill Business Centre
Houldsworth Street
Stockport, SK5 6DS
0161 327 1723

Work carried out by Envance on behalf of the client in accordance with the agreed terms of contract and/or written agreement form the agreed Services. The Services were performed by Envance with the skill and care ordinarily exercised by a reasonable Consultant at the time the Services were performed. Further, and in particular, the Services were performed by Envance taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between Envance and the client.

Other than that expressly contained in the paragraph above, Envance provides no other representation or warranty whether express or implied, in relation to the services.

This report is produced exclusively for the purposes of the client. Envance is not aware of any interest of or reliance by any party other than the client in or on the services. Unless expressly provided in writing, Envance does not authorise, consent or condone any party other than the client relying upon the services provided. Any reliance on the services or any part of the services by any party other than the client is made wholly at that party's own and sole risk and Envance disclaims any liability to such parties.

This report is based on site conditions, regulatory or other legal provisions, technology or economic conditions at the time of the Service provision. These conditions can change with time and reliance on the findings of the Services under changing conditions should be reviewed.

Envance accepts no responsibility for the accuracy of third party data used in this report.



Contents

1. Introduction	4
2. Ecological Context	7
3. Assessment Methodology	9
4. Possible Impacts of the Proposal on the Rochdale Canal SAC	10
5. Appropriate Assessment.....	13
6. Conclusion	16
Appendix I: Master Plan.....	18
Appendix II: Excerpts from CEMP.....	19
Appendix III: Drainage proposals	23
Appendix IV: Shade Models	24
Appendix V: Post-development Habitat Map.....	25



1. Introduction

- 1.1.1 Envance Ltd was commissioned by Vistry Partnership (now trading as Countryside Partnerships) to undertake a Habitats Regulations Assessment (HRA) for a proposed residential development at the former Akzo Noble Site, Hollingworth Road, Littleborough, Rochdale (central Ordnance Survey National Grid reference SD 9341 1575). The former Akzo Noble site lies to the south of Littleborough and is bounded to the north by the immediately adjacent Rochdale Canal Special Area of Conservation (SAC).
- 1.1.2 The purpose of this report is to provide Rochdale Metropolitan Borough Council's ecological planning advisors, the Greater Manchester Ecology Unit (GMEU), with sufficient information to undertake a Habitats Regulations Assessment for the proposed development.
- 1.1.3 The proposed development is for the construction of up to 127 2-5 bed residential dwellings including two vehicular accesses, landscaping and associated works (see **Appendix I** for Master Plan). The planning application will be submitted in full for all matters to be determined. Both Natural England and Greater Manchester Ecology Unit have been consulted in the preparation of this assessment.
- 1.1.4 A review of potential SuDS methods such as soakaways, basins and filter strips, together with swales, pervious pavements, detention basins, ponds and other wetland solutions were considered when developing a drainage strategy for the treatment of foul and surface water. Surface water from the site will be attenuated to 29.6 l/s as agreed by the LLFA. Attenuation for the site will be located within the central public open space. The required storage volume has been calculated as 1794m³ for the 1 in 100yr plus 30% climate change even.
- 1.1.5 Removal of suspended solids and sediment is achieved by the surface water flows from the whole development passing through a large attenuation tank with downstream flow control device. The flow control manhole has an inbuilt sump which provides an easy access point for inspection and removal of suspended solids. The upstream pipework, tank and flow control is to be offered for adoption to United Utilities or an alternative sewerage undertaker, who would provide regular maintenance and silt removal.
- 1.1.6 Immediately downstream of the flow control device for the development will be a full retention separator device (SPEL Puraceptor treatment device which will be sized to accommodate full restricted flows from the development to provide failsafe treatment to the site which can be easily accessed, maintained and monitored throughout the lifetime of the development.
- 1.1.7 This provides extremely high levels of treatment for TSS, Metals and Hydrocarbons should any of these reach this stage of the treatment train. It is proposed to introduce a section of reedbed swale immediately downstream of the Puraceptor which will provide a final 'polishing' treatment to the development surface water flows. This introduces a natural system prior to the canal outfall, which will have a flow control chamber allowing a maximum discharge of 29.6l/s for the whole development.
- 1.1.8 On site measures include below-surface attenuation, residential drives comprise permeable tarmac providing initial filtering along with 'aco' type drains at the bottom of the drives to channel the flow to the surface water attenuation system. In addition, there is a filter drain running along the back side of the foot and cycle path running along the canal embankment which will be a further mechanism capturing and filtering any other surface water run-off before it enters the reedbed.
- 1.1.9 Surface water from the site will be attenuated to the greenfield runoff rates using a flow control device with complex controls (or variable flow rates). For the 1 in 2 year (QBAR), 30



year, and 100 year rainfall events, discharge will be restricted to the equivalent greenfield rate.

- 1.1.10 Attenuation for the site will be located within the central public open space. The required storage volume has been calculated as 1794m³ for the 1 in 100yr plus 30% climate change event.
- 1.1.11 The site will be prepared for construction with installation of a Tensar reinforced soil embankment to raise the ground level along the northern site boundary (adjacent to the Rochdale Canal SAC) to 150.000 to 151.850 AOD.
- 1.1.12 The application includes a Construction Environmental Management Plan (CEMP) and longer-term Biodiversity Management Plan (BMP), along with a sympathetic landscaping scheme as standard.

1.2 Planning History

- 1.2.1 Outline planning permission for a mixed-use development comprising 164 development units, was approved in May 2008 (Ref. 07/D49551). The scheme included the provision of three new boat moorings, a new bridge across the canal and a new surface water outfall to the canal. An application to extend the time limit of the application (Ref 11/D54208) was approved on 12 May 2011. The buildings on the site have since been demolished and the site has been remediated in accordance with this consent.
- 1.2.2 A Habitats Regulation Assessment of the outline application was undertaken by GMEU in 2008 and concluded that the proposal would not have an adverse effect on the integrity of the Rochdale Canal SAC providing that appropriate mitigation was implemented in full.
- 1.2.3 A full planning application for development of 174 residential dwellings (11/D55085) was granted subject to conditions in March 2015. The revised scheme did not include the provision of boat moorings, a bridge or an outfall. GMEU undertook a Habitats Regulations screening assessment (re-issued in 2014) that concluded that the proposal would not have a significant effect on the SAC and that a full Appropriate Assessment was not necessary.
- 1.2.4 The current scheme has been developed following consultation with the LPA and includes 127 larger 2-5 bedroom properties and has been designed to meet the LPA requirements taking in to account environmental considerations.

1.3 Policy Context

- 1.3.1 The draft Habitats Regulations Assessment of the Greater Manchester Spatial Framework Consultation Report published in 2018 undertaken by GEMU identified a range of mechanisms by which the GMSF could potentially affect a number of European Sites and proposed existing policies and procedures that could be used to mitigated potential impacts.
- 1.3.2 Direct Water Pollution and Shading Impacts on the Rochdale Canal from residential development are specifically highlighted within the assessment. The assessment notes that in addition to aa range of policies and strategies it is recognised that significant development has taken place adjacent to and close to the Rochdale Canal SAC, including regeneration of the Canal itself, without causing harm to the integrity of the European site.
- 1.3.3 It goes on to note that additional safeguards for protecting the Canal include the application of Best Construction Practice to avoid water pollution from construction sites (e.g. CIRIA Best Practice Guidance Note C532) and that informed design of development proposals can avoid potential shading impacts on the Canal.
- 1.3.4 It concludes that no changes to existing Policies need to be made to provide special



protection for the Rochdale Canal and that it would be unreasonable to remove any sites and areas from consideration as allocations for development because of potential impacts on the Canal.

- 1.3.5 The draft HRA was superseded by the Habitats Regulations Assessment of the Places for Everyone Joint Development Plan (PFE HRA) (Feb 2022) notes that there is limited understanding of the effects of water pollution on *Luronium natans*, and that even less is known about the effects of air pollution; a precautionary approach has therefore been taken in relation to potential impacts on the Canal.
- 1.3.6 The PFE HRA identifies light spill and shading as a potential mechanism of impact that will only apply to the Rochdale Canal. It notes that whether this impact occurs, and if it does how it is mitigated, depends on the details of any particular development, and is best dealt with at project level rather than in the HRA of a high-level strategic plan.
- 1.3.7 In relation to air pollution impacts, the HRA notes that Natural England advised that measures to maintain the status of Rochdale Canal SAC are being carried out. Measures to achieve this include “ensure the supporting water bodies are sufficiently free of other competing vegetation to allow space for this early successional species to thrive.” In the absence of feasible avoidance and reduction measures in relation to air quality, suggested mitigation measures over and above those already being carried out included a strategic, long-term programme of invasive species control within the canal.
- 1.3.8 In relation to potential water quality impacts the PFE HRA notes that significant development has been permitted alongside the Canal in recent years and it has been conclusively demonstrated that water pollution prevention measures are readily available which effectively mitigate any risks of water pollution. Specific mitigation measures for particular developments need to be considered in detail at the planning application stage of the planning hierarchy but is concluded that this risk can be mitigated.
- 1.3.9 Since the submission of the planning applications refs. 23/00642/DOC and 23/00754/DOC additional information regarding an assessment of the installation and on-going management of the proposed Tensar retaining bank and potential local drainage pathways was requested by Natural England (Response 441857 dated 15 September 2023). The further information required is summarised below:
- Clarity on how the toe of the embankment will tie into the existing edge of the canal
 - How the integrity of the canal bank will be maintained
 - How the works will be performed
 - How erosion from the natural green face of the bank will be controlled and prevented from washing into the canal



2. Ecological Context

2.1 The Rochdale Canal SAC

- 2.1.1 The application site lies adjacent to the offside of the Rochdale Canal SAC. The SAC extends approximately 20 km along the canal from Littleborough at Ben Healey Bridge to Failsworth and is designated for a single qualifying feature: floating water-plantain *Luronium natans*. The canal also supports a diverse community of other aquatic plants.
- 2.1.2 The Rochdale Canal through this section is subject to annual monitoring surveys by the Canal & River Trust. Previous surveys have identified that the section of the canal from Ben Healey Bridge to the first footbridge downstream (c 735 m in length) do not host significant in-channel populations of floating water plantain. A custom-built geo-textile reserve, known to support a population of floating water plantain is located immediately downstream of Ben Healey Road bridge and terminates where the border with the application site starts.
- 2.1.3 The canal was previously bordered by former Akzo Nobel Chemical Factory prior to its decommissioning and demolition. The canal has since received unmanaged run off from the brown field site. Water quality was previously monitored by the Canal & River Trust, and it is understood that the primary influence on water quality within this section the quality of water from the supply reservoirs at Chelburn Reservoir and Hollingworth Lake. Water within the Rochdale Canal is typically slightly acidic, mesotrophic and displays a characteristic “tea stained” brown appearance due to location of its feeder reservoirs. According to Environment Agency (2002), the nutrient levels were indicative of mesotrophic still waters, specifically:
- *Total P criteria for mesotrophic waters 0.01-0.03 mg/1 - current mean orthophosphate levels are 0.025 at nearest SPT and 0.031 mg/1 “downstream”; and*
 - *Inorganic N criteria for mesotrophic 0.3-0.65 mg/1 - current mean nitrate levels are 0.43 at nearest SPT and 0.59 mg/1 “downstream.”*
- 2.1.4 Intensive aquatic plant surveys were undertaken in accordance with Natural England’s Guidance for Sampling Rare Aquatic Plants to inform this assessment. The survey identified two small, isolated, patches of floating water-plantain on the offside of the canal between the pipe bridge (NGR 393409,415830) and Heald Lane footbridge (393153,415690) with a handful scattered plants observed on the towpath side. The offside of the canal is heavily shaded by overhanging trees throughout its length and does not represent optimal conditions for floating water-plantain. No plants were observed within the potential footprint of the proposed surface water outfall into the canal, however, due to intrinsic limitations with grapnel survey methodology it is possible that small numbers of plants may have been undetected.

