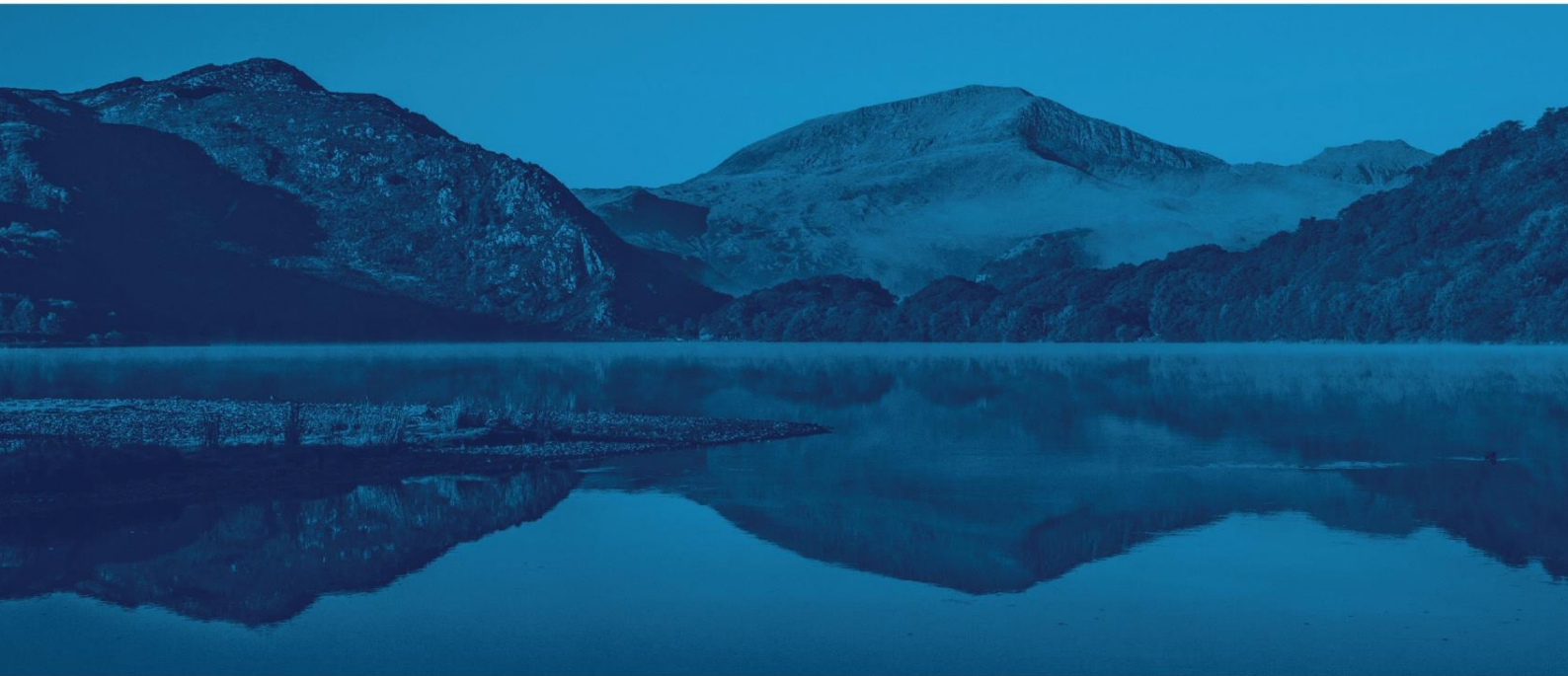




Henblas Street, Wrexham

Drainage Strategy

September 2018



Assessment / Modelling / Design

waterco.co.uk

DOCUMENT VERIFICATION RECORD

CLIENT:	Hindle Property Investments Ltd
SCHEME:	Proposed mixed use development at Henblas Street, Wrexham – Drainage Strategy
INSTRUCTION:	The instruction to carry out this Drainage Strategy was received from Craig Welsh of Studio KMA acting on behalf of the client

DOCUMENT REVIEW & APPROVAL

AUTHOR:	Sally Pettit
CHECKER:	Aled Williams BSc (Hons) MCIWEM
APPROVER:	Victoria Griffin BSc (Hons) MSc CEnv MIEEnvSc

ISSUE HISTORY

ISSUE DATE	COMMENTS
21/09/2018	First issue
27/09/2018	Second issue

Registered office: Waterco Ltd, Eden Court, Lon Parcwr Business Park, Ruthin, Denbighshire LL15 1NJ
01824 702220

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Introduction

Waterco Consultants have been commissioned to undertake a Drainage Strategy in relation to a mixed-use development at Henblas Street, Wrexham, LL13 8AD.

From April 2015, Wrexham County Borough Council as a Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Sustainable Drainage Strategy. The aim of the Sustainable Drainage Strategy is to identify water management measures, including Sustainable Drainage Systems (SuDS), to provide surface water runoff reduction and treatment.

Existing Conditions

The 725m² development site is located at National Grid Reference: 333543, 350316. A location plan and an aerial image are included in Appendix A.

Online mapping [accessed September 2018] records the site as comprising an area of disused hardstanding within the town centre. The site is bordered by commercial land uses on all sides with Henblas Street to the north. Access to the site is provided from Henblas Street.

Local Topography

A topographical survey has been undertaken by RJP Surveying Consultants Ltd in April 2018 and is included in Appendix B. No topographical levels are recorded within the site due to access issues. Levels surrounding the site vary from 82.41 metres Above Ordnance Datum (m AOD) in the south-west to 81.02m AOD in the north-east.

Topographic levels to m AOD have also been derived from a 1m resolution Natural Resources Wales (NRW) composite 'Light Detecting and Ranging' (LiDAR) Digital Terrain Model (DTM). The LiDAR levels show that the site is generally flat. The topography of the wider area generally slopes from west to east. A LiDAR extract is also included in Appendix B.

Ground Conditions

Reference to the British Geological Survey online mapping (1:50,000 scale) indicates that the site is underlain by superficial Devensian Glaciofluvial Sheet deposits generally comprising sand and gravel.

The superficial deposits are identified as being underlain by the Salop Formation consisting of mudstone, sandstone and conglomerate.

According to the Environment Agency's (EA) online Groundwater Vulnerability Mapping, accessed via MAGIC's online map, both the superficial deposits and the underlying bedrock are classified as Secondary A Aquifers. These are permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases form an important source of base flow to rivers.

The Cranfield University 'Soilscapes' map indicates that the site is underlain by 'freely draining' loamy soils.

Local Drainage

Public sewer records have been obtained from Dwr Cymru Welsh Water (DCWW) and are included in Appendix C. The DCWW sewer records identify a 300mm public combined sewer located immediately north of the site in Henblas Street flowing south-east. No cover or invert levels are given for any manholes on the 300mm public combined sewer in the vicinity of the site.

The nearest surface water sewer is located approximately 60m east of the site in Chester Street. The 300mm / 375mm public surface water sewer in Chester Street flows south. There is a public surface water manhole located in Chester Street, approximately 70m south-east of the site (at the junction of Henblas Street and Chester Street). No cover or invert levels are given for any manholes on the 300mm / 375mm public surface water sewer in Chester Street.

The topographical survey (Appendix B) identifies a manhole which corresponds to the location of manhole SJ33505301 on the 300mm public combined sewer located in Henblas Street. The manhole is shown to have a cover level of 81.18m AOD.

Development Proposals

The proposed development is for the erection of a mixed-use building to comprise 2No. retail units at ground floor level and 15No. one-bed apartments over the first and second floor levels. The ground floor will incorporate secure refuse and recycling areas for the retail and residential units and a bicycle store and entrance lobby for the residential units. Development plans are included in Appendix D.

The proposed building will occupy the entire site area (725m²).

Planning Policy

The Wrexham County Borough Council Unitary Development Plan 1996-2011 (February 2005) contains the following policy relating to drainage;

Policy EC13 *Development which would result in an unacceptable adverse impact on the water environment due to additional surface water run-off will not be permitted.*

The Wrexham County Borough Council 'Management of Surface Water Generated from New Development' (adopted September 2015) contains the following guidance for surface water drainage and the use of Sustainable Drainage Systems;

- *Wrexham County Borough Council advocates that surface water run-off should be controlled as near to its source as possible. Preferably sustainable drainage systems (SuDS) should be utilised. The variety of SuDS techniques available means that virtually any development should be able to include a scheme based around these principles. Surface water should be disposed of to the receptors listed in order of priority below:*
 - a) *Infiltrated to ground;*
 - b) *To a watercourse*
 - c) *To a surface water sewer*
 - d) *Other*
- *The developer is asked to calculate the existing brownfield runoff rates and to improve the existing situation. This should aim to be as close as reasonably practicable to the greenfield runoff rates. If it cannot be demonstrated that previously developed land has functioning positive drainage or the details of components cannot be ascertained (even if there are known outfalls), an assumption should be made that the system is no longer operational and the site should be treated as an "undeveloped site".*
- *The drainage system should be designed so that flooding does not occur on any part of the development for the 1 in 30 year rainfall event other than in those areas/systems designated to store or convey water. It may be acceptable to allow some on-site flooding of roads etc. for rainfall events beyond this. However, flooding within the development site should not occur in any part of a building or utility plant susceptible to water during a 1% (1 in 100 year) + climate change rainfall event.*
- *A practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactorily low flow rate while keeping the risk of*

blockage to an acceptable level. It is suggested that this is 5 litres per second, using an appropriate vortex flow control device or other technically acceptable flow control device

Correspondence

A pre-planning opinion request was submitted to the LLFA in August 2018. A response is included in Appendix E. The LLFA have stated:

‘With regards to attenuation allowances to accommodate climate change, we would normally accept a maximum 30% increase, unless a more appropriate allowance can be justified.’

A developer enquiry was submitted to DCWW in August 2018, in their response (Appendix C) DCWW have stated:

‘Sewerage

Only foul flows from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be taken to the foul sewer at manhole reference SJ33505301 which is located in Henblas Street.

Surface Water

Due to capacity constraints with the combined public sewerage system, we would not allow surface water run-off from the proposed development to be discharged into the combined sewerage system.

Therefore, consideration should be given to the incorporation of sustainable methods of drainage into the scheme in line with priority levels 1-4 of Standards S1 – Surface water runoff destination within Welsh Government’s ‘Recommended non-statutory standards for sustainable drainage (SuDS) in Wales – designing, constructing, operating and maintaining surface water drainage systems’ (2017).

In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

Sewage Treatment

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.’

A further enquiry was submitted to DCWW in September 2018 regarding the disposal of surface water from the site. In response (Appendix C) DCWW have stated:

'We have recorded flooding instances on the combined sewerage network downstream of the site and therefore introducing surface water runoff from the proposed development would overload the combined public sewerage system and increase the risk of flooding.'

In light of the above, we would not allow surface water run-off from the proposed development to be discharged into the combined sewerage system.

We may be able to consider a connection to the surface water sewer in Chester Road at an attenuated rate not exceeding 5l/s provided it can be demonstrated that there is no space to accommodate soakaways on the site.'

Surface Water Management

The surface water drainage arrangement for the site is currently unknown.

