

ENVIRONMENTAL RISK ASSESSMENT

The Breakers Yard, Barracks Road, Assington, Sudbury, Suffolk, CO10 5LP

Assington Autos Limited

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1 Introduction

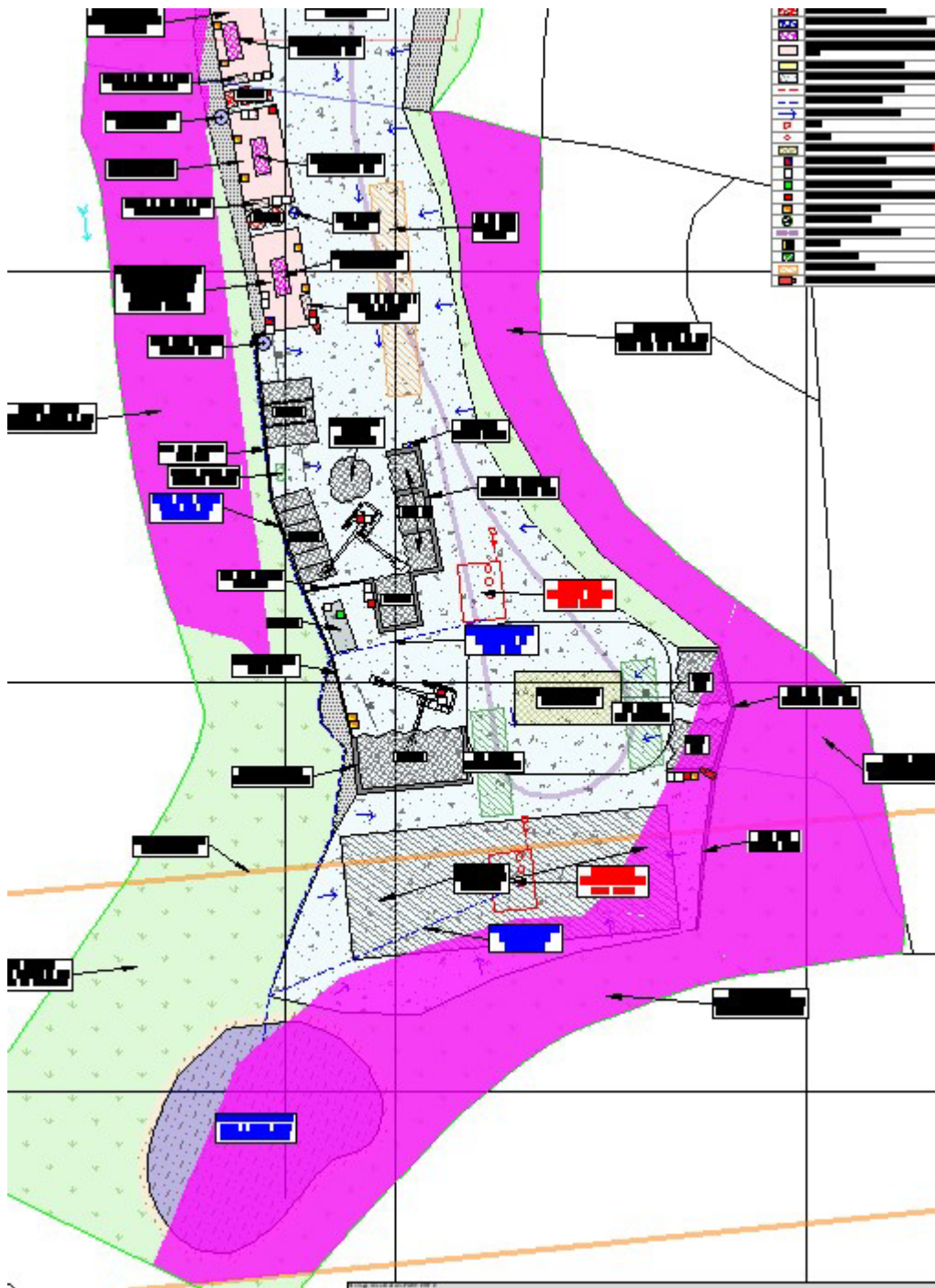
- 1.1 This Environmental Risk Assessment (ERA) considers the potential and actual risks associated with the use of the site at The Breakers Yard, Barracks Road, Assington, Sudbury, Suffolk, CO10 5LP as a plastics recycling facility to be operated by Assington Autos Limited.
- 1.2 All site staff should be provided with a copy of this ERA and be aware of where it is located on site.
- 1.3 All environmental risks identified in this document should be acted upon accordingly by site management to ensure all environmental risks can be appropriately managed/controlled.
- 1.4 This document primarily considers environmental risks associated with the site. This does not aim to provide detailed Health and Safety risk assessments as required separately through the necessary legislation.
- 1.5 The Environmental Permit is required for the storage (keeping) prior to removal, and treatment (all types of handling/processing) of waste. Waste treatment processes to be carried out on site may include the following:
- 1.6 In summary the main operations which take place at the site are as follows:
- Compacting (by loading shovel/360° excavator)
 - Sorting (with loading shovel/360° excavator or by hand)
 - Separation (by using appropriate mechanical screening plant and equipment)
 - Baling (by using appropriate plant and equipment)
 - Depollution and dismantling of waste motor vehicles