2.2 Conservation Objective for the Rochdale Canal SAC

- 2.2.1 The conservation objectives for the Rochdale Canal SAC have recently been updated. These are:

“Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;”.

- 2.2.2 Subject to natural change, to maintain or restore:

- The extent and distribution of the habitats of qualifying species
- The extent and distribution of the habitats of qualifying species



- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of the qualifying species, and,
- The distribution of the qualifying species within the site.

2.3 About Floating Water-Plantain

- 2.3.1 Floating water-plantain occurs in a range of freshwater situations, including nutrient-poor lakes in the uplands and slow-flowing lowland rivers, pools, ditches and canals that are moderately nutrient-rich. It grows in two distinct forms: in shallow water it has floating oval leaves, and in deep water it has submerged rosettes of narrow leaves.
- 2.3.2 The plant thrives best in open situations with a moderate degree of disturbance, where the growth of other emergent vegetation is held in check. Populations fluctuate greatly in size, often increasing when water levels drop to expose the bottom of the water body. Populations also fluctuate from year to year, and at many sites records of floating water plantain have been infrequent, suggesting that only small populations occur, in some cases possibly as transitory colonists of the habitat. Populations tend to be more stable at natural sites than artificial ones, but approximately half of recent (post-1980) records are from canals and similar artificial habitats. Its habitat in rivers has been greatly reduced by channel-straightening, dredging and pollution, especially in lowland situations ¹. Floating water plantain is thought to require high levels of light (Hill et al. 1999), and therefore may be adversely affected by leaf litter, algal growth, shade and turbidity.
- 2.3.3 The plant is widespread within the Rochdale Canal, both within the geo-textile reserves and main channel. There are significant canal populations located at Grimshaw Lane Bridge in Failsworth and adjacent to Oldham Broadway Business Park and outside of the SSSI/ SAC, upstream at Lock 46.

¹ <https://sac.jncc.gov.uk/species/S1831/>



3. Assessment Methodology

- 3.1.1 The qualifying feature for which the SAC was notified has been identified and an initial assessment of whether the proposal is likely to result in an increase in any pressure upon the feature has been made.
- 3.1.2 An initial assessment of Likely Significant Effects of the proposed development was undertaken using the approach adopted by GMEU in their assessment of earlier scheme. The potential mechanisms by which the proposed development could either directly or indirectly affect the qualifying feature was identified and an assessment of potential likely significant effects was made.
- 3.1.3 A 'significant' effect is not defined in law, however, it is taken to mean an effect upon the integrity of a site, or its ability to achieve or maintain favorable conservation status.
- 3.1.4 Similarly, likelihood is not defined; however, in line with the precautionary principle it is not necessary to determine that a significant effect is certain.
- 3.1.5 The 'precautionary principle' is applied when undertaking Habitat Regulations Assessments and consent cannot be given unless it is ascertained that there will be no adverse effect on the integrity of the site.
- 3.1.6 Government guidance notes that the scope and content of an appropriate assessment will depend on the nature, location, duration and scale of the proposed plan or project and the interest features of the relevant site. 'Appropriate' is not a technical term. It indicates that an assessment needs to be proportionate and sufficient to support the task of the competent authority in determining whether the plan or project will adversely affect the integrity of the site.



4. Possible Impacts of the Proposal on the Rochdale Canal SAC

- 4.1.1 In the Habitats Regulations assessment for the earlier consented application, GMEU identified the following operations that have the potential to damage the qualifying feature of the canal:
- Dredging of the canal
 - Draining of the canal
 - Pollution of the canal
 - Shading of the canal
 - Increased boat traffic using the canal, increasing both water turbidity and disturbance of substrates
 - Use of herbicides in or adjacent to the canal
 - Physical disturbance
- 4.1.2 The development has been redesigned since GMEU identified the above list and no longer incorporates additional moorings or any physical works to the canal structure. Furthermore, the developer implements responsible construction practices and will implement a Construction Environmental Management Plan as standard. The range of measures incorporated within the design and construction practices will ensure that there are no short- or long-term impacts. As the development proposals have been revised since GMEU identified the above list, the following mechanisms have been screened out of the current assessment:
- Dredging of the canal – no longer relevant due to removal of moorings
 - Draining of the canal – not required for construction purposes
 - Increased boat traffic - no longer relevant due to removal of moorings
 - Use of herbicides in or adjacent to the canal – no proposal in landscaping scheme
 - Physical disturbance – not required for construction purposes
- 4.1.3 The PFE HRA notes that potential impacts to the Rochdale Canal could occur from air pollution, recreational disturbance, light spill and shading, and water pollution. Strategic measures are suggested in relation to air quality impacts and recreational disturbance will not be affected through this development.
- 4.1.4 The development has the potential to result in changes in the level of shading and these mechanisms are considered further. The drainage strategy has been revised for consultation with Natural England to include surface water treatment before discharge into the canal. Any pollution risk during construction shall be avoided through adherence to working practise outlined in the CEMP (see extract at **Appendix II**). and through the drainage strategy (see **Appendix III**). In relation to shading, the embankment works will result in a reduction in shading from overhanging vegetation and there will be no increase in shading from buildings as the proposed layout has all dwellings at least 20 m from the canal edge (**Appendix I**). Modelling of shade caused by the buildings, indicates that shading to the water column will be minimal and unlikely to significantly affect any floating water-plantain potentially present during the growing season (June to August). Modelling indicates no shading during at all during the summer shading, with limited shading at 9am at both Spring and Autumn Equinoxes. Whilst the shade modelling was undertaken on a previous iteration of the site layout, the changes to the position of the dwellings do not result in any increased risk of overshadowing the canal (as shown in **Appendix IV**).
- 4.1.5 The landscaping plan includes the removal of existing tall scrub and trees on the canal embankment and replanting with areas of tussocky grassland and pockets of low level scrub, to prevent over shading of the canal habitat. This will result in a reduction in shading of the



canal and associated accumulation of leaf litter. Neutral grassland and low-growing native scrub will be planted along the border with the canal (see **Appendix V** which shows the post-development habitats expected from the landscaping plans).

4.1.6 The redesign of the development includes construction of a Tensar reinforced earth embankment, the toe of which at its closest point will be 5 metres from the existing edge of the canal. The construction of this bank has the potential to damage the qualifying feature of the canal through:

- Potential to damage the integrity of the canal bank during installation of the Tensar earth embankment, and
- Nutrient enrichment from the topsoil of the embankment slope during the construction and operational phases of the development.

Assessment of Significant Effects

Harmful operation	Potential cause	Proposed avoidance measures	Residual effect
Direct disturbance	Disturbance to localized floating water-plantain populations due to the siting of the surface water outlet.	Survey has indicated that the offside of the canal is largely devoid of aquatic vegetation. No plants were recorded within the location of the proposed outfall. Location of the outfall will be micro-sited if necessary subject to additional survey to ensure a buffer of at least 5 m from nearest localized floating water-plantain population.	None anticipated.
Draining of canal	The feeder channel for the Rochdale Canal from Hollingworth Lake runs in a culvert under the Akzo Noble site. Damage could be caused to this culvert during the construction phase or during operational phases of the development, resulting in a loss of water supply to the canal.	The line of the culvert will be retained beneath the route of the proposed highway. During construction the culvert will be protected using designated crossing points with the method of protection to be required by conditions.	None anticipated.
Pollution	Surface water run-off from the development could result in increased sedimentation and pollution of the canal.	Pollution prevention measures are outlined in a CEMP and will be strictly adhered to. Measures outlined within the Strategic HRA will apply. The drainage strategy has been designed so as not to increase levels of pollutants or sedimentation from discharge of surface water into the canal. However, as this mitigation cannot be considered as part of the HRA Screening process, there is potential for Likely Significant Effect as a result of the development.	Potential for Likely Significant Effect
Shading	Shading from houses immediately south of the Canal could result in conditions unsuitable for growth of floating water-plantain in the lower water column.	All buildings will be a minimum of 20 m distant from the canal and are unlikely to produce a significant shade to the water column. Shading assessment indicated no overshading during peak growing season and minimal shadows in early morning from Spring- Autumn Landscaping plans will result in a decrease in shading from canal side and overhanging vegetation.	Long term positive impact (moderate confidence)
Direct disturbance	Installation of the Tensar retaining bank could damage the integrity of the canal bank	A shallow trench will be dug along the toe of the embankment slope to tie the erosion control matting into place. The fill material will be imported Class 2C (in line with SHW 600 Series)	None anticipated.

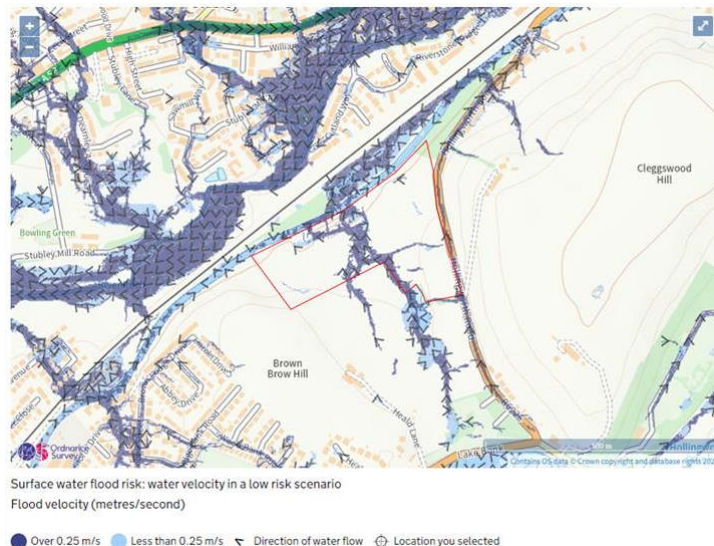


		All heavy plant will work from existing ground a minimum of 10 metres from the canal edge. A four ton double roller will be used no less than 5 m from the canal edge to compact the embankment layers	
Direct disturbance	Installation of the Tensar retaining bank from within the canal (on barges or pontoon) could damage the canal during the construction phase	The Tensar retaining bank will be constructed from dry land. There will be no requirement to work from any floating or temporary structure within the canal	None anticipated.
Nutrient enrichment	Surface water run-off from the Tensar retaining bank could result in increased nutrient enrichment of the canal during the construction and operational phases of the development	Pollution prevention measures are outlined in a CEMP and will be strictly adhered to. Measures outlined within the Strategic HRA will apply. The topsoil layer of the Tensar bank will be 100mm of topsoil, erosion control material will be installed as per manufacturers specifications. seeding with Emorsgate No 1 and low growing shrubs will fix the topsoil and prevent erosion washing into the canal. Surface water will be contained within the development. The Tensar embankment represents a 400m length of the canal bankside habitat, there is potential for nutrient enrichment to occur	None anticipated.
Shading	Shading from houses immediately south of the Canal could result in conditions unsuitable for growth of floating water-plantain in the lower water column.	All buildings will be a minimum of 20 m distant from the canal and are unlikely to produce a significant shade to the water column. Shading assessment indicated no overshading during peak growing season and minimal shadows in early morning from Spring- Autumn Landscaping plans will result in a decrease in shading from canal side and overhanging vegetation.	Long term positive impact (moderate confidence)