The proposed development will introduce 725m² of hardstanding in the form of the building which will occupy the entire site.

In order to ensure the proposed development will not increase flood risk elsewhere, surface water discharge from the site will be controlled.

The Wrexham County Borough Council 'Management of Surface Water Generated from New Development' guidance states,

'The developer is asked to calculate the existing brownfield runoff rates and to improve the existing situation. This should aim to be as close as reasonably practicable to the greenfield runoff rates....'

Existing brownfield and greenfield runoff rates have been estimated using the Revitalised Flood Hydrograph Model (ReFH2) method. A summary of the runoff rates is provided as Appendix F. The existing 1 in 1 year greenfield runoff rate for the 725m² site is 0.054 l/s. The existing 1 in 1 year brownfield runoff rate for the 725m² site is 1.27 l/s.

In accordance with the Wrexham County Borough Council 'Management of Surface Water Generated from New Development', a minimum flow rate of 5 l/s is permitted. DCWW have also confirmed that a rate of 5 l/s could be applied.

Attenuation Storage

In order to achieve a discharge rate of 5 l/s, attenuation storage will be required. A storage estimate is included in Appendix G. The LLFA state, *'With regards to attenuation allowances to accommodate climate change, we would normally accept a maximum 30% increase, unless a more appropriate allowance can be justified.'*

An estimated storage volume of 26m³ will be required to accommodate the 1 in 100 year plus 30% Climate Change (CC) event. The storage estimate is based on storage within a tank or pond structure, an impermeable drainage area of 725m², a design head of 1m and hydro-brake flow control.

Discharge Method

The Welsh Government: 'Recommended non-statutory standards for sustainable drainage (SuDS) in Wales' (2017) contains the following standards for surface water runoff destination:

S1 - Surface water runoff destination

Priority Level 1: Surface water runoff is collected for use;

Priority Level 2: Surface water runoff is infiltrated to ground;

Priority Level 3: Surface water runoff is discharged to a surface water body;

Priority Level 4: Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system;

Priority levels 5: Surface water runoff is discharged to a combined sewer.

Priority Level 1: Surface water runoff collected for use

Surface water re-use is applicable for residential properties. Rainwater harvesting systems are not proposed. In line with section G1.4 of the 'Recommended non-statutory standards for sustainable drainage (SuDS) in Wales', rainwater harvesting is not proposed for this site as:

- 1) There is no foreseeable need to harvest water at the site and Welsh Water have not identified potential stresses on mains water supplies in this area;

- 2) The use of rainwater harvesting is not a cost-effective part of the solution for managing surface water runoff on the site, taking account of the potential water supply benefits of such a system.

The potable water cost saving of the rainwater harvesting system is only marginally greater than the cost of the electrical usage of the system. When the capital and maintenance costs of the rainwater harvesting system are also considered it is not considered that rainwater harvesting offers a financial benefit.

Priority Level 2: Surface water runoff is infiltrated to ground

In accordance with Building Regulations, soakaways should be located a minimum of 5m from habitable dwellings and adopted roads. The building will occupy the entire site and there is no open space to accommodate soakaways. It can be concluded that soakaways are not a feasible option for the site.

Priority Level 3: Surface water runoff is discharged to a surface water body

The site is located in an urban setting and there are no watercourses within close vicinity of the site. Discharge of surface water to a watercourse is not considered a feasible option for the site.

Priority Level 4: Discharge to a surface water sewer or highway drain

There is a 300mm / 375mm public surface water sewer located in Chester Street approximately 60m east of the site. DCWW have confirmed that: *We may be able to consider a connection to the surface water sewer in Chester Road at an attenuated rate not exceeding 5l/s provided it can be demonstrated that there is no space to accommodate soakaways on the site.*

A new connection to the public surface water sewer in Chester Street would require laying approximately 90m of new surface water sewer within Henblas Street. A review of LiDAR (Appendix B) identifies levels in Chester Street (at the junction between Henblas Street and Chester Street) to be below the 80m AOD contour. The site is situated at a minimum of approximately 81.2m AOD. Assuming that the sewer has a minimum 1m cover i.e. an invert level below 79m AOD, a gravity connection can likely be achieved. The invert levels should be verified through survey.

DCWW have confirmed that they would not permit a surface water connection to the public combined sewer in Henblas Street.

Sustainable Drainage Systems

Attenuation storage should be provided in the form of Sustainable Drainage Systems (SuDS) where practical. As the site will be wholly occupied by the proposed building, there is limited potential to incorporate SuDS. In order to incorporate the 26m³ of attenuation storage on site, a below ground attenuation tank, located beneath the building, will be required.

Consideration should be given to foundation design to minimise the loading on the attenuation tank. The depth of the tank should be limited to facilitate a gravity connection to the public surface water sewer in Chester Street.

The attenuation tank will need to be accessed for maintenance via one of the retail units.

Concept Surface Water Drainage Scheme

Surface water runoff will be discharged to the 300mm / 375mm public surface water sewer located in Chester Street at a rate of 5 l/s. Surface water runoff up to the 1 in 100 year plus 30% climate change allowance event will be attenuated on site. A total attenuation volume of 26m³ will be required to achieve the discharge rate and will be provided in the form of a tank located beneath the building. A Concept Drainage Sketch is included in Appendix H.

Exceedance Event

Storage will be provided for the 1 in 100 year plus 30% CC event. To prevent an exceedance event causing internal flooding at the site, a high-level overflow should be fitted within the flow control chamber. This will permit any water, in excess of the 1 in 100 year plus 30% CC event, to bypass the flow control and discharge to the public sewer.

Surface Water Treatment

In accordance with the CIRIA C753 publication 'The SuDS Manual' (2015), residential roofs have a 'very low' pollution hazard level, with commercial roofs classified as having a 'low' pollution hazard level. Given the low pollution hazard levels associated with the roof areas, no surface water treatment is considered necessary.

Sediment traps should be located upstream of the attenuation tank and at the base of rainwater downpipes to ease maintenance / sediment removal.

Maintenance

Maintenance of the attenuation tank will be the responsibility of the site owner. Maintenance of shared surface water drainage systems can be arranged through appointment of a site management company.

A maintenance schedule for an attenuation tank is included in Appendix I.

Foul Drainage

DCWW have stated, *'Only foul flows from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be taken to the foul sewer at manhole reference SJ33505301 which is located in Henblas Street.'*

DCWW have also stated, *'No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.'*

Foul flows should be discharged to the 300mm public combined sewer located immediately north of the site in Henblas Street as agreed with DCWW. A gravity connection appears achievable.

Conclusions

The proposal is for the erection of a mixed use building to comprise 2No. retail units at ground floor level and 15No. one-bed apartments across the first and second floors.

The proposed building will occupy the entirety of the site. As such, soakaways (infiltration techniques) will not be a viable option for surface water drainage.

There are no watercourses within the vicinity of the site and Welsh Water have stipulated that a surface water connection to the public combined sewer in Henblas Street will not be permitted.

The only permitted option for surface water drainage is a connection to the public surface water sewer in Chester Street. Welsh Water have stated that surface water discharge from the site can connect to the public surface water sewer in Chester Street at a maximum flow rate of 5 l/s. A connection to the public surface water sewer in Chester Street would require approximately 90m of new surface water sewer within Henblas Street. A gravity connection appears feasible.

In order to achieve a discharge rate of 5 l/s, attenuation storage will be required. Attenuation can be provided in the form of a below tank located beneath the building.

DCWW have confirmed that foul flows can discharge to the 300mm public combined sewer in Henblas Street. A gravity connection can be achieved.

Recommendations

1. Submit this Drainage Strategy to the Planning Authority in support of the Planning Application;
2. Verify the attenuation volumes included in this report when undertaking detailed drainage design;
3. Survey the public surface water sewer in Chester Street to determine invert levels and whether a gravity connection can be achieved.

Appendix A – Location Plan & Aerial Image



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary

Watercourses / Water Bodies

CLIENT:

HINDLE PROPERTY INVESTMENTS LTD

www.waterco.co.uk

SCHEME:

HENBLAS STREET, WREXHAM

PLOT TITLE:

LOCATION PLAN

PLOT STATUS:			DATE:
FINAL			03/09/2018

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
RP	AW	VG	1:1,000
			(UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
w10760-Location_plan	-



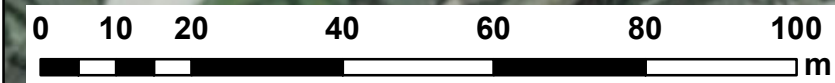
NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary

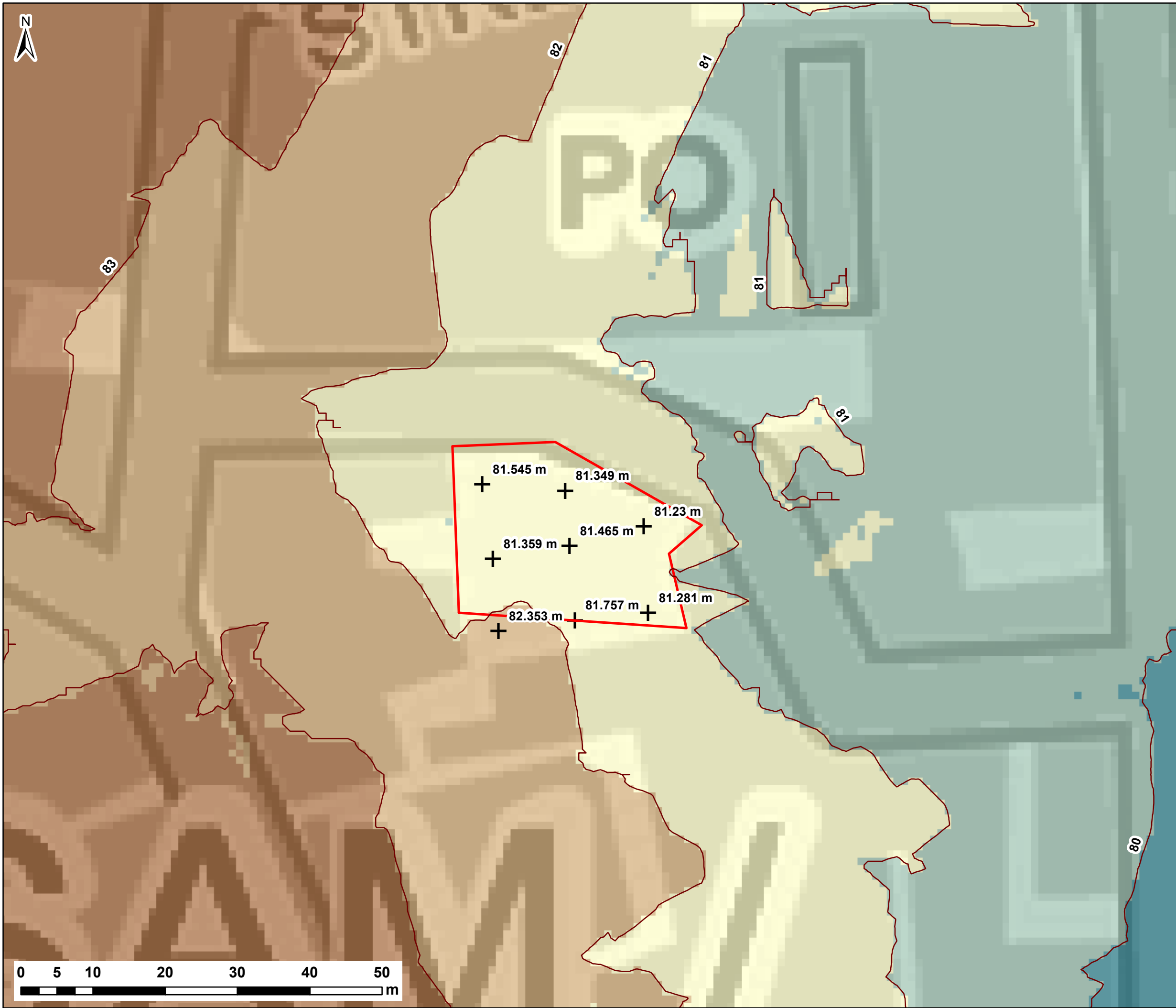


CLIENT:				HINDLE PROPERTY INVESTMENTS LTD	
				 www.waterco.co.uk	
SCHEME:				HENBLAS STREET, WREXHAM	
PLOT TITLE:				AERIAL PLAN	
PLOT STATUS:		FINAL		DATE:	03/09/2018
DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:		
RP	AW	VG	1:1,000 (UNLESS STATED OTHERWISE)		
PLOT NAME:				REV:	
w10760-Aerial_Plan				-	