1.7 Specified waste management operations include waste disposal and waste recovery operations listed Annex I and II of The Waste Framework Directive 2008/98/EC and are listed in summary below:

- **R3** Recycling/reclamation of organic substances which are not used as solvents
- **R4** Recycling or reclamation of metals and metal compounds.
- **R5** Recycling or reclamation of other inorganic materials.
- **R13** Storage of waste pending recovery.

2 Site Receptors

- 2.1 A Sensitive Receptors Plan has been provided Appendix II of this document.
- 2.2 It is important to note that parts of the site are within flood zone 3 and this proposed variation is also running concurrently with a planning application submitted to the Local Planning Authority (LPA), the planning application reference is DC/21/02579. As part of the planning application, a Flood Risk Assessment, modelling and a Drainage Assessment / Strategy was submitted to the LPA and this part of the proposal has been approved. Information relating this is shown within Appendix III of this document.
- 2.3 Within the proposed permit boundary of the site are deciduous woodland areas which are a priority habitat, these areas have been overlaid onto the proposed site layout drawing (BAR/3041/03B) for ease of reference. The woodland areas are shown in pink on the image overleaf. As can be seen from the image, there is only a small proportion of the woodland areas which will be affected from this proposed variation which is to the south and south-eastern part of the operational area, the remaining areas, although within the proposed permit boundary will be left untouched. As there will be a loss of habitat, the LPA requested a Preliminary Ecological Assessment and Biodiversity Net Gain Report submitted as part of the above planning application, the LPA have approved these reports subject to conditions and information regarding this is shown in Appendix IV. It is considered the re-planning of habitat will not lead to an increase impact on the environment following this proposed permit variation.



3 Environmental Risk Assessment Model

3.1 Fundamental Considerations

3.1.1 **Source/Hazard:** A property or situation that in particular circumstances could lead to harm.

3.1.2 **Consequences:** The adverse effects or harm as the result of realising a hazard which causes the quality of human health or the environment to be impaired in the short or long term.

3.1.3 **Risk:** A combination of the probability of occurrence of a defined hazard and the magnitude of the consequences of the occurrence.

3.2 Pathway

3.2.1 Important in the assessment of a particular risk(s) and to inform the subsequent management of the risk(s) is the identification of the pathway(s) through which the risk may affect the identified receptor(s). The following are examples of pathways:

- Air (windblown dust etc.)
- Ground (leaching of contaminants into underlying aquifers).
- Water (hydrocarbon run off into surface waters)
- Direct contact / exposure

3.3 Consequences

3.3.1 The following table highlights the consequences of the hazard(s) identified and the abbreviations for each as used in the Risk Assessment Table in Section 3:

Abbreviation	Consequences
A	Minor Injury
B	Major Injury
C	Death
D	Air Pollution
E	Water Pollution
F	Pollution of Land

3.4 Effects of Consequences

3.4.1 In order to quantify the level of risk and identify the appropriate management procedures, the potential effects must be considered, as outlined in the table below:

Abbreviation	Consequences	Management Requirements
S	SEVERE	In all cases
Mo	MODERATE	In most cases
Mi	MILD	Occasionally
N	NEGLIGIBLE	No

3.4.2 Note: "Management" is the action required to reduce the risk of a hazard causing a problem on site. Contingency measures are procedures which are in place to reduce the consequences of a hazard.