5. Appropriate Assessment

- 5.1.1 The screening assessment above concludes that the proposed development including integral design features in combination with standard construction methods could potentially result in Likely Significant Effect on the Rochdale Canal SAC without mitigation, as a result of pollution from surface water run-off.
- 5.1.2 The current site has been cleared and remediated, comprising crushed stone and hard standing that has been colonised by ephemeral vegetation. Existing overland flow patterns as shown in the figure 5.1. below:



- 5.1.3 Natural England's Supplementary advice on conserving and restoring site features (Natural England, 2019) defines a target for water quality and quantity to support the features of the SAC as '*Maintain water quality and quantity to a standard which provides the necessary conditions to support the feature*'.
- 5.1.4 Typical pollution hazard levels from a residential development are considered to be low (CIRIA C753, 2016). A fully adoptable drainage strategy has been designed for the site aiming to minimise the risk of pollutants entering the watercourse. The development will result in an increase in permeability through provision of permeable driveways, garden areas and landscaped areas.
- 5.1.5 Infiltration type SuDS such as soakaways are not feasible due to impermeable ground conditions. Type C permeable paving will be provided for 70% of driveways to allow infiltration into the underlying construction material. Trapped gullies will also be provided for silt removal. Permeable paving is shown to have a SuDS mitigation index greater than the pollution hazard of a car parking area (CIRIA C573, 2016) and removal of up to 80% of phosphates and nitrates. The proposed limestone granular surface and sub-base permeable paving therefore provides suitable filtration for removal of nutrients and treatment of any hydrocarbons, and/or possible washdown of the cars.
- 5.1.6 Surface water will discharge to a reedbed, which will convey flows via a proprietary treatment system to an attenuation tank in the central open space, before being discharged into the canal.
- 5.1.7 The scheme design includes a full retention oil/water separator (SPEL Puraceptor P030/1C/ESR or similar), which will receive treated water from a newly created reedbed/swale, from a before discharging into the canal. The full retention SPEL separator



is compliant to the European Standard BS EN 858-1:2002, the Environment Agency's Pollution Prevention Guidelines PPG3 and CIRIA SuDS Mitigation Index. The system has been tested by HR Wallingford, with results substantially within the maximum hydrocarbon concentration in the outlet of 5mg/l (European Standard BS EN 858-1), and an average result for all units tested being 1.22mg/l. Total suspended sediment is reduced by 80% and metals reduced by 60%. The system includes automatic closure devices once capacity of pollutants has been reached, preventing them passing through. They have a life expectancy of more than 50 years.² This type of system is usually used for treating surface water run-off from sites dealing with hazardous chemicals or from fuel stations.

- 5.1.8 Although the SuDS mitigation index is achieved using the proprietary treatment system and following a precautionary approach, the creation of a reedbed as part of the treatment process provides an additional layer of protection and removal of nutrients, before discharging into the canal.
- 5.1.9 Wetlands receiving nutrient-rich water can remove a proportion of this nutrient through processes of sedimentation, absorbing nutrients to the sediment and plant growth (Natural England, 2020). Land et al. (2016) suggests a median removal efficiency level of 37% depending on the size and quality of the wetland, and the nutrient levels within the water it receives. Other sources, such as Deletic and Fletcher (2006), suggest median pollutant mass removal rates of swales have been reported as 76% for total suspended solids, 55% for total phosphorus and 50% for total nitrogen.
- 5.1.10 The existing site is currently served by a series of land drains which appear to intercept an element of natural runoff from the adjacent elevated land and currently discharges to the existing culvert below the canal and onwards to the island site. It is proposed that these shall remain and be re-routed where necessary within the development to the same discharge point. This shall mitigate any change in potential increased nutrient or phosphate entering the canal.
- 5.1.11 The primary surface water network which shall drain the adoptable roads serving the residential development shall include trapped gullies spaced in accordance with Highway Authority requirements. These typically capture first flush runoff of silt and sediments. Cleaning out of highway gullies should be in accordance with national guidelines of a minimum of once every twelve months.
- 5.1.12 The scheme design includes a filter drain running along the back side of the foot and cycle path. The foot and cycle way is a non-vehicular route so the risks of pollutants are minimal, however, a filter drain has been provided to capture any run off from this surface running in to the canal. Rainfall landing to the north of this filter drain on the landscaping and planting will run down the embankment and into the canal as per the current position.
- 5.1.13 At least 70% of driveways will comprise permeable tarmac providing initial filtering along with 'aco' type drains at the bottom of the drive to channel the flow to the surface water attenuation system.

Tensar embankment construction

- 5.1.14 The proposed Tensar embankment wall will be constructed sequentially in zones (A – G), with the typical Tensar installation requirements and gradients for construction within each of these zones shown on the typical cross sections illustrated on 45466/015, 016, 017, and

² <https://www.spelproducts.co.uk/products/fuel-and-oil-separators/spel-puraceptor-class-1-full-retention-separators/>



018 (Please refer to the Construction and Environmental Habitat Plan (CEMP)). The toe of the embankment of these sections is located between 5 and 9 metres from the existing canal edge. No embankment section is located less than 5 m from the existing canal edge.

- 5.1.15 The Tensar embankment is proposed to be constructed from dry land, in line with Standards for Highway Works (SHW 600 Series) including an initial excavation into natural ground for the formation layer, then built up with 250mm reinforced fill layers using Class 2C materials to the desired height. A trench 450mm wide by 300 mm deep will be excavated at the toe of the embankment to tie in the erosion control material. This trench will be back filled with site won material once the erosion material has been fixed within. These excavations will not take place less than 5 metres from the existing canal edge, and no heavy plant will be used at less than 5 metres from the canal edge.
- 5.1.16 Heavy plant (excavators) will be always located on existing ground beyond 15m from the canal edge, fill material will be placed using excavator booms. Each 250mm fill layer will be compacted using a double drum roller with a four-tonne working limit. The proposed Tensar embankment will be capped with a 100 mm layer of topsoil sourced in line with BS3882-2015 for multi-purpose topsoil that will then be seeded with Emorsgate No. 1 before being capped by erosion control material.
- 5.1.17 A silt fence will be erected at the toe of the embankment to prevent any soils that may be washed out after the installation of erosion control matting and seeding has taken place.
- 5.1.18 The final landscaping of the embankment will take place at the end of the construction period and will include a hard surface footpath at the top of the embankment, a mixed native species hedge long the footpath northern boundary, a 150mm filter drain beyond the footpath with the face of the embankment planted with areas of low-growing native shrubs over the wildflower seeding. The landscaping and erosion control material installation will limit the potential for soil erosion and associated nutrient enrichment of the canal to occur.
- 5.1.19 Nutrient enrichment through the potential for the topsoil of the Tensar embankment to wash into the canal is assessed as a minimal risk. Surface water from within the development will be controlled and managed using the agreed SWD plan, the Tensar bank will represent a run-off area of approximately 2800 m², resulting in a 95.6% reduction on the potential run-off area of the site before development (approximately 80000 m²), resulting in a reduction for the potential for nutrients to be washed into the canal at this section.
- 5.1.20 According to Natural England's 2022 Advice on Nutrient Neutrality Generic Methodology (in relation to new development and assessing nutrient load from soils currently under greenfield or greenspace use), the average nutrient loss per hectare is 3.0 kg/ha/yr for nitrate-nitrogen, and 0.02 kg/ha/yr for phosphorus. The Tensar embankment is less than 0.3 ha indicating that the potential for nutrient loss from the topsoil will be (at maximum) 0.78, kg of nitrate/nitrogen and 0.006 kg of phosphorus in the first year after construction. This low level of nutrient discharge is not assessed to pose a significant adverse effect to the Rochdale Canal SAC Qualifying Features.
- 5.1.21 As there is no plan for fertilizing or otherwise enriching the topsoil of the Tensar embankment, the potential for nutrient enrichment will decrease over time, and it is expected the topsoil will develop into the similar acidic (low nutrient) profile of the surrounding area during the operational phase of the development.



6. Conclusion

- 6.1.1 The proposed development of up to 127 residential dwellings is not expected to result in any likely significant effects of floating water-plantain, the qualifying feature for which the Rochdale Canal SAC is designated. The proposed layout is set back from the canal and the implementation of responsible construction practices and standard CEMP will avoid any environmental effects. The proposed landscaping scheme along the embankment has the potential to result in a positive impact.
- 6.1.2 The construction of the proposed Tensar embankment will take place from existing ground, with heavy plant not being less than 10 metres from the canal edge at any time. A 4-tonne double roller will be used to compact the soil layers to create the embankment, however, the roller equipment will not be within less than 5 metres of the existing canal edge at any time. These construction methods are not considered to be at risk of damaging the existing canal edge.
- 6.1.3 The development does not include the provision of additional moorings and is not expected to result in any increased recreational pressures.
- 6.1.4 Taking a precautionary approach, with the potential for likely significant effects on the proposed development, the drainage strategy includes a proprietary treatment system for surface water, a newly created reedbed or swale, permeable driveways, landscaping and gardens along with land drains at the site boundary. Surface water will discharge to an attenuation tank within the central open space which will convey flows via a full retention oil/water separator with reedbed system downstream, before discharging into the canal. The typical pollution hazard levels resulting from residential development and the potential for nutrient enrichment from the Tensar green slope are low, and the proposed mitigation takes a precautionary approach to minimise the risk of increase in levels of sediments, nutrients, and pollutants entering the watercourse, enabling the target of maintaining water quality to support the qualifying feature to be met.
- 6.1.5 The construction and operation of the proposed development is not considered likely to result in any adverse effect upon the integrity of the Rochdale Canal SAC, alone or in combination with other plans or projects. The proposed development has the potential to result in a positive effect upon the canal through the reduction in shading and leaf litter input.