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Appendix B – Topographical Data



NOTES:
1) ALL DIMENSIONS ARE IN METRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS STATED OTHERWISE

LEGEND

Site Boundary

+ Spot Levels

Ground Elevation (m AOD)

	< 80
	80 - 81
	81 - 82
	82 - 83
	> 83

CLIENT:

HINDLE PROPERTY INVESTMENTS LTD

www.waterco.co.uk

SCHEME:

HENBLAS STREET, WREXHAM

PLOT TITLE:

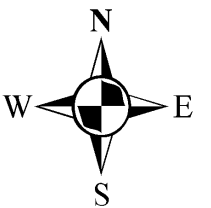
LIDAR ELEVATIONS
1m RESOLUTION

PLOT STATUS:			DATE:
FINAL			03/09/2018

DRAWN:	CHECKED:	APPROVED:	PLOT SCALE @ A3:
RP	AW	VG	1:500
			(UNLESS STATED OTHERWISE)

PLOT NAME:	REV:
w10760-LIDAR	-

Appendix C – DCWW Sewer Plan and Correspondence



LEGEND(Representative of most common features)

Waste network:																				

Notes:

Whilst every reasonable effort has been taken to correctly record the pipe material of DCWW assets, there is a possibility that in some cases pipe material (other than Asbestos Cement or Pitch Fibre) may be found to be asbestos cement (AC) or Pitch Fibre (PF). It is therefore advisable that the possible presence of AC or PF pipes be anticipated and considered as part of any risk assessment prior to excavation.

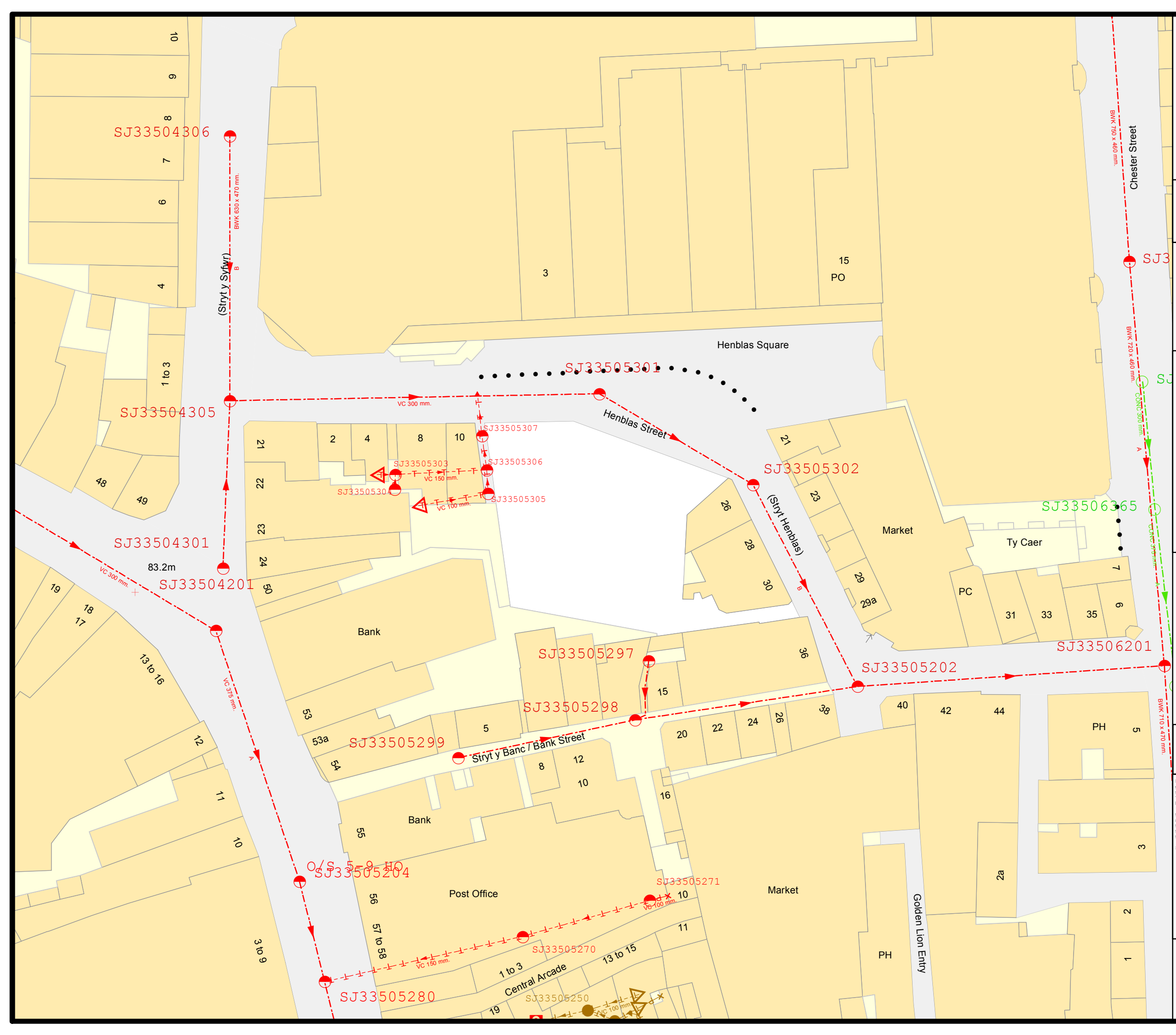
Dŵr Cymru Cyfyngedig ('the Company') gives this information as to the position of its underground apparatus by way of general guidance only and on the strict understanding that it is based on the best information available and no warranty as to its correctness is relied upon in the event of excavations or other works made in the vicinity of the company's apparatus. The onus of locating apparatus before carrying out any excavations rests entirely on you. The information which is supplied by the Company, is done so in accordance with statutory requirements of sections 198 and 199 of the Water Industry Act 1991 which is based upon the best information available and, in particular, but without prejudice to the generality of the foregoing, it should be noted that the records that are available to the Company may not disclose the existence of a water main, service pipe, sewer, lateral drain or disposal main and any associated apparatus laid before 1 September 1989, or, if they do, the particulars thereof including their position underground may not be accurate. It must be understood that the furnishing of this information is entirely without prejudice to the provision of the New Roads and Street Works Act 1991 and the Company's right to be compensated for any damage to its apparatus.

Service pipes are not generally shown but their presence should be anticipated.

**EXACT LOCATIONS OF ALL APPARATUS
TO BE DETERMINED ON SITE.**

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Map Ref: 333544,350315
Map scale: 1:500
Printed by: Parker David
Printed on: 06 Sep 2018



Miss Sally Pettit
Waterco Ltd
Lon Parcwr Business Park
Ruthin
Denbighshire
LL15 1NJ

Date: 06/09/2018
Our Ref: PPA0003358

Dear Miss Pettit,

Grid Ref: 333544 350315

Site Address: Land at Henblas Street, Wrexham

Development: Residential / Retail Development – 2 retail units and 15 one bedroom studio apartments

I refer to your pre-planning enquiry received relating to the above site, seeking our views on the capacity of our network of assets and infrastructure to accommodate your proposed development. Having reviewed the details submitted I can provide the following comments which should be taken into account within any future planning application for the development.

SEWERAGE

Only foul flows from the proposed development can be accommodated within the public sewerage system. We advise that the flows should be taken to the foul sewer at manhole reference SJ33505301 which is located in Henblas Street.

Should a planning application be submitted for this development we will seek to control these points of communication via appropriate planning conditions and therefore recommend that any drainage layout or strategy submitted as part of your application takes this into account.

However, should you wish for an alternative connection point to be considered please provide further information to us in the form of a drainage strategy, preferably in advance of a planning application being submitted.

Advisory Notes

The applicant may need to apply to Dwr Cymru / Welsh Water for any connection to the public sewer under S106 of the Water industry Act 1991. If the connection to the public sewer network is either via a lateral drain (i.e. a drain which extends beyond the connecting property boundary) or via a new sewer (i.e. serves more than one property), it is now a mandatory requirement to first enter into a Section 104

Adoption Agreement (Water Industry Act 1991). The design of the sewers and lateral drains must also conform to the Welsh Ministers Standards for Gravity Foul Sewers and Lateral Drains, and conform with the publication "Sewers for Adoption"- 7th Edition. Further information can be obtained via the Developer Services pages of www.dwrcymru.com.

The applicant is also advised that some public sewers and lateral drains may not be recorded on our maps of public sewers because they were originally privately owned and were transferred into public ownership by nature of the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. The presence of such assets may affect the proposal. In order to assist us in dealing with the proposal the applicant may contact Dwr Cymru Welsh Water. Under the Water Industry Act 1991 Dwr Cymru Welsh Water has rights of access to its apparatus at all times.

SURFACE WATER

Due to capacity constraints with the combined public sewerage system, we would not allow surface water run-off from the proposed development to be discharged into the combined sewerage system.

Therefore, consideration should be given to the incorporation of sustainable methods of drainage into the scheme in line with priority levels 1-4 of Standards S1 – Surface water runoff destination within Welsh Government's 'Recommended non-statutory standards for sustainable drainage (SuDS) in Wales – designing, constructing, operating and maintaining surface water drainage systems' (2017).

Please refer to further detailed advice relating to surface water management included in our attached Advice & Guidance note.

In addition, please note that no highway or land drainage run-off will be permitted to discharge directly or indirectly into the public sewerage system.

SEWAGE TREATMENT

No problems are envisaged with the Waste Water Treatment Works for the treatment of domestic discharges from this site.