3.5 Risk Estimation and Evaluation (Probability/Frequency of Occurring Hazard)

3.5.1 The following table allows the likelihood of an occurrence of an identified risk to be assessed:

Abbreviation	Probability	Evaluation
1	Very likely	Could occur during any working day
2	Likely	Could occur regularly
3	Possible	Event possible
4	Unlikely	Event very unlikely

3.6 Risk Assessment Outcome (Combination of Probability & Consequence)

3.6.1 The following table shows the resultant risk of an identified hazard or potential situation. This uses the hierarchy of both probability and consequence to assess the level of risk. The level of risk determines what level of management would be required in order to reduce the risk of occurrence and/or scale.

		Consequence			
		S	Mo	Mi	N
Probability	1	High	High	Medium	Low
	2	High	Medium	Low	Near-Zero
	3	Medium	Low	Near-Zero	N/A
	4	Low	Near-Zero	N/A	N/A

3.6.2 Where the risk assessment outcome is high, first-level management of the risk is essential, i.e. removal of hazard, implementation of major infrastructure/structural design measures to contain the risk/hazard and company policy changes to incorporate the management of the risk. All risk management measures must be supplemented with detailed induction training, spot training and tool-box talks to ensure all site staff and users are made fully aware of the risk/hazard, all potential consequences and necessary management and contingency procedures.

- 3.6.3 Where the risk assessment outcome is medium, the management of the risk should be tackled by management or delegates. If removal of the hazard is not possible, management will normally be met through implementing minor structural design measures or by imposing procedures for the prevention of occurrences which will be conveyed to all site staff through the appropriate training, including any contingency measures/procedures.
- 3.6.4 Where the risk assessment outcome is low, the management of the risk can be done wholly through appropriate training to site staff including any contingency measures/procedures.
- 3.6.5 Where the risk assessment outcome is near-zero, site staff should be made aware of the possibility of an occurrence and contingency measures should be readily available to all staff should they be required.

4 Risk Assessment Table

- 4.1 The following pages contain the site-specific risk assessment for the site with appropriate remedial actions, recommendations and comments included for each identified hazard, potential contaminant or situation.
- 4.2 The table also contains references to the appropriate section(s) of the site's EMS for additional management procedures.
- 4.3 As discussed in Section 3.6 above, all situations which identify a risk from Low – High should be incorporated into the staff/visitor training schedule, where appropriate and acted on as required.

SEE TABLES OVERLEAF

Appendix I

RISK ASSESSMENT TABLES

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Dust / particulates	<p>Formation of dust on site surfaces during dry and windy weather on both areas of the site.</p> <p>Waste delivery vehicles depositing and collecting potentially dusty waste during dry and windy weather conditions</p> <p>Storage of potentially dusty/waste material externally</p> <p>Settlement of dust of processing plant on both areas of the site.</p> <p>Breakdown of mobile suppression systems linked to treatment plants</p> <p>Droughts or water bans leading to a water shortage</p>	Air	<p>Site personnel/ visitors</p> <p>Surrounding site users/occupiers</p> <p>Flora & fauna</p> <p>Residential receptors</p> <p>Argen Fen SSSI</p> <p>Nearby and on-site deciduous woodland – priority habitats</p> <p>Surface waters comprising adjacent watercourses which run parallel to the site</p>	A, B, D, E	Mi	4	Near zero	<p>No acceptance and storage of waste considered dusty.</p> <p>The site benefits from an impermeable concrete surface which will be damped down using manual hoses during periods of dry/windy weather conditions.</p> <p>Drop heights will be kept to a minimum</p> <p>Continuous monitoring regime in place to identify any potential dust leaving the site boundary.</p> <p>Complaint’s procedure in the EMS in place.</p> <p>Cleaning of any spillages using wet cleaning methods.</p> <p>Preventative maintenance within the to remove dust/fluff from mobile processing plants.</p> <p>Fleet lorries have a break check every 6 weeks as well as routine servicing. Part of the variation comprises a new building for lorry servicing to ensure all fleet vehicles and other vehicles are kept up to a high standard to reduce any unnecessary emissions.</p> <p>The site is not located within a designated AQMA.</p> <p>Deciduous woodlands on site are to be removed with new planting proposed in accordance with a biodiversity net gain proposal which has been agreed with the Local Planning Authority. This is shown in Appendix IV of this ERA.</p>