References

- CIRIA C573 (2016) The SuDS Manual Version 5; Published by CIRIA 2015; ISBN: 978-0-86017-760-9
- Deletic, A. and Fletcher, T (2006) Performance of grass filters used for stormwater treatment—a field and modelling study; Journal of Hydrology; Volume 317, Issues 3–4, 20 February 2006, Pages 261-275
- Environment Agency (2002) Habitats Directive Review of Consents Stage 1 and 2, Rochdale Canal SAC; Environment Agency; <http://hdl.handle.net/1834/27253>
- Land, M., Graneli, W., Grimvall, A., Hoffmann, C.C., Mitsch, W.J., Tonderski, K.S., Verhoeven, J.T.A. (2016) How effective are created or restored freshwater wetlands for nitrogen and phosphorus removal? A systematic review. Environmental Evidence 5:9
- Natural England (2019) European Site Conservation Objectives: Supplementary advice on conserving and restoring site features Rochdale Canal Special Area of Conservation (SAC), UK0030266
- Natural England (2020) Advice on Nutrient Neutrality for New Development in the Stour Catchment in Relation to Stodmarsh Designated Sites - For Local Planning Authorities, November 2020
- Natural England (2022) Natural England Commissioned Report NECR459. Nutrient Neutrality Generic Methodology



Appendix I: Master Plan

2B Butternut	2	754.98 ft²	70.13m²
2B Alder	2	776.89 ft²	72.18m²
3B Poplar	7	1276.54 ft²	118.59m²
3B Newell	5	1276.54 ft²	118.59m²
3B Spruce	16	1099.61 ft²	102.15m²
3B Jessop	7	1159.59 ft²	107.72m²
3B Hazel	9	931.82 ft²	86.56m²
3B Cypress	9	1107.08 ft²	102.85m²
3B Rowan	2	931.82 ft²	86.56m²

4B Macarthur	4	1066.33 ft²	99.06m²
4B Stansfield	12	1311.80 ft²	121.87m²
4B Willow	4	1474.89 ft²	137.02m²
4B Juniper	10	1217.51 ft²	113.11m²
4B Chestnut I	7	1368.09 ft²	127.09m²
4B Chestnut II	2	1396.93 ft²	129.78m²
4B Maple	8	1792.27 ft²	166.50m²
4B Aspen	10	1370.30 ft²	127.30m²

5B Birch	3	1805.64 ft²	167.74m²
5B Yew	5	1832.09 ft²	170.20m²
5B Lime	3	2063.05 ft²	191.66m²

Total 127 units

• 2-bed	2	2%
• 3-bed	57	45%
• 4-bed	57	45%
• 5-bed	11	8%

Total 127 (68 detached 54%)

REPRODUCTION

Revision: Date: Drawn: Checked:

PL

Planning

Hollingworth Road

Proposed Site Layout

Location:

Client:

Vistry Partnerships

HOLLIN WBA XX XX DR A PL_S01

PG

Date: 04.22

Drawn: 0209

Checked: 0209

Scale: 1:500

Sheet: 05 of 06

CAD REF:

NATSON BATTY

ARCHITECTS

Stiles House, Shires Road

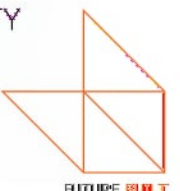
Colchester, Essex CO1 1SD

London | Longbridge

Tel: 01206 2916 605

E: enquiries@natsonbatty.co.uk

Web: www.natsonbatty.co.uk



WBA XX XX XX DR A PL_S01

PG

WBA XX XX XX DR A PL_S01

PG



Appendix II: Excerpts from CEMP

Pollution Prevention and Hazardous Material Storage

Chemicals and hazardous materials such as fuels and lubricants are to be stored on site during the construction phase of the project.

These include but are not limited to:

- Fuels
- Oils
- Lubricants
- Paint and Coating
- Adhesives and resins
- Solvents
- Compressed gases
- Cements and binders

Measures will be developed, implemented, maintained and monitored in order to comply with the Water Resources Act (1991) section 85 and associated regulations.

The site layout plan will identify the storage location of bunded fuel stores and the store for small volume packaged chemicals and materials.

Surface Water Management

The contractor will develop a Construction Surface Water Management Plan (CSWMP), the key objective of which will be to ensure that the construction works are undertaken in compliance with environmental legislation and that no contaminants are released from the site to any waters, sewerage network or the bed or banks of any watercourses, unless permitted and approved.

The CSWMP plans and drainage drawings should ensure any potential points of discharge are present and up to date for the stage of construction works and level of disturbance. It must be available for inspection by the administering authority on request.

Surface Water Management Plans should be updated as necessary so as to ensure that any changes to retention, management controls or discharge locations are included as necessary.

Relevant construction water discharge or abstraction permits are to be retained on site, so as to be available for inspection by the administering authority on request.

Potential measures include:

- There should be no unpermitted release of surface waters from site. All surface water releases or discharges are recommended to be tested and provide a field test permit for discharge, in accordance with this CSWMP and any specific conditions of EA permitting.
- Storm water runoff will be directed towards appropriate retention areas and controls so as to control the potential for uncontrolled emissions of water and associated contaminants (such as soil, hydrocarbons and other surfactant contaminants) from the site, wherever practicable.



- Access and egress points to or from the site will be designated access points. Where there is the potential for sediment is tracked onto external sealed roads, it must be removed promptly to reduce spreading and nuisance mud tracking.
- All surface waters should be discharged from site in accordance with any extenuating permit and as defined or conditioned by permitting agents. Any waters removed from the site must also then be removed in accordance with wastewater permitting requirements.
- Applicable surface water and flood risk management controls should be enacted and implemented as soon as possible to mitigate against potential uncontrolled emissions to receiving environment.
- Surface, foul or combined water quality emission should be monitored and recorded as required under any extant permitting requirements. Wheel wash facilities should be provided for vehicles moving to and from the Site at all entry and exit points. Silty water from wheel-wash facilities will require appropriate disposal to prevent unacceptable levels of suspended solids entering any nearby surface water bodies. Any disposal of surface water generated on site during construction to controlled waters will require consent from the EA. Wheel wash facilities should not be located too close to surface waters.
- If dewatering is required along any part of the construction site, pumped groundwater should be disposed of appropriately according to EA Pollution Prevention Guidelines.
- Early re-seeding of cleared land, where practicable, to minimise exposed land and the entrainment of sediment by overland flow; and this can be managed by ensuring construction plant/ materials are stored on hard-standing surfaces where possible.
- The surface water attenuation pond to be constructed first and used to attenuate and store run-off from the site during construction to prevent contamination of the surface and ground- waters.
- There is a potential that hazardous waste will be stored on the site and therefore it must be stored in accordance with the Environment Agency Pollution Prevention Guidance (PPG2) so as not to cause any further water/land contamination.

Pollution Prevention Guidelines (PPGs) are based on relevant legislation and reflect current good practice.

The project construction phase will adhere to the following Environment Agency Pollution Prevention guidance listed below. All contractors will be familiar with and apply the relevant best practice listed in the above guidance documents. It is recommended that copies are available in the site office.

Protected sites

The Rochdale Canal SSSI is located on the northern boundary of the site. The following measures will be implemented:

- Works to canal embankment should ensure no material enters the canal, prior to any construction of the Tensar retaining wall, installation of netting/screen at canal edge will be completed. No construction work shall commence until such time as this Silt barrier has been placed along the site boundary with the canal. This barrier should be constructed of Straw bales wrapped in Terram and placed end to end with no gaps, or a silt fence buried to a depth of 2" Is acceptable.



- Barrier should be checked on a regular basis (weekly in the site managers inspections) and damaged sections replaced immediately. In the event of significant rainfall, the barrier may require a slit trench be dug, filled with type 1 washed granite with a soakaway. This measure should only be installed when weather conditions are so poor there is risk of overloading of the existing defence.
- No fuel should be stored within 20m of the canal embankment top, and any refuelling carried out with jerry cans etc should be completed over a drip tray or plant nappy, and away from any drains. Any equipment that contains fuel should be stored in site storage when not in use, and for short term storage at the place of work should be stored on a drip tray or plant nappy.
- All site vehicles that work within 20m of the canal must have biodegradable hydraulic fluid. Spill kits must be present at a minimum of one kit every 100m of the canal bank, site operatives must be trained in containing any fuel or hydraulic fluid spills.
- Once per week the site manager or nominated representative shall walk the canal bank and ensure that there is no impact upon the watercourse and associated wildlife. In the event that any issue is identified, the site shall immediately notify the local SHE advisor, and group environment advisor. If the pollution is significant, please contact Adler and Allan for pollution control, and notify the Environment agency, and the Canal & River Trust
- At all times, consideration should be given to “The code of practice for works affecting the Canals & Rivers Trust”
- A suitably experienced ecologist competent to identify *Luronium natans* and familiar with working in a canal environment should be employed to supervise works within 5 m of the canal edge.
- Follow pollution prevention and incident response measures outlined below.

Tensar wall construction strategy

Working areas

The Tensar embankment will be constructed with heavy plant working from existing ground, working away from the canal edge as layers are formed. There is no requirement to work from within the canal at any time, nor for heavy plant (excavators, muck shifters, etc.) to be within less than 10m of the canal edge.

Excavation

Where required, the existing ground will be excavated to provide a base for the embankment earth slope formation layer. These excavations relate to Sections A, B, D, and G. These excavations are proposed to be undertaken using 360 excavators working from existing ground, pulling material away from the northern boundary (Rochdale Canal).

Formation layers

For sections A, B, D, and G, excavation will be undertaken to expose natural ground. These excavations will then be built back up to the Tensar slope formation level required with engineered fill of Class 2C engineered fill, compacted with a 4-ton double roller. Section C will be regraded and built-up using Class 2C engineered fill, but no Tensar layers are deemed necessary in this section.

Where no excavations are required in sections E, and F, the ground will be graded where required using a 360-excavator working from existing land and pulling material away from



the northern boundary of the site.

Layer methodology

Once the formation layers or grading have been completed, the Tensar primary geogrid will be laid on the surface and topped with Class 2C fill material placed using an excavator working from existing ground with a bottom opening bucket that allows the material to cascade on to the geogrid. The fill material will be compacted by a 4 ton roller to achieve a 250mm layer. At 250mm a Tensar secondary geogrid will be laid, the fill layer Class 2C material addition and compaction process repeated to achieve a 250mm layer, where the primary geogrid material will be laid again. This process will be repeated until the designed AOD height had been achieved.

Surface layer

Once the designed AOD and slope angle has been achieved for each embankment section, the face of the slope will be trimmed using an excavator working from the top of the slope and pulling material away from the northern boundary, the slope will then be topped with a 100mm layer of topsoil that shall be sourced in line with BS 3882:2015.

Erosion control

The topsoil layer will be seeded with Emorsgate No. 1. Wildflower mix (EM1) prior to installation of erosion control matting. The erosion control matting will be fixed at the top of the embankment within a 250mm deep by 450mm wide trench excavated no less than 300mm from the lip of the embankment, into which the matting will be laid held place by Class 2C fill material.

The erosion control material will be rolled down the slope and fixed at 1 m intervals to maintain contact with the topsoil layer. It shall then be fixed at the toe of the embankment through excavation of a 300mm deep by 450mm wide trench, into which the erosion control matting will be placed and held in situ by backfilling with site won material.

Silt control comprising hay bales, or a silt fence at minimum 50mm below ground shall be installed 300mm from the toe of the embankment to prevent any silts from washing into the canal prior to establishment of the wildflower seeding.

Planting plan

Precise planting along with management and maintenance should be referred to the maintenance responsibility plan. The planting mixes will be selected to include locally suitable plants which will complement the surrounding landscape.

Seepage

British Geological Survey mapping shows the underlying bedrock at the site is Mudstone, Siltstone, and Sandstone of the Pennine Lower Coal Measures Formation and Sandstone of the Milnrow Sandstone Formation. Superficial Devensian Till (Diamicton) deposits are shown to overly these.