I trust the above information is helpful and will assist you in forming water and drainage strategies that should accompany any future planning application. I also attach copies of our water and sewer extract plans for the area, and a copy of our Planning Guidance Note which provides further information on our approach to the planning process, making connections to our systems and ensuring any existing public assets or infrastructure located within new development sites are protected.

Please note that our response is based on the information provided in your enquiry and should the information change we reserve the right to make a new representation. Should you have any queries or wish to discuss any aspect of our response please do not hesitate to contact our dedicated team of planning officers, either on 0800 917 2652 or via email at developer.services@dwrcymru.com



Welsh Water is owned by Glas Cymru – a 'not-for-profit' company.
Mae Dwr Cymru yn eiddo i Glas Cymru – cwmni 'nid-er-elw'.

We welcome correspondence in
Welsh and English

Dŵr Cymru Cyf, a limited company registered in
Wales no 2366777. Registered office: Pentwyn Road,
Nelson, Treharris, Mid Glamorgan CF46 6LY

Rydym yn croesawu gohebiaeth yn y
Gymraeg neu yn Saesneg

Dŵr Cymru Cyf, cwmni cyfyngedig wedi'i gofrestru yng
Nghymru rhif 2366777. Swyddfa gofrestredig: Heol Pentwyn
Nelson, Treharris, Morgannwg Ganol CF46 6LY.

Please quote our reference number in all communications and correspondence.

Yours faithfully,



Owain George
Planning Liaison Manager
Developer Services

Enc. Sewer Plan
Advice Note

Please Note that demands upon the water and sewerage systems change continually; consequently the information given above should be regarded as reliable for a maximum period of 12 months from the date of this letter.

Sally Pettit

From: Jones Alaw <Alaw.Jones@dwrcymru.com>
Sent: 12 September 2018 16:06
To: Sally Pettit
Subject: RE: W10760-DCWW Developer enquiry response- Reference: PPA0003358

Categories: Information received

Dear Sally,

Thank you for your e-mail in relation to the above pre-planning enquiry.

We have recorded flooding instances on the combined sewerage network downstream of the site and therefore introducing surface water runoff from the proposed development would overload the combined public sewerage system and increase the risk of flooding.

In light of the above, we would not allow surface water run-off from the proposed development to be discharged into the combined sewerage system.

We may be able to consider a connection to the surface water sewer in Chester Road at an attenuated rate not exceeding 5l/s provided it can be demonstrated that there is no space to accommodate soakaways on the site.

Should you have any queries, please do not hesitate to contact me.

Kind regards,
Alaw



Alaw Jones



Development Control Officer | Developer Services | Wholesale Business Services | Services Dwr Cymru Welsh Water

Kinmel Park | Bodelwyddan | LL18 5TQ | T: 0800 917 2652 | www.dwrcymru.com

Developer Services have an on-line service at www.dwrcymru.com. Here you can find all the services available, complete application forms and also make payments. If you have a quotation you can pay for this on-line or alternatively by telephoning 0800 917 2652 using a credit/debit card.

*We will respond to your email as soon as possible but you should allow up to **10 working days** to receive a response. For most of the services we offer we set out the timescales that we work to on our Developer Services section of our website. Just follow this link <http://www.dwrcymru.com/en/Developer-Services.aspx> and select the service you require where you will find more information and guidance notes which should assist you. If you cannot find the information you are looking for then please call us on 0800 917 2652 as we can normally deal with any questions you have during the call.*

If we've gone the extra mile to provide you with excellent service, let us know. You can nominate an individual or team for a Diolch award through our [website](#).

From: Sally Pettit [<mailto:Sally.Pettit@waterco.co.uk>]
Sent: 12 September 2018 09:03
To: services developer <developer.services@dwrcymru.com>
Subject: W10760-DCWW Developer enquiry response- Reference: PPA0003358

***** External Mail *****

DCWW Reference: PPA0003358

Proposed residential and commercial development at Henblas Street, Wrexham, LL13 8AD. Grid ref: 333543E 350316N.

Dear Owain,

Thank you for your recent response (attached above) to our developer enquiry regarding the proposed development at Henblas Street, Wrexham (Reference: PPA0003358).

In your pre-planning response regarding surface water you state:

'Due to capacity constraints with the combined public sewerage system, we would not allow surface water run-off from the proposed development to be discharged into the combined sewerage system.

Therefore, consideration should be given to the incorporation of sustainable methods of drainage into the scheme in line with priority levels 1-4 of Standards S1 – Surface water runoff destination within Welsh Government's 'Recommended non-statutory standards for sustainable drainage (SuDS) in Wales – designing, constructing, operating and maintaining surface water drainage systems' (2017).'

Given the nature of the development site, a building occupying the entirety of a small plot of land within the town centre, there are limited options in terms of surface water drainage and the scheme is somewhat reliant upon surface water being able to connect to the public combined sewer. To assist with a potential agreement in principle with Welsh Water to connect surface water to the combined sewer, we have assessed the surface water discharge priority levels below and given justification why priority level 5 is required:

Priority Level 1: Surface water runoff is collected for use;

The proposed building will occupy the entirety of the site and therefore there is limited space available on site for a rainwater harvesting tank. Furthermore, there are complexities with incorporating rainwater harvesting across a number of residential flats. The Welsh Government guidance (G1.6) acknowledges that "In most cases, rainwater harvesting alone will not be adequate to deal with the site drainage and provision will be required for an overflow to a Level 2 or lower priority destination".

Priority Level 2: Surface water runoff is infiltrated to ground;

The building will occupy the entire site and there is no open space to accommodate soakaways. Soakaway must be situated a minimum of 5m from habitable buildings and adopted roads, this will not be achievable for this site.

Priority Level 3: Surface water runoff is discharged to a surface water body;

The site is in an urban setting and there are no watercourses within the vicinity of the site.

Priority Level 4: Surface water runoff is discharged to a surface water sewer, highway drain, or another drainage system;

The nearest surface water sewer is located approximately 60m east of the site in Chester Street. The sewer is separated from the site by industrial buildings. A new connection to this sewer would require laying some 90m of new pipe within Henblas Street (a busy, part pedestrianised street in a town centre shopping area). Works to lay a 90m length of new sewer in Henblas Street would entail significant cost and disruption and would not be commensurate to the scale of the development.

Priority levels 5: Surface water runoff is discharged to a combined sewer.

Should you be happy to permit a connection to the public combined sewer, the proposed drainage system could include an element of flow control and attenuation, with a small storage tank placed beneath the building. We would like to avoid this if possible (due to the structural / access constraints), however we could consider incorporating such a system where possible. Flow routes could be limited down to 2 l/s, or lower if required.

If you have any suggestions regarding surface water discharge and potential attenuation / mitigation measures we would be happy to consider them.

We hope that the above constraints can be considered and an agreement reached for the discharge of surface water from the site. If you have any questions or require any further information to process my request please don't hesitate to contact me.

Kind regards,

Sally Pettit

Environmental Consultant

01824 702220



Assessment, Modelling, Design

Ruthin - Chester - Manchester - Hyderabad

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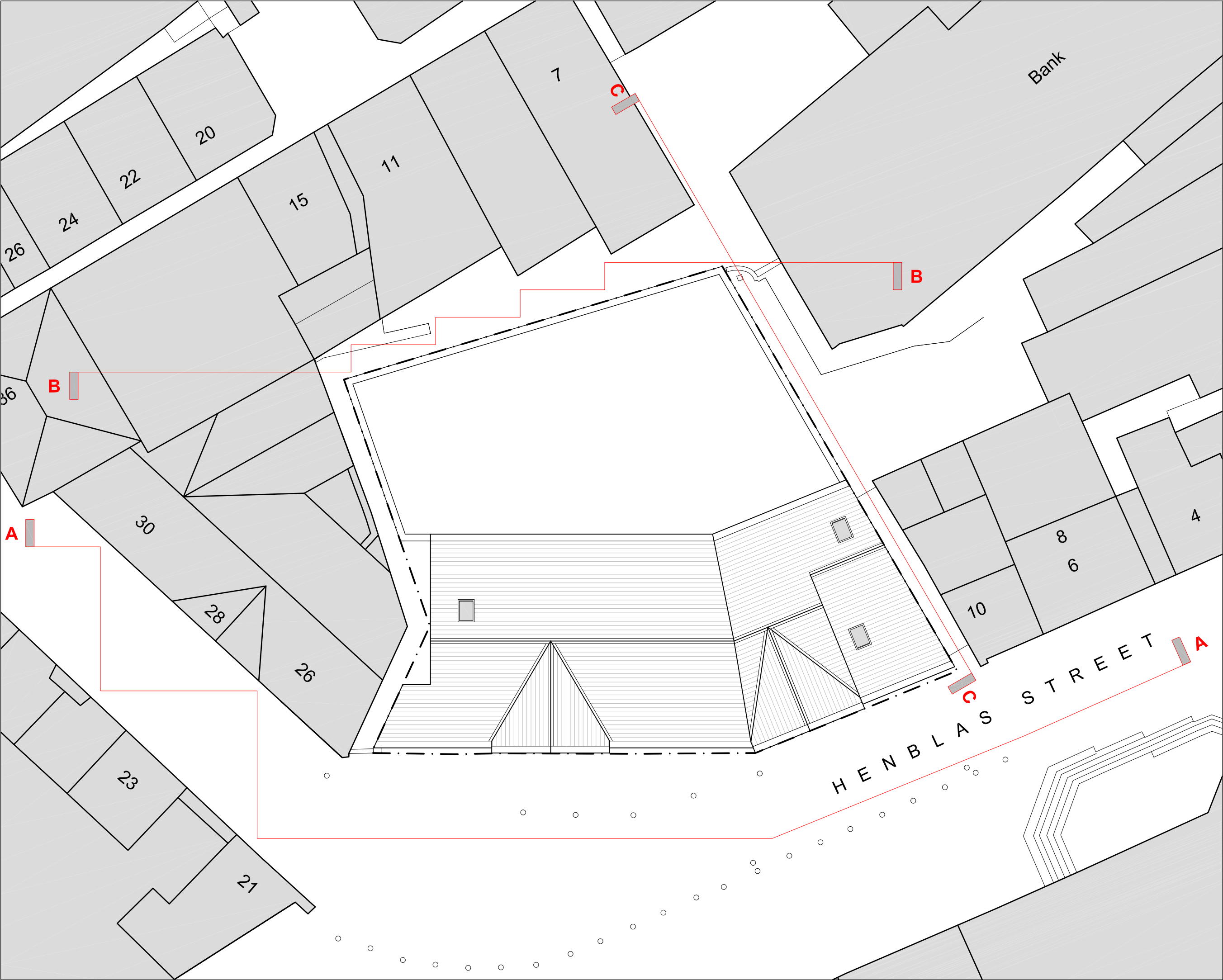


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Appendix D – Development Plans



Note:

This drawing should not be scaled unless for planning application purposes. Work to figured dimensions only.

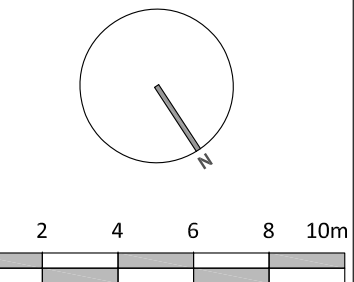
All dimensions and levels to be checked on site.