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Odour	<p>Stored biodegradable waste on site</p> <p>Cracks in concrete leading to trapped waste in both areas of the site</p> <p>Dry/hot weather conditions exceeding three dry days</p> <p>Prevailing wind to towards residential receptor locations</p> <p>Staff negligence leading to odour releases from unauthorised waste acceptance and treatment</p>	Air	<p>Site personnel/ visitors</p> <p>Surrounding site users/occupiers</p> <p>Residential receptors</p>	A, D	Mi	4	Near zero	<p>Strict waste acceptance procedures to identify odorous waste likely to give rise to complaints off-site i.e. putrescible wastes</p> <p>Any wastes giving rise to odour following a daily inspection will be removed from site within 48 hours</p> <p>The site will not accept any odorous wastes as the only wastes will comprise ELVs and their components and scrap metal.</p> <p>Drainage channels and site infrastructure will be checked daily with any issues rectified as soon as practicable</p> <p>Complaint's procedure in the EMS in place.</p> <p>All storage of oils, hydrocarbons are done so in fully bunded sealed tanks which undergo daily inspections.</p>
Litter	<p>Poor housekeeping</p> <p>Staff negligence leading to litter being accepted and escaping off site</p> <p>Overflowing trade bins</p>	Air	<p>Surrounding site users/occupiers</p> <p>Flora & fauna</p> <p>Residential receptors</p> <p>Argen Fen SSSI</p> <p>Nearby and on-site deciduous woodland – priority habitats</p> <p>Surface waters comprising adjacent watercourses which run parallel to the site</p>	A to C E,F	Mi	4	Near zero	<p>Due to the wastes accepted and proposed, litter is not expected to be an issue at the site.</p> <p>Complaint's procedure in the EMS in place.</p> <p>Daily inspections of the site and areas in the immediate vicinity of the site boundary for litter.</p> <p>Various wheelie bins on site for collecting any rags, debris arising from activities.</p> <p>The site does not accept or treat and waste on a Saturday and this day is used for tidying up the site ready for Monday.</p>

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Noise/ vibration arising from existing activities and proposed increased annual throughput of waste	<p>Fixed and mobile plant and machinery breakdowns or malfunctions</p> <p>Unloading of skips containing waste vehicle parts</p> <p>Loading of waste into vehicles, containers for removal off site</p> <p>Loading of waste into fixed and mobile plant in external areas of the site</p> <p>Operating mechanical treatment plants (baler/shear) in external areas of the site i.e. car baler</p> <p>Handheld cutting of ELV parts using petrol powered saw</p> <p>HGVs leaving the site at 06:00am to collect ELVs</p> <p>HGVs returning to the site between 15:00 – 16:00</p> <p>Operating mobile plant in all areas of the site during a Saturday morning for housekeeping only</p>	Air or ground by vibration	<p>Site personnel/ visitors</p> <p>Surrounding site users/occupiers</p> <p>Flora & fauna</p> <p>Residential receptors</p> <p>Argen Fen SSSI</p> <p>Nearby and on-site deciduous woodland – priority habitats</p>	A, D	Mo	3	Low	Refer to Noise & Vibration Management Plan BAR-3041-G

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Vermin causing leptospirosis and other respiratory diseases	Poor housekeeping Staff negligence leading to acceptance of unauthorised waste giving rise to pests Storing trade waste bins for excessive time periods	Water, direct contact with waste	Site personnel/ visitors Surrounding site users/occupiers Residential receptors	A to C	Mi to Mo	4	Near zero	Wear PPE - gloves and masks as appropriate Site inspections daily Rejected waste procedures Strict waste acceptance procedures Daily inspections for any vermin/pests. The site does not receive any waste types which would be regarded as putrescible/ biodegradable and attract such pests. Pest controller called in the event of pests being present at the site or complaints received from receptors.
Fire/ smoke / particulates	Refer to Section 2.1 of operator's FPP	Air, direct contact	Site personnel/ visitors Surrounding site users/occupiers and local business Flora & fauna Residential receptors Argen Fen SSSI Nearby and on-site deciduous woodland – priority habitats Surface waters comprising adjacent watercourses which run parallel to the site Surrounding road networks	A to F	Mi to S	3	Low	Refer to Fire Prevention Plan BAR-3041-B.