The site was remediated following the demolition of the former Akzo Nobel chemical works and it is understood the ground underlying the remediated top layers consists of clay. As such, ground conditions are not suitable for sources of ground water to be present that could rise below the Tensar wall.

Surface water drainage plan was appraised and will be surface water will be managed according to the Surface Water Drainage plan and S104 Layout. Land drainage will be managed in accordance with the Land Drainage Layout.



Appendix III: Drainage Proposals

2B Buckthorn	2	754.98 ft²ea	1509.96 ft²	
3B-Turner.	2	872.32 ft²ea	1744.64 ft²	
3B Poplar	12	1276.54 ft²ea	15318.48 ft²	
3B Spruce	17	1099.61 ft²ea	18693.37 ft²	
3B-Split Level	7	1159.59 ft²ea	8117.13 ft²	
3B Hazel	9	931.82 ft²ea	8386.38 ft²	
3B Cypress	8	1107.08 ft²ea	8856.64 ft²	
3B Rowan	2	931.82 ft²ea	1863.64 ft²	
4B Macarthur	4	1066.33 ft²ea	4265.32 ft²	
4B Foulston	12	1311.80 ft²ea	15741.6 ft²	
4B Willow	4	1474.89 ft²ea	5899.56 ft²	
4B Juniper	10	1217.51 ft²ea	12175.1 ft²	
4B Chestnut	9	1368.09 ft²ea	12312.81 ft²	
4B Maple	7	1792.27 ft²ea	12545.89 ft²	
4B Alder	1	1504.71 ft²ea	1504.71 ft²	
4B Aspen	10	1370.30 ft²ea	13703.00 ft²	
5B Birch	3	1805.64 ft²ea	5416.92 ft²	
5B Yew	5	1832.09 ft²ea	9160.45 ft²	
5B Lime	3	2063.05 ft²ea	6189.15 ft²	

Total 127 units 163404.8 ft²

- 2-bed 2 2%
- 3-bed 57 45%
- 4-bed 57 45%
- 5-bed 11 8%

Total 127 (68 detached 54%)

000'00951P

000'00951P

000'00951P

415800

Revisions: Date: Drawn: Checked:

PL Planning

Hollingworth Road

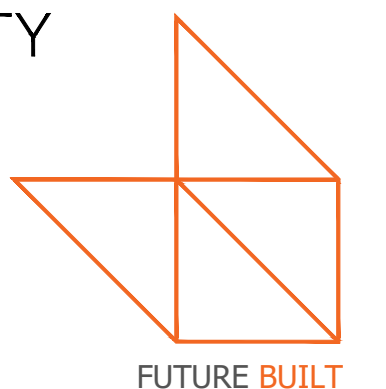
Proposed Site Layout

Location:

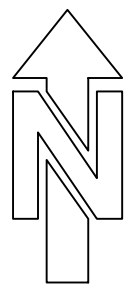
Client: Vistry Partnerships

HOLLIN WBA XX XX DR A PL_101 P7
Date: 17.03.22 Drawn: DW Checked: RM Scale: 1:500@A0 Int. Job No: 4046_001
CAD REF:

NATSON BATTY ARCHITECTS
Shires House, Shires Road
Gusaeley, Leeds LS20 8EU
Leeds | Loughborough
T: 01943 876 665
E: enquiries@natsonbatty.com
W: www.natsonbatty.com



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



INFORMATION WITHIN THIS DRAWING IS NOT NECESSARILY PRODUCED TO SCALE.
ALWAYS USE FIGURED DIMENSIONS AND CO-ORDINATES - IF IN DOUBT, ASK.

NOTES

- This drawing is to be read in conjunction with all relevant Eastwood & Partners drawings prefixed 45466 as well as all relevant Vistry Partnerships planning layouts and house type drawings.
- Levels in areas surrounding existing trees and on site boundaries are to be maintained as existing, unless noted otherwise.

KEY

- S8 Proposed adoptable surface water sewer
- F14 Proposed adoptable foul water sewer
- Easement
- Foul pumping main
- Proposed attenuation tank
- Filter drain to footway link
- Indicative areas of permeable driveways (70% to be provided)
- G Trapped gully for silt removal

X	Revised to suit latest site layout	RJ	CH	30.11.23
W	Revised to suit latest drainage design.	RJ	CH	16.11.23
V	Revised to suit latest site layout	JR	RJ	27.10.23
U	Updated to suit latest drainage layout and FFL's	CH	PR	01.08.23
T	Updated to suit latest drainage layout and FFL's	GH	CH	10.07.23
S	Updated to suit latest site layout and proposed drainage strategy. Section of gravity foul drainage added to the site frontage.	GH	CH	02.06.23
R	Drainage layout updated	CH	PR	21.04.23
Q	Manhole cover levels added	TW	GH	14.03.23
P	Interceptor location adjusted	CH	PR	06.03.23
N	Updated to show revised outfall to canal with reedbed option	GH	CH	27.01.23
M	Updated to show revised outfall to culvert below canal. discharge rate updated as agreed with LLFA. Latest planning layout shown	GH	CH	01.12.22
L	Updated to suit latest site layout. Pollution mitigation measures identified	CB	CH	26.08.22
K	Updated to suit latest site layout and clients comments	GH	CH	27.06.22
J	Updated to suit latest site layout	AS	GH	24.06.22
H	Updated to latest client comments.	CJH	GH	15.06.22
G	Updated to latest site layout. Drainage updated to suit.	CJH	GH	13.06.22
F	Updated to suit latest site layout. Swales introduced along western boundary. Storage tank included in central POS	GH	CH	03.05.22
E	Easement widths added to layout.	RB	CH	18.08.21
D	Updated to latest planning layout	CH	PR	28.07.21
C	Land drainage added to southern and western boundaries. Note on mine drainage expanded. Easement added to existing culvert.	RB	CH	01.07.21
B	Drainage updated to suit latest site layout. Attenuation basin and tank amended.	RB	CH	29.06.21
A	First Issue.			
REV	DESCRIPTION	SIG	CHK	DATE

VISTRY PARTNERSHIP YORKSHIRE

LITTLEBOROUGH

DRAINAGE APPRAISAL
SHEET 1

Eastwood & Partners
CONSULTING ENGINEERS
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330
mail@eastwoodandpartners.com
www.eastwoodandpartners.com



SCALE WHEN PLOTTED AT A1			DRAWING STATUS		
1:500			PRELIMINARY		
DRAWN	CHECKED	DATE	DRAWING NUMBER	REV	
RB	CH	26.11.20	45466/002	X	



INFORMATION WITHIN THIS DRAWING IS NOT NECESSARILY PRODUCED TO SCALE.
ALWAYS USE FIGURED DIMENSIONS AND CO-ORDINATES - IF IN DOUBT, ASK.

NOTES

- 1. This drawing is to be read in conjunction with all relevant Eastwood & Partners drawings prefixed 45466 as well as all relevant Vistry Partnerships planning layouts and house type drawings.
- 2. Levels in areas surrounding existing trees and on site boundaries are to be maintained as existing, unless noted otherwise.

KEY

- S8 Proposed adoptable surface water sewer
- F14 Proposed adoptable foul water sewer
- Easement
- Foul pumping main
- Proposed attenuation tank
- Filter drain to footway link
- Indicative areas of permeable driveways (70% to be provided)
- G Trapped gully for silt removal

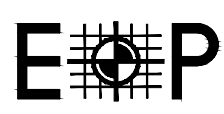
Y	Revised to suit latest site layout	RJ	CH	30.11.23
X	Revised to suit latest drainage design.	RJ	CH	16.11.23
W	Revised to suit latest site layout	JR	RJ	27.10.23
V	Updated to suit latest drainage layout and FFL's	CH	PR	01.08.23
U	Updated to suit latest drainage layout and FFL's	GH	CH	10.07.23
T	Updated to suit latest site layout and proposed drainage strategy. Section of gravity foul drainage added to the site frontage.	GH	CH	02.06.23
S	Drainage layout updated	CH	PR	21.04.23
R	Manhole cover levels added	TW	GH	14.03.23
Q	Interceptor location adjusted	CH	PR	06.03.23
P	Updated to show revised outfall to canal with reedbed option	GH	CH	27.01.23
N	Updated to show revised outfall to culvert below canal. discharge rate updated as agreed with LLFA. Latest planning layout shown	GH	CH	01.12.22
M	S104 Submission	CJH	GH	14.10.22
L	Updated to suit latest site layout. Pollution mitigation measures identified	CB	CH	26.08.22
K	Updated to suit latest site layout	GH	CH	27.06.22
J	Updated to suit latest site layout	AS	GH	24.06.22
H	Updated to latest clients comments.	CJH	GH	14.06.22
G	Updated to latest site layout. Drainage updated to suit.	CJH	GH	13.06.22
F	Updated to suit latest site layout. Swales introduced along western boundary. Storage tank included in central POS	GH	CH	03.05.22
E	Easement widths added to layout.	RB	CH	18.08.21
D	Updated to latest planning layout	CH	PR	28.07.21
C	Land drainage added to southern and western boundaries. Note on mine drainage expanded. Easement added to existing culvert.	RB	CH	01.07.21
B	Drainage updated to suit latest site layout. Attenuation basin and tank amended.	RB	CH	29.06.21
A	First Issue.			
REV	DESCRIPTION	SIG	CHK	DATE