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Drawing Amendment:			
rev	date	drawn	checked
-	31/08/18	CTW	AT
Initial Issue			

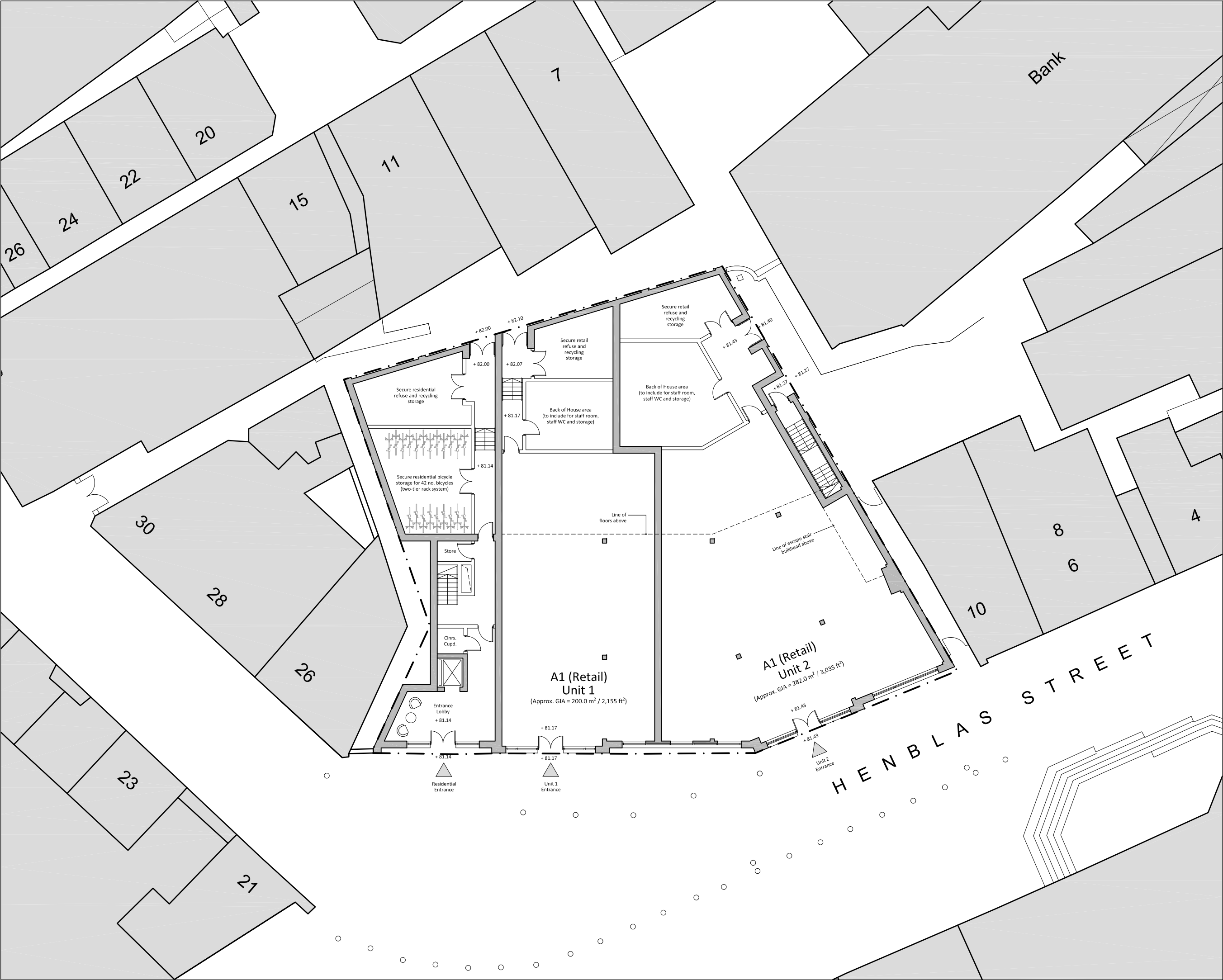


Scale 1:200 @ A3

Project Title	
Wrexham Henblas Street	
Drawing Title	
Proposed Site Plan	
Project No. T743	Drawing No. P003
Date 31.08.2018	Scale 1:200 @ A3
Stage Stage 3	Revision -
Drawn By CTW	Auth By AT

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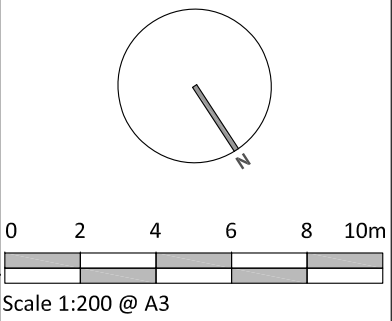
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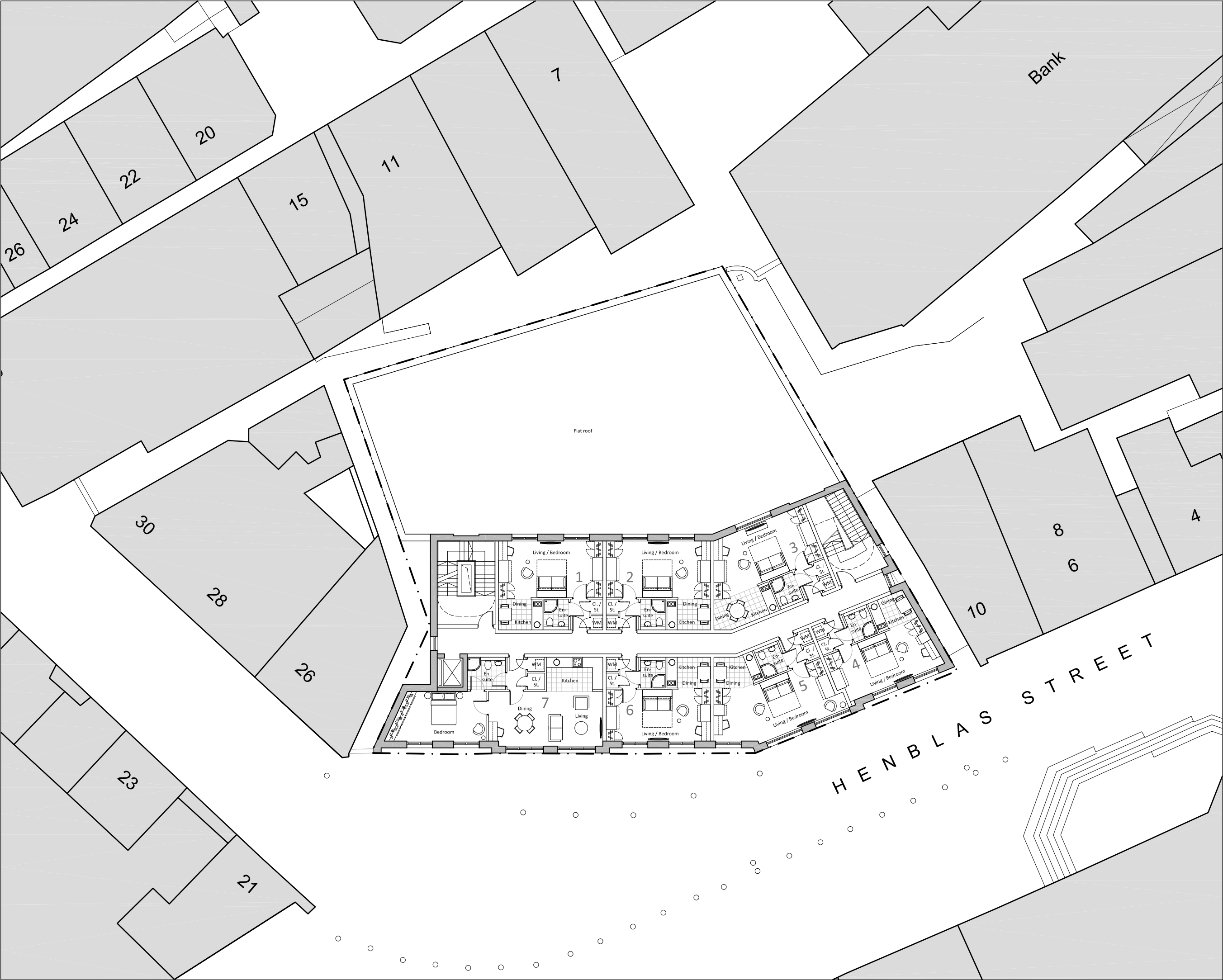
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Drawing Amendment:			
rev	date	drawn	checked
-	31/08/18	CTW	AT
Initial Issue			



Project Title	
Wrexham Henblas Street	
Drawing Title	
Proposed Ground Floor Plan	
Project No. T743	Drawing No. P004
Date 31.08.2018	Scale 1:200 @ A3
Stage Stage 3	Revision -
Drawn By CTW	Auth By AT



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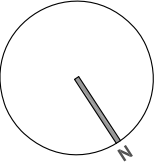
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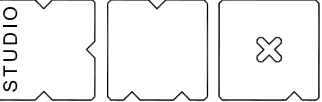
Drawing Amendment:			
rev	date	drawn	checked
-	31/08/18	CTW	AT
Initial Issue			