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Vehicle collision/ accidents including impacts and injury	<p>Poor visibility</p> <p>Spillages of oils/fluids causing vehicles to skid</p> <p>Lack of PPE worn by staff</p> <p>Staff negligence i.e. mobile plant operators</p> <p>Excessive waste storage causing collapse of stored materials / falling materials and reducing accessibility around the site</p> <p>No signage</p> <p>Cold weather conditions leading to icy/slippers surfaces</p>	Direct contact	<p>Site personnel / visitors</p> <p>Vehicle users</p> <p>Pedestrians</p>	A to F	Mi to S	3	Low	<p>The site benefits from good housekeeping and benefits from daily site inspections to ensure all wastes are stored in designated areas.</p> <p>The site does not accept or treat and waste on a Saturday and this day is used for tidying up the site ready for Monday.</p> <p>Fuel storage is done stored in double bunded tanks as shown on Drawing Nos. BAR/3041/03A.</p> <p>Fleet lorries have a break check every 6 weeks as well as routine servicing. Part of the variation comprises a new building for lorry servicing to ensure all fleet vehicles and other vehicles are kept up to a high standard to reduce any unnecessary emissions.</p> <p>Ensure all free-standing waste storage areas are in the correct locations and access areas are kept clear as shown on Drawing Nos. BAR/3041/03A and BAR/3041/03B.</p> <p>An accident logbook is kept in the site office so all new and existing staff members can review previous accidents.</p> <p>Encouragement for staff for greater number of “accident-free days” to encourage a safer working environment</p> <p>Appropriate signage throughout the site and Vehicle movements on site restricted to 5mph.</p> <p>All staff have radio’s and use horns / alarms on equipment to alert them of their presence</p> <p>The operator has trained staff who control vehicle movements throughout the site.</p> <p>Dedicated staff & visitor parking areas as shown on Drawing No. BAR/3041/03A.</p> <p>Staff training procedures in place.</p> <p>The proposed variation includes a designated one-way system for HGVs accessing/egressing the site.</p> <p>The site is not open for members of the public. Storage of road salt to lay on surfaces during cold weather.</p>

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Leachate	<p>Poor housekeeping</p> <p>Staff negligence leading to acceptance of unauthorised waste giving rise to leachate</p> <p>Overflowing trade waste bins</p> <p>Defects to the concrete surfaces storing waste</p> <p>Release of firewater into surface waters</p> <p>Leaking fuel tanks</p> <p>Leaks from ELVs before depollution</p> <p>ELVs not being depolluted correctly</p>	Ground	<p>Site personnel/ visitors</p> <p>Surrounding site users/occupiers and local business</p> <p>Flora & fauna</p> <p>Residential receptors</p> <p>Argen Fen SSSI</p> <p>Nearby and on-site deciduous woodland – priority habitats</p> <p>Surface waters comprising adjacent watercourses which run parallel to the site</p> <p>Surrounding road networks</p>	E, F	Mi to S	3	Low	<p>All waste storage/treatment is undertaken on an impermeable concrete surface with sealed drainage and the site undergoes continuous daily inspections.</p> <p>The site checks all underground storage tanks every 2-3 days depending on the amount of rainfall.</p> <p>Regular (minimum daily) checks of site surface infrastructure (as above).</p> <p>Any spillages identified will be dealt with in accordance with the spillage procedure.</p> <p>Dedicated mobile quarantine skip for intercepted leachable wastes found during initial inspections ensuring isolation and quick removal off site. The skip may be positioned in various positions of the site depending how operations permit.</p> <p>All fuels, liquids are stored in double bunded tanks as shown on Drawing No. BAR/3041/03A.</p> <p>All depollution and dismantling of ELVs will take place inside a building and all ELVs are depolluted in line with guidance published May 2011 - Depolluting end-of-life vehicles (cars and light goods vehicles): guidance for authorised treatment facilities.</p> <p>The site is engineered to fall by gravity into catchment pits to prevent rainwater escaping onto hardstanding areas of the site. Newly concreted areas will also be designed in this manner.</p> <p>The site has proposed firewater containment measures in the event of a fire at the site which are clearly demonstrated within the operator's FPP.</p> <p>Fleet lorries have a break check every 6 weeks as well as routine servicing. Part of the variation comprises a new building for lorry servicing to ensure all fleet vehicles and other vehicles are kept up to a high standard to reduce any unnecessary emissions and leakages.</p> <p>Deciduous woodlands on site are to be removed with new planting proposed in accordance with a biodiversity net gain proposal which has been agreed with the Local Planning Authority. This is shown in Appendix IV of this ERA.</p>