VISTRY PARTNERSHIP YORKSHIRE

LITTLEBOROUGH

DRAINAGE APPRAISAL
SHEET 2

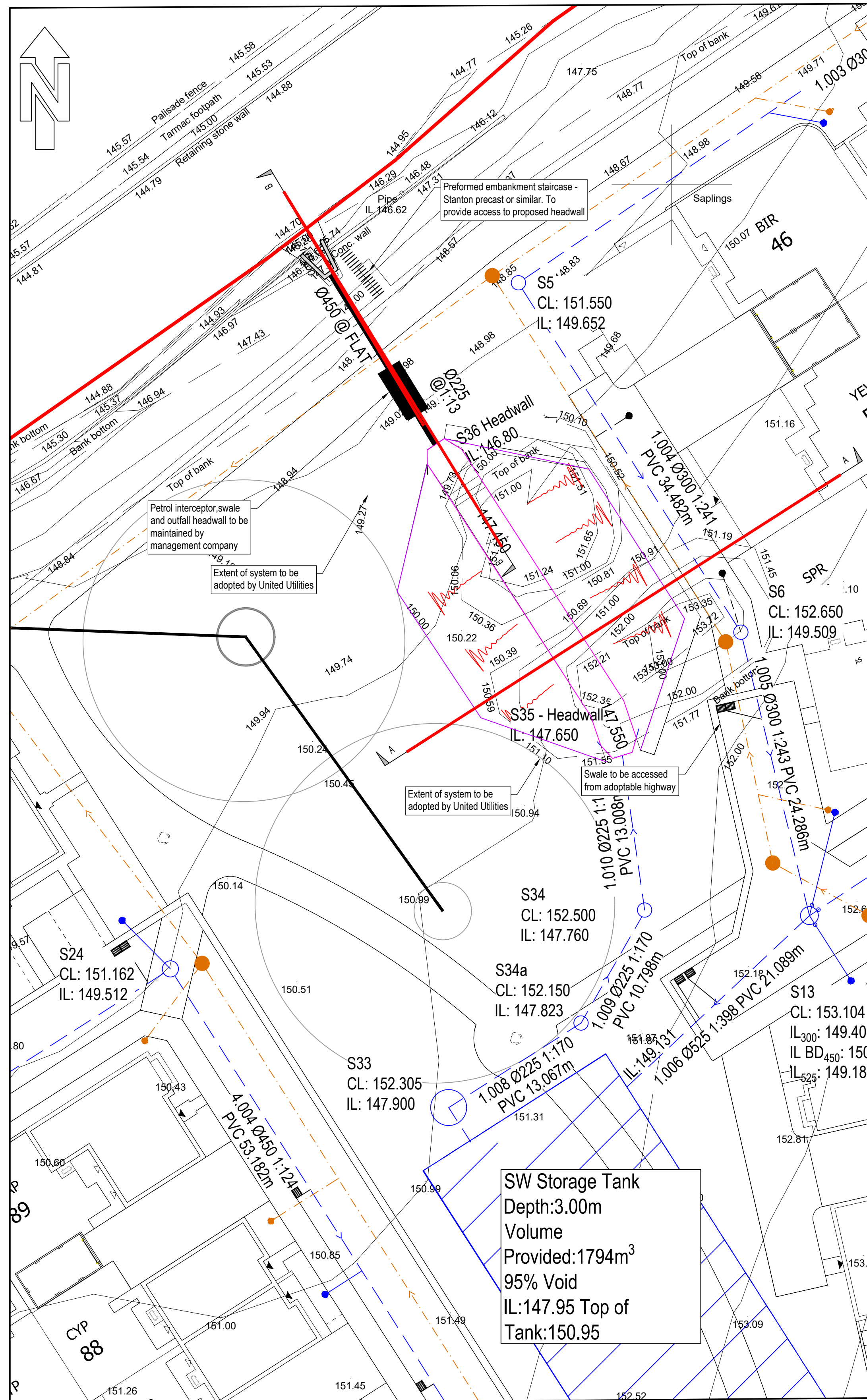
Eastwood & Partners
CONSULTING ENGINEERS



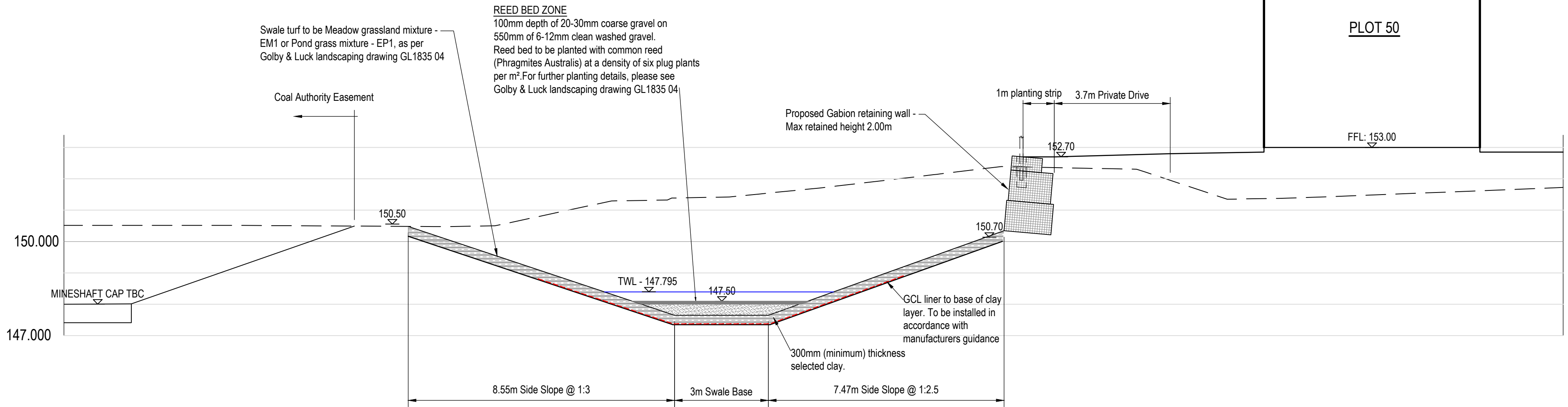
St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330

mail@eastwoodandpartners.com
www.eastwoodandpartners.com

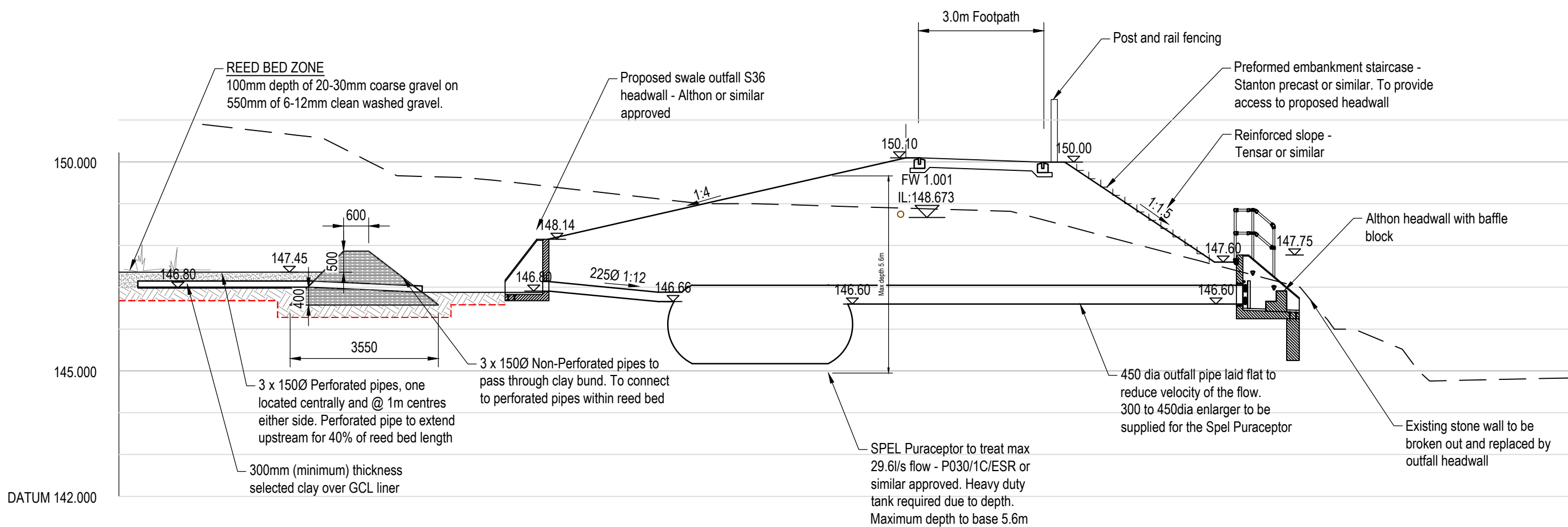
SCALE WHEN PLOTTED AT A1			DRAWING STATUS		
1:500			PRELIMINARY		
DRAWN	CHECKED	DATE	DRAWING NUMBER	REV	
RB	CH	26.11.20	45466/003	Y	



SWALE PLAN
SCALE 1:250



SECTION A-A
SCALE 1:100



SECTION B-B
SCALE 1:100

F	Top water level added. Limits of UU adoption moved.	AT	GH	10.11.23
E	Outfall arrangement amended to suit S104 resubmission	GH	CH	05.10.23
D	Updated to suit latest proposed levels. Petrol interceptor moved to after swale. Bund indicated for swale	GH	CH	02.06.23
C	Updated following meeting with client.	GH	CH	06.02.23
B	Section lines added	GH	CH	02.02.23
A	First Issue.			
REV	DESCRIPTION	SIG	CHK	DATE

VISTRY PARTNERSHIPS YORKSHIRE

LITTLEBOROUGH

INDICATIVE WETLANDS AND REED
BEDS SECTIONS AND DETAILS

Eastwood & Partners
CONSULTING ENGINEERS

St. Andrew's House
23 Kingfield Road
Sheffield
S11 9AS
Tel 0114 255 4554
Fax 0114 255 4330

mail@eastwoodandpartners.com
www.eastwoodandpartners.com



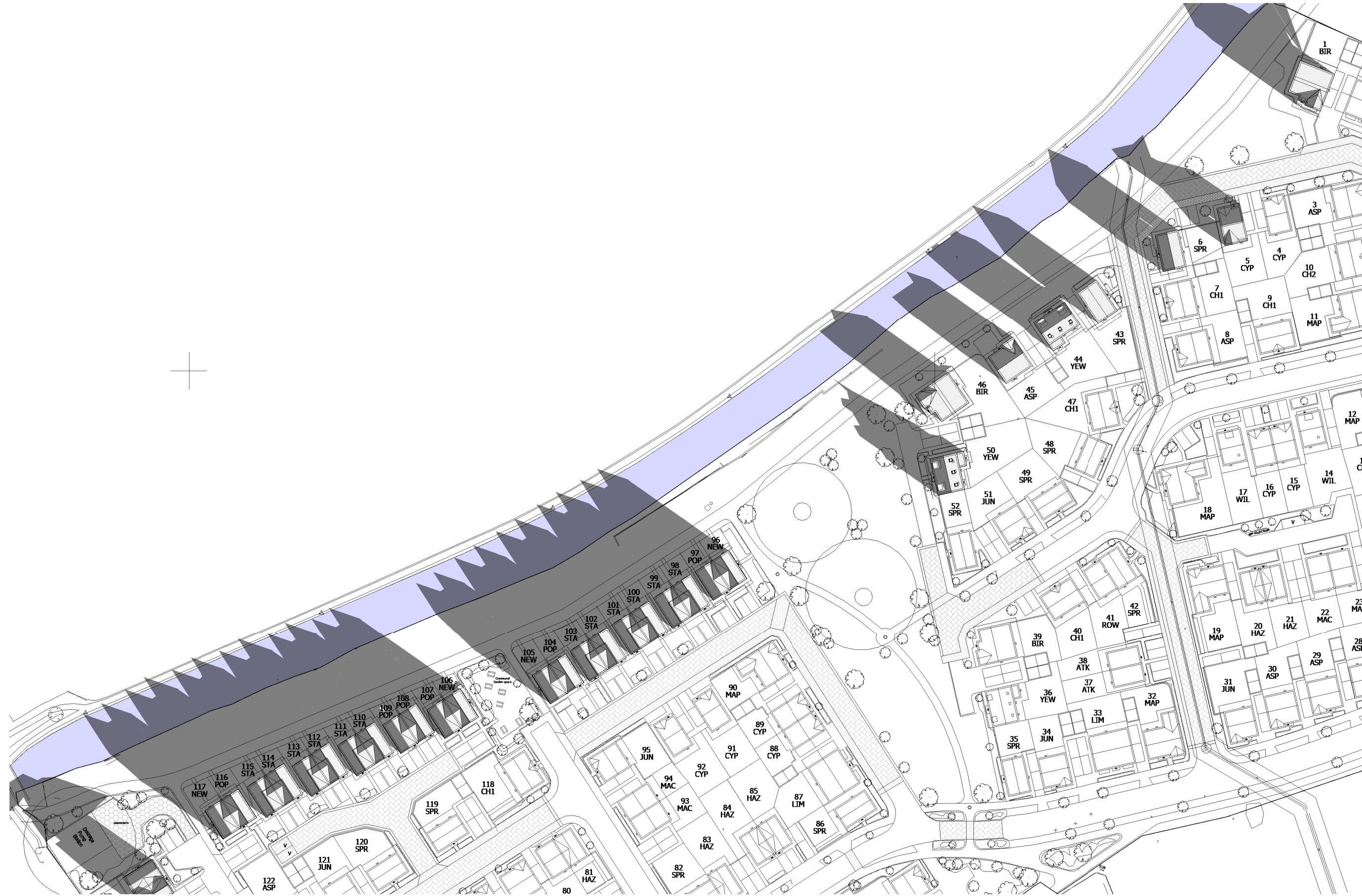
SCALE WHEN PLOTTED AT A1		DRAWING STATUS	
AS SPECIFIED		PRELIMINARY	
DRAWN	CHECKED	DATE	DRAWING NUMBER
GH	CH	31.01.23	45466/040
			REV
			F