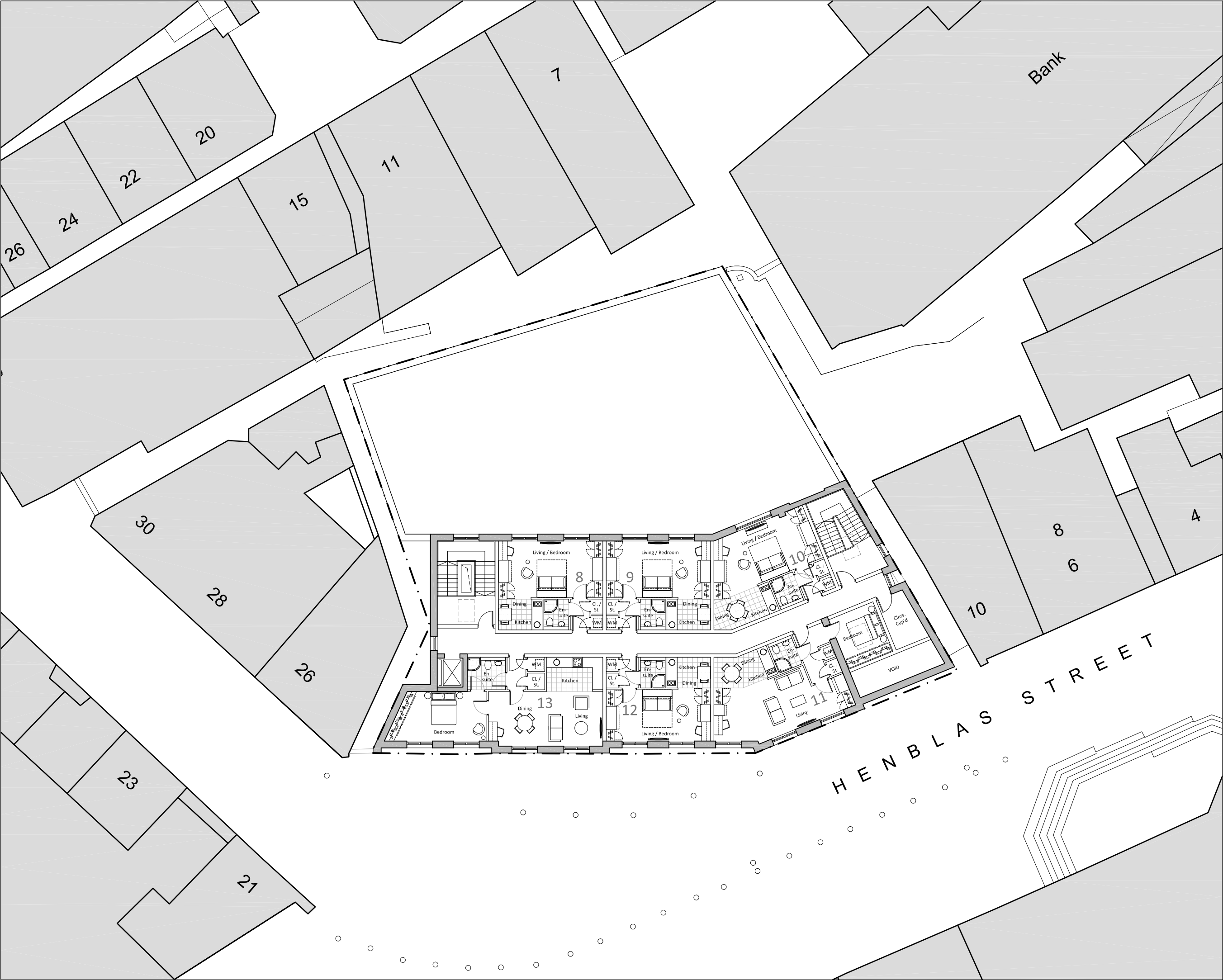


Scale 1:200 @ A3

Project Title	
Wrexham Henblas Street	
Drawing Title	
Proposed First Floor Plan	
Project No. T743	Drawing No. P005
Date 31.08.2018	Scale 1:200 @ A3
Stage Stage 3	Revision -
Drawn By CTW	Auth By AT

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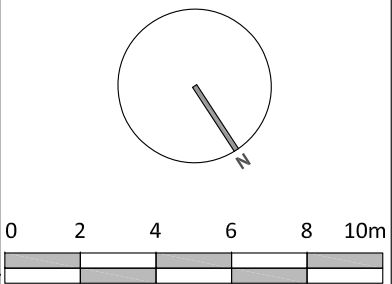
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Initial Issue



Scale 1:200 @ A3

Project Title	
Wrexham	
Henblas Street	
Drawing Title	
Proposed	
Second Floor Plan	
Project No.	Drawing No.
T743	P006
Date	Scale
31.08.2018	1:200 @ A3
Stage	Revision
Stage 3	-
Drawn By	Auth By
CTW	AT

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Appendix E – LLFA Correspondence

Sally Pettit

From: Sharon Holman <Sharon.Holman@wrexham.gov.uk>
Sent: 06 September 2018 09:52
To: Sally Pettit
Subject: W10760 - ENQ/2018/0081 - Pre-application Drainage Enquiry - 10 Henbals Street, Wrexham
Attachments: Management of Surface Water Generated from New Dev_E.pdf
Categories: Information received

Dear Sally,

Thank you for your pre-application drainage enquiry.

The attached guidance note provides detail on what would normally be expected for a brownfield/redevelopment site. With regards to attenuation allowances to accommodate climate change, we would normally accept a maximum 30% increase, unless a more appropriate allowance can be justified.

In addition, please be aware that a significant change to drainage requirements will impact new developments from January 2019. From January 7th 2019, all new developments of at least 2 properties or over 100m² of construction area will require sustainable drainage to manage on-site surface water. The surface water drainage systems must be designed and built in accordance with standards for sustainable drainage published by Welsh Ministers. These systems must be approved by the local authority acting in its SuDS Approving Body (SAB) role before construction work begins.

Kind regards
Sharon

Sharon Holman

Development Control Planning Officer/ Swyddog Cynllunio Rheoli Datblygu



01978 298779
Wrexham County Borough Council, 16 Lord Street, Wrexham, LL11 1LG
Cyngor Bwrdeistref Sirol Wreccsam, 16 Stryt yr Arglwydd, Wreccsam, LL11 1LG
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Rydym yn croesawu gohebiaeth yn Gymraeg. Byddwn yn ymateb i unrhyw ohebiaeth yn Gymraeg ac ni fydd hyn yn arwain at unrhyw oedi.

Ewch i weld - mi fedrwch chi dalu, rhoi gwybod, gwneud cais, dweud eich dweud, a dod o hyd i wybodaeth ar-lein yn www.wreccsam.gov.uk. Arbedwch bapur - meddyliwch cyn argraffu!

Mae'r neges e-bost hon ac unrhyw atodiadau wedi eu bwriadu ar gyfer yr unigolyn neu'r sefydliad y?i cyfeirir atynt yn unig. Am yr amodau llawn yngl?n ? chynnwys a defnyddio'r neges e-bost hon, ac unrhyw atodiadau, cyfeiriwch at www.wreccsam.gov.uk/top_navigation/disclaimersw.htm

We welcome correspondence in Welsh. We will respond to any correspondence in Welsh and this will not lead to any delay.

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Appendix F – Greenfield and Brownfield Runoff Rates

Job number: w10760	Author: SJP
Scheme name: Henblas Street, Wrexham	Checked: AW
ReFH2 Runoff Rates	Date: 19/09/2018

Greenfield and Brownfield Runoff Rates						
Return period (yrs)	Urbanised peak flow (m ³ /s)	Urbanised peak flow (l/s)	Urbanised direct runoff (ML)	As-rural peak flow (m ³ /s)	As-rural peak flow (l/s)	As-rural direct runoff (ML)
1	0.0012661	1.266100371	0.006979279	5.40E-05	5.40E-02	0.000427772
2	0.001473539	1.473538637	0.008122767	6.36E-05	6.36E-02	0.000504414
5	0.002188577	2.188577123	0.01206436	9.88E-05	9.88E-02	0.000782748
10	0.002753649	2.75364883	0.015179274	0.000128566	1.29E-01	0.001018222
30	0.003818749	3.81874937	0.021050557	0.000189411	1.89E-01	0.001499305
50	0.004394708	4.394708344	0.024225486	0.000224897	2.25E-01	0.001779727
75	0.004885673	4.88567303	0.026931891	0.000256578	2.57E-01	0.002030002
100	0.005248947	5.248946846	0.028934409	0.000280867	2.81E-01	0.002221841
200	0.006159109	6.159109132	0.033951607	0.00034489	3.45E-01	0.002727343
1000	0.008388092	8.388092106	0.046238702	0.000520805	5.21E-01	0.004115393

Appendix G – MicroDrainage Storage Volumes

Waterco Ltd				Page 1	
Eden Court		w10760			
Lon Parcwr Business Park		Henblas Street, Wrexham			
Denbighshire LL15 1NJ		1 in 100 years + 30%CC 5l/s			
Date 18/09/2018		Designed by SJP			
File w10760-1 in 100 year +3...		Checked by AW			
XP Solutions		Source Control 2018.1			
Summary of Results for 100 year Return Period (+30%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.627	0.627	5.0	16.9	O K
30 min Summer	9.771	0.771	5.0	20.8	Flood Risk
60 min Summer	9.838	0.838	5.0	22.6	Flood Risk
120 min Summer	9.784	0.784	5.0	21.2	Flood Risk
180 min Summer	9.703	0.703	5.0	19.0	Flood Risk
240 min Summer	9.607	0.607	5.0	16.4	O K
360 min Summer	9.431	0.431	5.0	11.6	O K
480 min Summer	9.305	0.305	5.0	8.2	O K
600 min Summer	9.220	0.220	4.9	5.9	O K
720 min Summer	9.165	0.165	4.7	4.5	O K
960 min Summer	9.115	0.115	4.3	3.1	O K
1440 min Summer	9.084	0.084	3.1	2.3	O K
2160 min Summer	9.065	0.065	2.2	1.8	O K
2880 min Summer	9.055	0.055	1.7	1.5	O K
4320 min Summer	9.044	0.044	1.2	1.2	O K
5760 min Summer	9.038	0.038	1.0	1.0	O K
7200 min Summer	9.034	0.034	0.8	0.9	O K
8640 min Summer	9.032	0.032	0.7	0.9	O K
10080 min Summer	9.030	0.030	0.7	0.8	O K
15 min Winter	9.716	0.716	5.0	19.3	Flood Risk
30 min Winter	9.884	0.884	5.0	23.9	Flood Risk
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
15 min Summer	147.241	0.0	20.1	15	
30 min Summer	99.728	0.0	27.3	30	
60 min Summer	64.618	0.0	35.4	48	
120 min Summer	38.827	0.0	42.5	82	
180 min Summer	28.461	0.0	46.7	118	
240 min Summer	22.742	0.0	49.8	150	
360 min Summer	16.514	0.0	54.2	210	
480 min Summer	13.118	0.0	57.4	268	
600 min Summer	10.948	0.0	59.9	324	
720 min Summer	9.429	0.0	61.9	378	
960 min Summer	7.423	0.0	65.0	490	
1440 min Summer	5.267	0.0	69.2	734	
2160 min Summer	3.714	0.0	73.2	1100	
2880 min Summer	2.897	0.0	76.1	1452	
4320 min Summer	2.039	0.0	80.4	2180	
5760 min Summer	1.603	0.0	84.3	2896	
7200 min Summer	1.356	0.0	89.1	3608	
8640 min Summer	1.200	0.0	94.6	4336	
10080 min Summer	1.096	0.0	100.8	5120	
15 min Winter	147.241	0.0	22.6	15	
30 min Winter	99.728	0.0	30.6	29	
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Waterco Ltd					Page 2
Eden Court		w10760			
Lon Parcwr Business Park		Henblas Street, Wrexham			
Denbighshire LL15 1NJ		1 in 100 years + 30%CC 5l/s			
Date 18/09/2018		Designed by SJP			
File w10760-1 in 100 year +3...		Checked by AW			
XP Solutions		Source Control 2018.1			
<u>Summary of Results for 100 year Return Period (+30%)</u>					
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	9.963	0.963	5.0	26.0	Flood Risk
120 min Winter	9.885	0.885	5.0	23.9	Flood Risk
180 min Winter	9.764	0.764	5.0	20.6	Flood Risk
240 min Winter	9.620	0.620	5.0	16.7	O K
360 min Winter	9.354	0.354	5.0	9.6	O K
480 min Winter	9.203	0.203	4.9	5.5	O K
600 min Winter	9.130	0.130	4.5	3.5	O K
720 min Winter	9.107	0.107	4.0	2.9	O K
960 min Winter	9.085	0.085	3.2	2.3	O K
1440 min Winter	9.066	0.066	2.3	1.8	O K
2160 min Winter	9.053	0.053	1.6	1.4	O K
2880 min Winter	9.045	0.045	1.3	1.2	O K
4320 min Winter	9.036	0.036	0.9	1.0	O K
5760 min Winter	9.031	0.031	0.7	0.8	O K
7200 min Winter	9.028	0.028	0.6	0.8	O K
8640 min Winter	9.026	0.026	0.5	0.7	O K
10080 min Winter	9.025	0.025	0.5	0.7	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)	
60 min Winter	64.618	0.0	39.6	52	
120 min Winter	38.827	0.0	47.6	88	
180 min Winter	28.461	0.0	52.3	128	
240 min Winter	22.742	0.0	55.8	164	
360 min Winter	16.514	0.0	60.8	220	
480 min Winter	13.118	0.0	64.3	270	
600 min Winter	10.948	0.0	67.1	320	
720 min Winter	9.429	0.0	69.4	370	
960 min Winter	7.423	0.0	72.8	490	
1440 min Winter	5.267	0.0	77.5	726	
2160 min Winter	3.714	0.0	82.0	1084	
2880 min Winter	2.897	0.0	85.3	1460	
4320 min Winter	2.039	0.0	90.0	2148	
5760 min Winter	1.603	0.0	94.4	2936	
7200 min Winter	1.356	0.0	99.8	3640	
8640 min Winter	1.200	0.0	105.9	4384	
10080 min Winter	1.096	0.0	112.9	5144	
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Waterco Ltd		Page 4
Eden Court	w10760	
Lon Parcwr Business Park	Henblas Street, Wrexham	
Denbighshire LL15 1NJ	1 in 100 years + 30%CC 5l/s	
Date 18/09/2018	Designed by SJP	
File w10760-1 in 100 year +3...	Checked by AW	
XP Solutions	Source Control 2018.1	