Appendix IV: Shade Models



1 | 6.00 Spring Equinox
1 : 1000



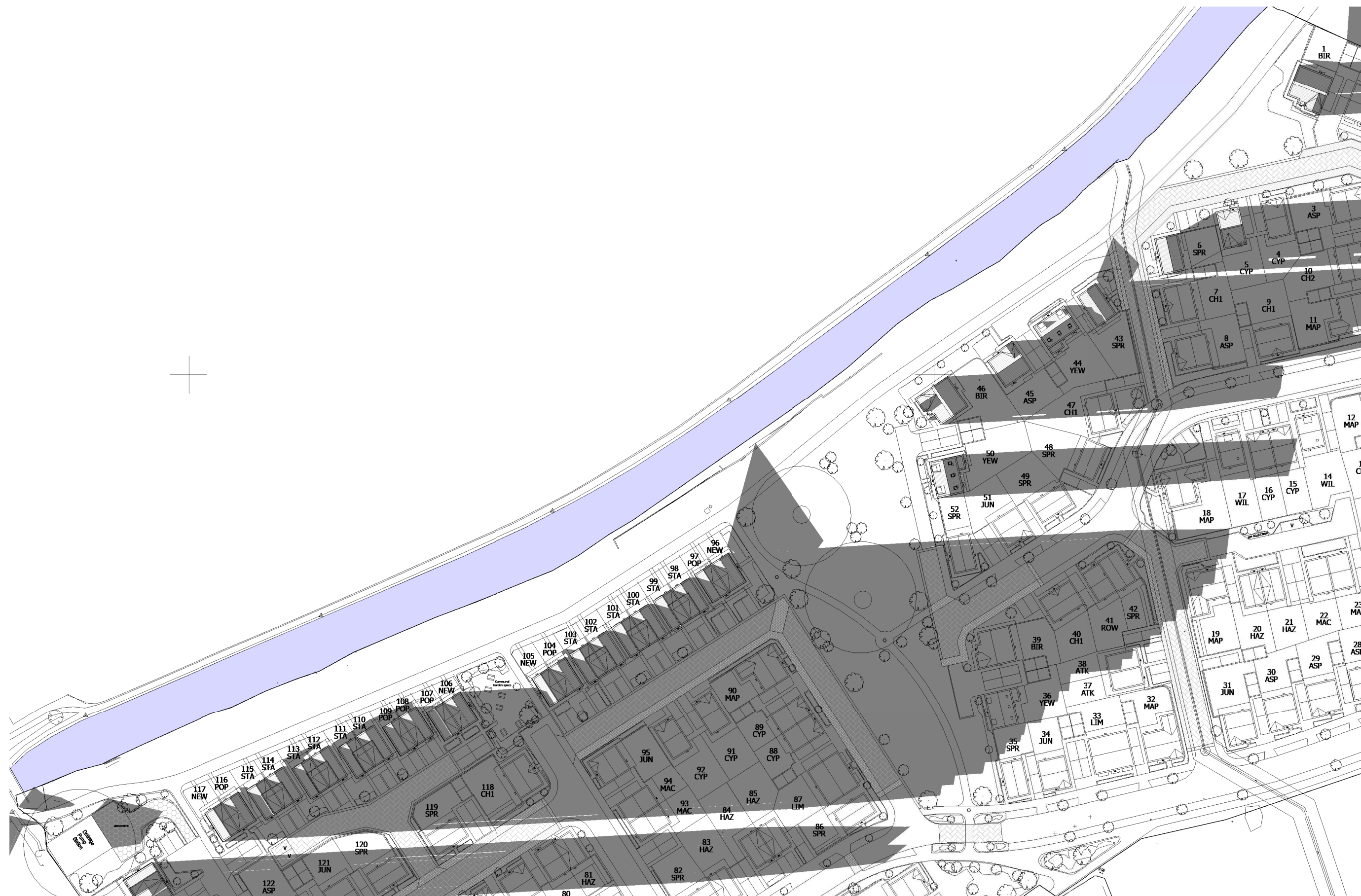
2 | 9.00 Spring Equinox
1 : 1000



3 | 12.00 Spring Equinox
1 : 1000



4 | 15.00 Spring Equinox
1 : 1000



5 | 18.00 Spring Equinox
1 : 1000



1 | 6.00 Summer Solstice
1 : 1000



2 | 9.00 Summer Solstice
1 : 1000



3 | 12.00 Summer Solstice
1 : 1000



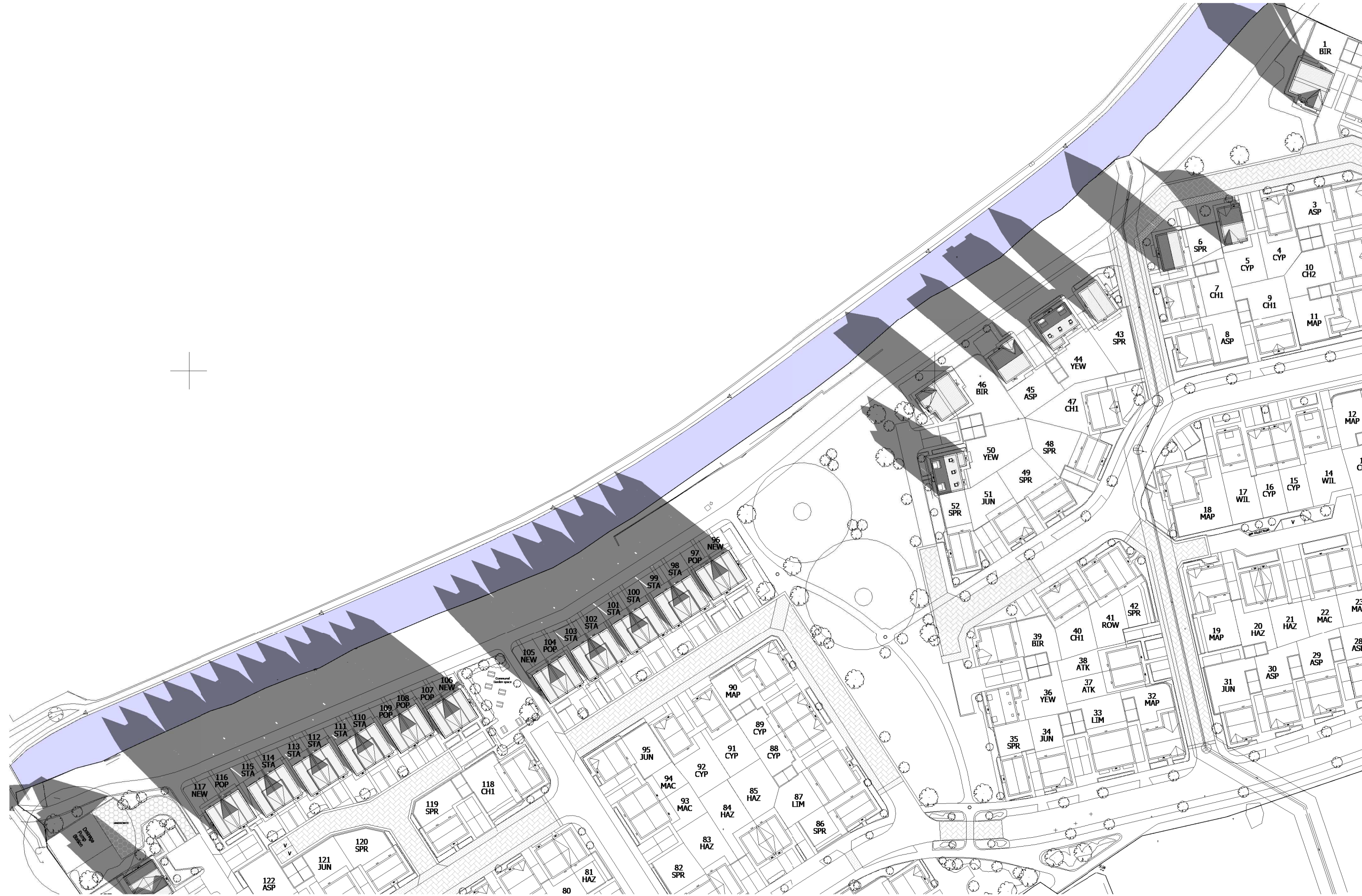
4 | 15.00 Summer Solstice
1 : 1000



5 | 18.00 Summer Solstice
1 : 1000



1 | 6.00 Autumn Equinox
1 : 1000



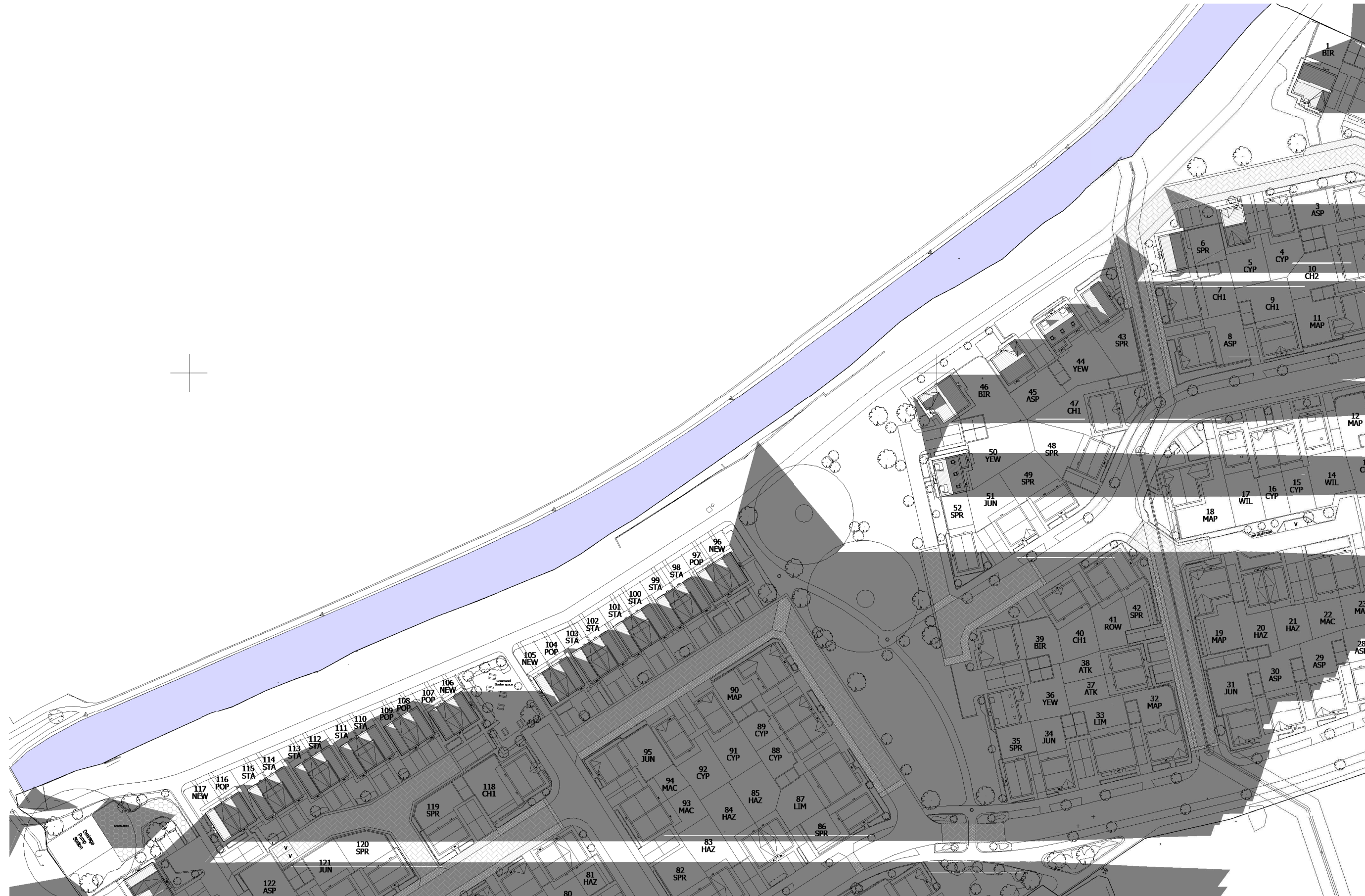
2 | 9.00 Autumn Equinox
1 : 1000



3 | 12.00 Autumn Equinox
1 : 1000



4 | 15.00 Autumn Equinox
1 : 1000



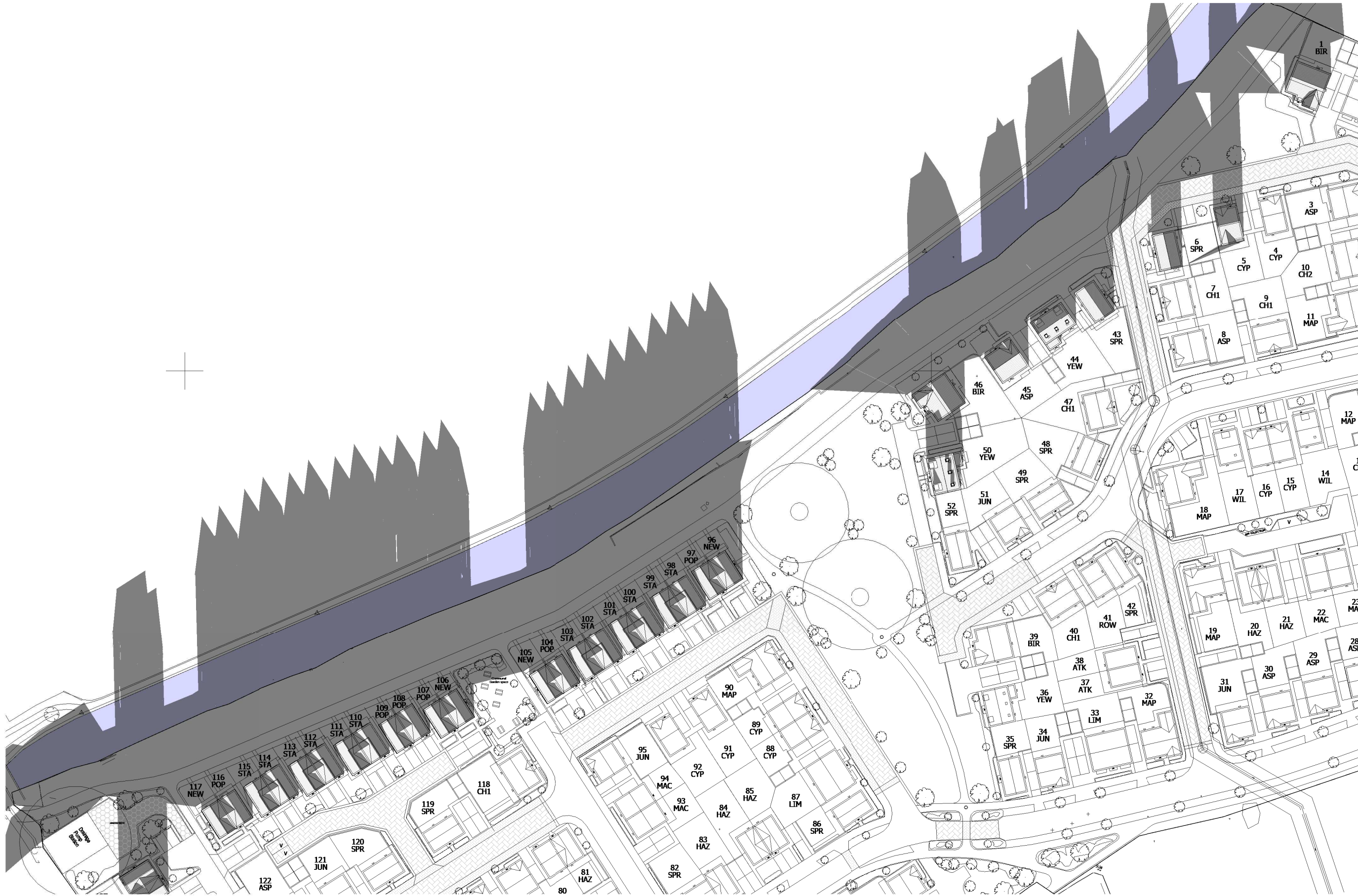
5 | 18.00 Autumn Equinox
1 : 1000



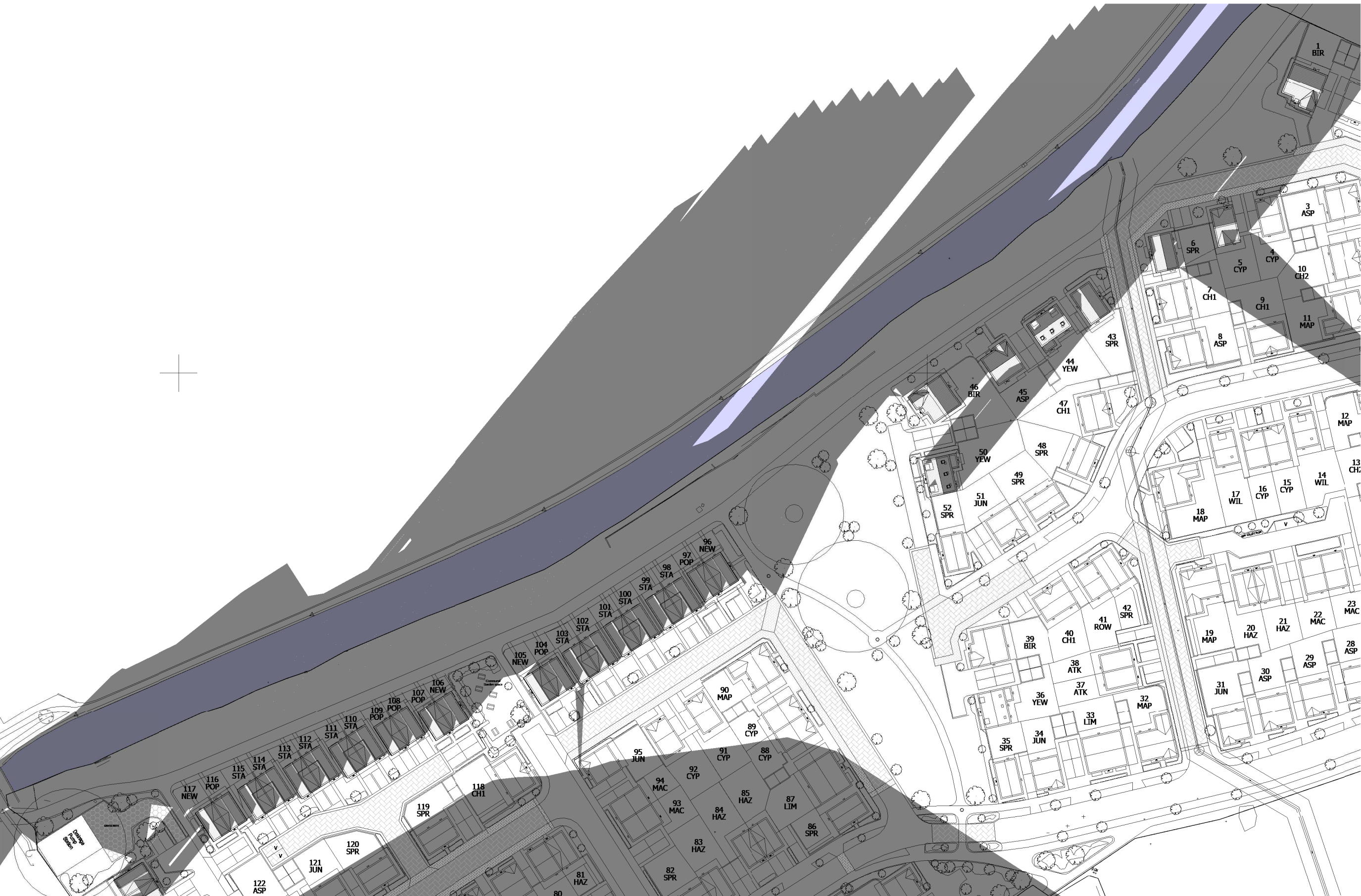
1 | 6.00 Winter Solstice
1 : 1000



2 | 9.00 Winter Solstice
1 : 1000



3 | 12.00 Winter Solstice
1 : 1000



4 | 15.00 Winter Solstice
1 : 1000



5 | 18.00 Winter Solstice
1 : 1000

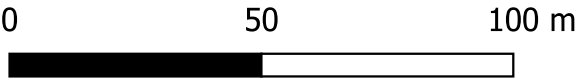


Appendix V: Post-development Habitat Map



Legend

- Site Boundary
- Native hedgerow
- Native species-rich hedgerow
- Tree Planting
- Developed land; sealed surface (residential development)
- Vegetated garden
- Grasscrete track
- Amenity grass (modified grassland)
- Introduced shrub
- Bioswale
- Other neutral grassland; meadow grassland mix
- Other neutral grassland; wetland mix
- Emergent wetland vegetation
- Mixed scrub
- Retained scrub (habitat enhancement)
- Retained habitat



Land at Hollingworth Road

Figure 2: Post-development Habitat Map

Date	February 2023
Scale	1:1500@A3
Drawing Ref:	0170/F2



Houldsworth Mill Business Centre
Houldsworth Street
Stockport
SK14 6DS

0161 327 1 723

enquiries@envanceuk.com

www.envanceuk.com