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.000

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	27.0	1.000	27.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0105-5000-1000-5000
Design Head (m)	1.000
Design Flow (l/s)	5.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	105
Invert Level (m)	8.995
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	5.0
Flush-Flo™	0.296	5.0
Kick-Flo®	0.637	4.1
Mean Flow over Head Range	-	4.3

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

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.6	1.200	5.4	3.000	8.4	7.000	12.5
0.200	4.8	1.400	5.8	3.500	9.0	7.500	12.9
0.300	5.0	1.600	6.2	4.000	9.6	8.000	13.3
0.400	4.9	1.800	6.6	4.500	10.1	8.500	13.7
0.500	4.7	2.000	6.9	5.000	10.6	9.000	14.1
0.600	4.3	2.200	7.2	5.500	11.1	9.500	14.5
0.800	4.5	2.400	7.5	6.000	11.6		
1.000	5.0	2.600	7.8	6.500	12.1		

Eden Court
Lon Parcwr Business Park
Denbighshire LL15 1NJ

w10760
Henblas Street, Wrexham
1 in 100 years + 30%CC 51/s

Date	18/09/2018
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Designed by SJP

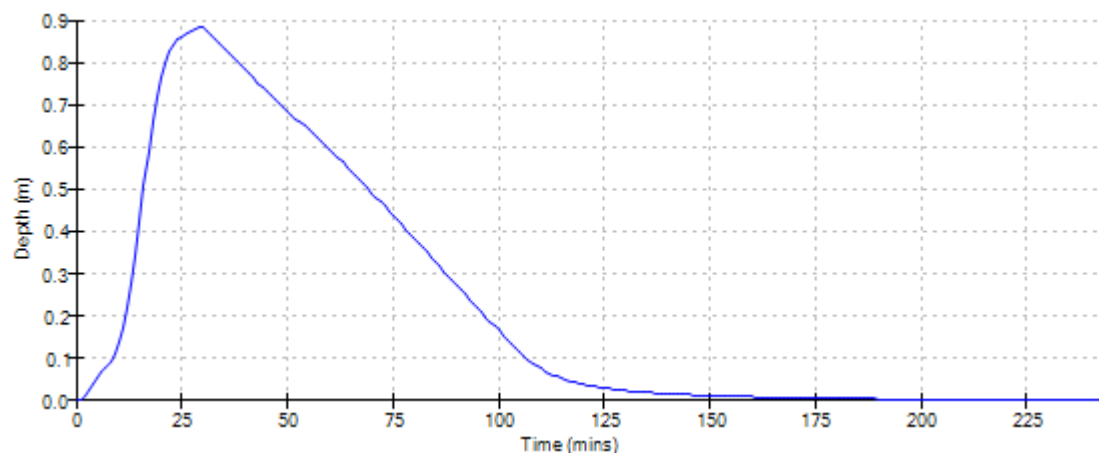
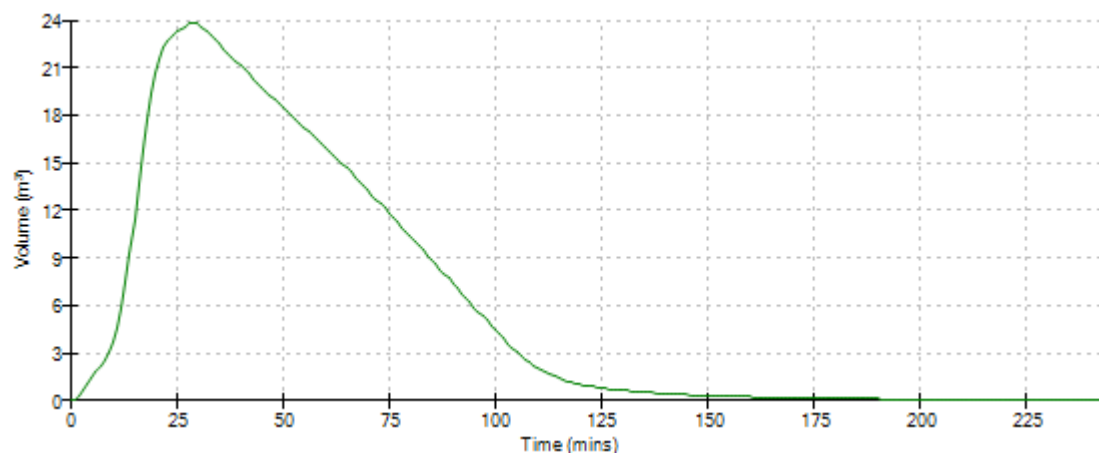
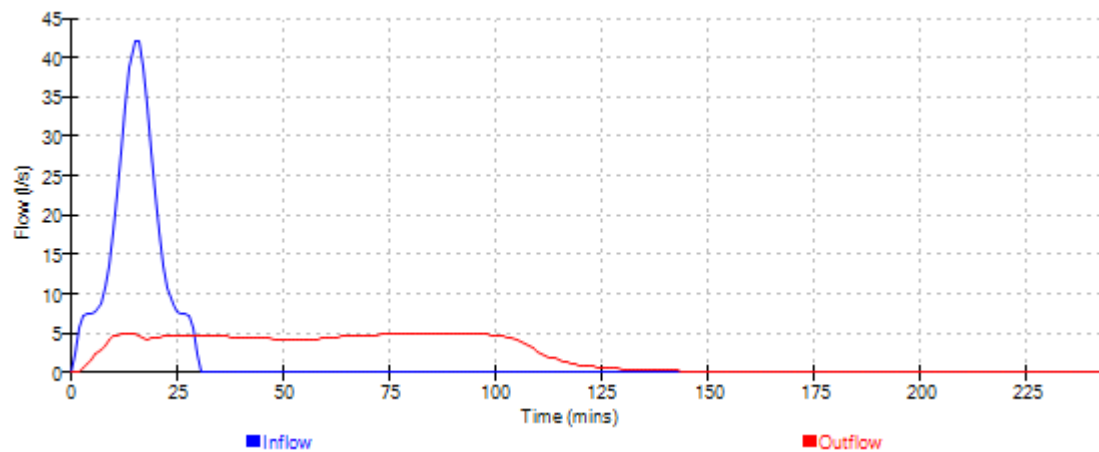
File w10760-1 in 100 year +3...

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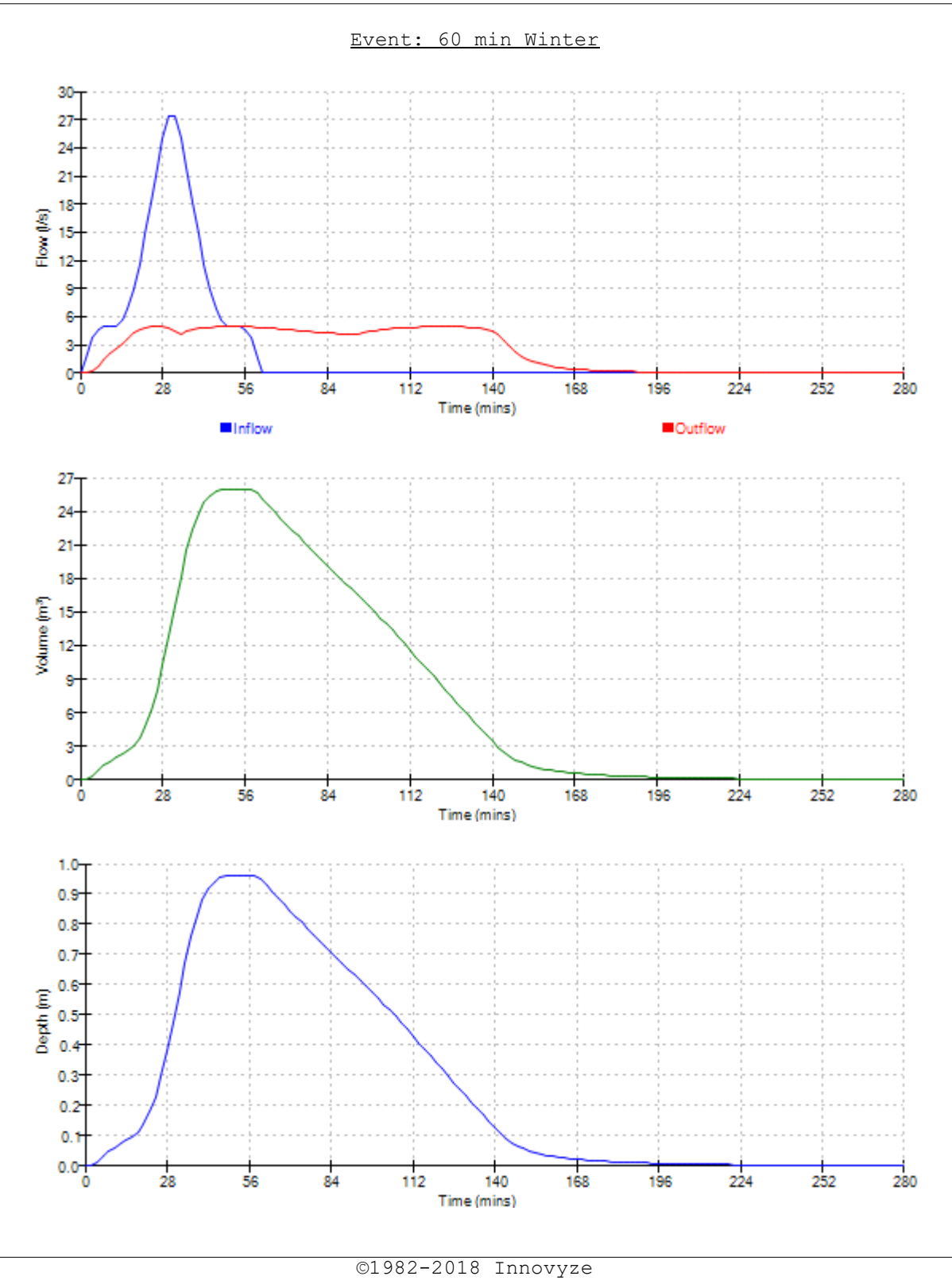
XP Solutions

Source Control 2018.1

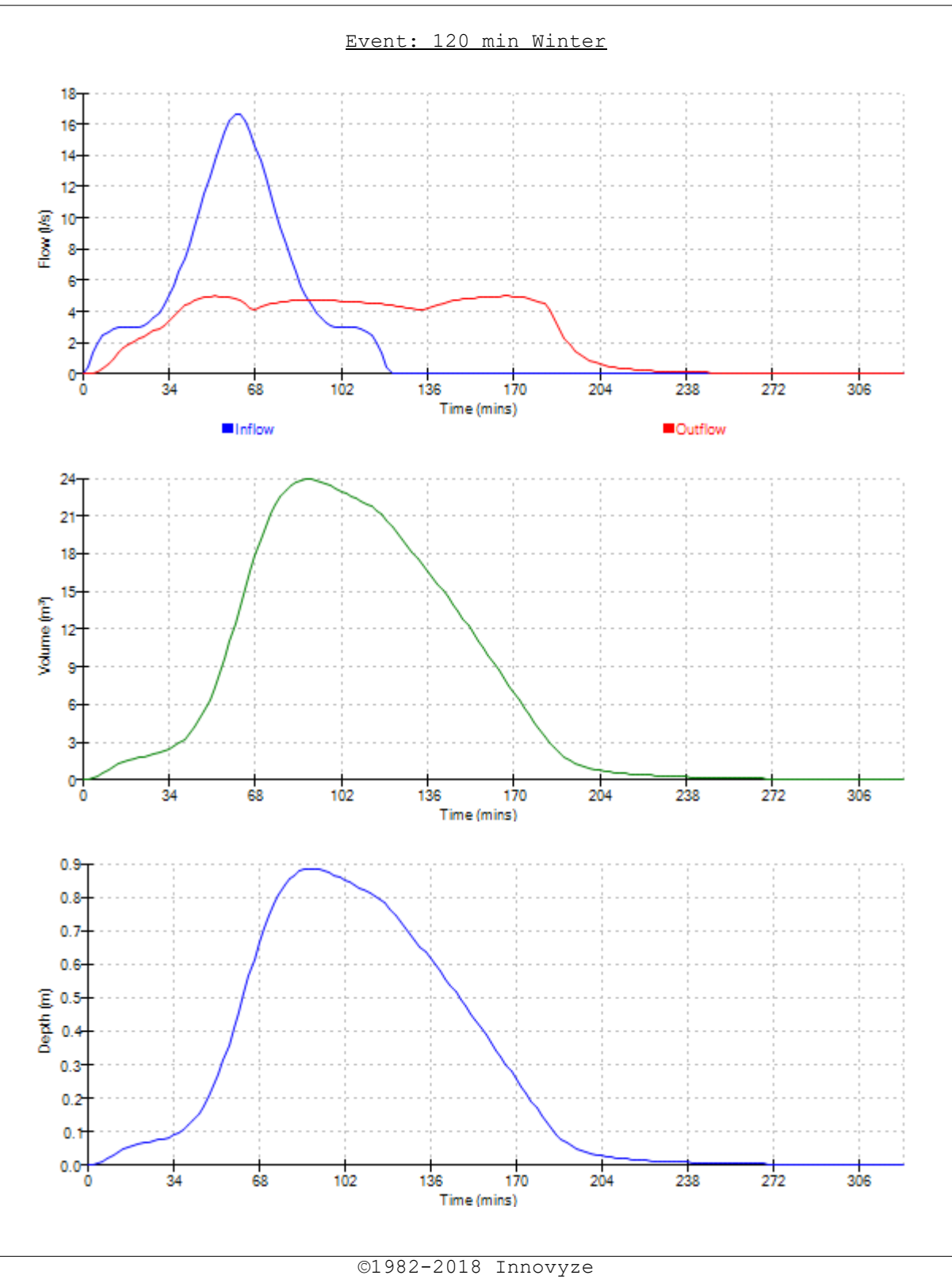
Event: 30 min Winter



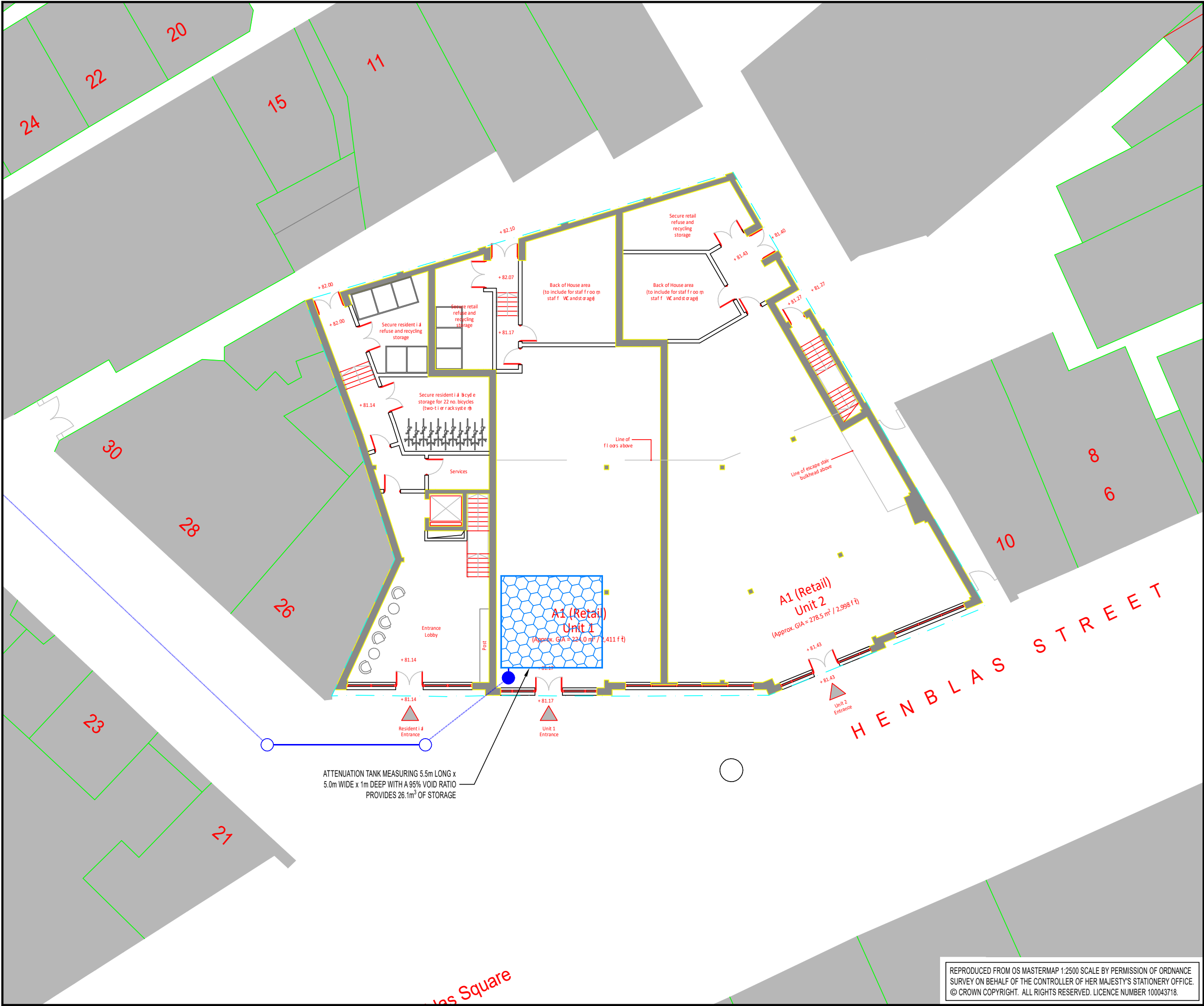
Waterco Ltd		Page 6
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	Henblas Street, Wrexham 1 in 100 years + 30%CC 51/s	
Date 18/09/2018	Designed by SJP	
File w10760-1 in 100 year +3...	Checked by AW	
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Waterco Ltd		Page 7
Eden Court Lon Parcwr Business Park Denbighshire LL15 1NJ	w10760	
	Henblas Street, Wrexham 1 in 100 years + 30%CC 51/s	
Date 18/09/2018	Designed by SJP	
File w10760-1 in 100 year +3...	Checked by AW	
XP Solutions	Source Control 2018.1	



Appendix H – Concept Drainage Sketch



ATTENUATION TANK MEASURING 5.5m LONG x 5.0m WIDE x 1m DEEP WITH A 95% VOID RATIO PROVIDES 26.1m³ OF STORAGE

NOTES

1. ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS SHOWN OTHERWISE.
2. THIS DRAWING IS AN AMENDMENT OF A DEVELOPMENT PLAN PROVIDED BY 'STUDIO KMA LTD'
3. THIS DRAWING PROVIDES A CONCEPT ONLY AND IS NOT INTENDED FOR DETAILED DESIGN

KEY

- PROPOSED SURFACE WATER DRAIN
- PROPOSED HYDROBRAKE CHAMBER WITH OVERFLOW
- PROPOSED ATTENUATION TANK
- PROPOSED SURFACE WATER INSPECTION CHAMBER

SITE LOCATION
GRID REFERENCE: 333543, 350316

P00	21-09-18	FIRST ISSUE	SJP	AW	VG
REV.	DATE	DESCRIPTION	DSGND	CHKD	APPD

CLIENT
HINDLE PROPERTY INVESTMENTS LTD

PRINCIPAL DESIGNER
-

Waterco
Waterco Ltd., Eden Court,
Lon Parcwr Business Park, Ruthin LL15 1NJ
tel (+44) 1824 702220
www.waterco.co.uk

SCHEME
HENBLAS STREET, WREXHAM

TITLE
CONCEPT DRAINAGE SKETCH

STATUS
PRELIMINARY

DESIGNED SJP	CHECKED AW	APPROVED VG	SCALE / SHEET SIZE N.T.S
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DRAWING NO. w10760-CONCEPT SKETCH	REV P00
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REPRODUCED FROM OS MASTERMAP 1:2500 SCALE BY PERMISSION OF ORDNANCE SURVEY ON BEHALF OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE.
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Appendix I – Maintenance Schedules

Operation and Maintenance Requirements for Attenuation Storage Tanks

Maintenance Schedule	Required Action	Typical Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Ref. Table 21.3, CIRIA C753 'The SuDS Manual'

The maintenance requirements detailed above are to be undertaken by the site owner.

Name:

Position:

Date:

Signed on behalf
Of the site owner