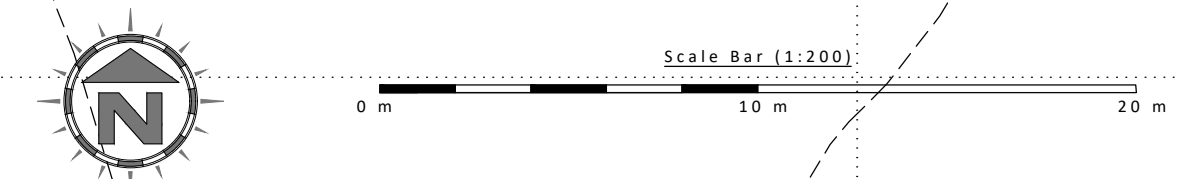
Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
Hydrocarbons including release of gases/fumes/vapours/volatiles	Spills from fuel tanks Drips when refueling Vehicles not depolluted correctly Leakage from stored drums Fixed and mobile plant malfunction Mixing of waste/chemicals Spillage of chemicals Overturned vehicle plant/plant failure Reaction between stored wastes Release of firewater into surface waters	Ground - direct contact, ingestion Inhalation (of volatiles)	Site personnel/visitors Surrounding site users/occupiers and local business Flora & fauna Residential receptors Argen Fen SSSI Nearby and on-site deciduous woodland – priority habitats Surface waters comprising adjacent watercourses which run parallel to the site	A, B, D, E, F	Mi to S	3	Low	<p>All plant manoeuvring takes place on an impermeable concrete surface with sealed drainage.</p> <p>The site is surfaced with concrete and has a sealed drainage system.</p> <p>Where plant is operated; drip trays will be available to ensure that fuels are contained.</p> <p>Spill kits kept close to source(s) of hazards as shown on Drawing Nos. BAR/3041/03A and BAR/3041/03B.</p> <p>Any spillages identified will be dealt with in accordance with the spillage procedures.</p> <p>Ensure all waste storage areas are stored as per the waste storage table and locations shown on Drawing Nos. BAR/3041/03A and BAR/3041/03B to reduce the risk reactions of stored waste, fire and collisions between plant causing release of fumes.</p> <p>All waste storage/treatment is undertaken on an impermeable concrete surface with sealed drainage and the site undergoes continuous daily inspections.</p> <p>The site checks all underground storage tanks every 2-3 days depending on the amount of rainfall.</p> <p>Regular (minimum daily) checks of site surface infrastructure (as above).</p> <p>Any spillages identified will be dealt with in accordance with the spillage procedure.</p> <p>Dedicated mobile quarantine skip for intercepted leachable wastes found during initial inspections ensuring isolation and quick removal off site. The skip may be positioned in various positions of the site depending how operations permit.</p> <p>All fuels, liquids are stored in double bunded tanks as shown on Drawing No. BAR/3041/03A.</p> <p>All depollution and dismantling of ELVs will take place inside a building and all ELVs are depolluted in line with guidance published May 2011 - Depolluting end-of-life vehicles (cars and light goods vehicles): guidance for authorised treatment facilities.</p>

Hazard / Potential Contaminant or Situation	Source(s)	Pathway	Receptor(s)	Consequences	Effect	Probability	Assessment Outcome	Remedial Action/ Recommendations/ Comments
								<p>The site is engineered to fall by gravity into catchment pits to prevent rainwater escaping onto hardstanding areas of the site. Newly concreted areas will also be designed in this manner.</p> <p>The site has proposed firewater containment measures in the event of a fire at the site which are clearly demonstrated within the operator's FPP.</p> <p>Fleet lorries have a break check every 6 weeks as well as routine servicing. Part of the variation comprises a new building for lorry servicing to ensure all fleet vehicles and other vehicles are kept up to a high standard to reduce any unnecessary emissions and leakages.</p>
Contamination of surface / ground waters	<p>Flooding of site - part of the site is within a low-risk area of flooding</p> <p>Release of fire water</p> <p>Release of contaminated residues from containers/drums in a flood event or fire water release</p> <p>Flood or fire waters if not contained will be washed off site and contaminate buildings / gardens / protected sites / natural habitats downstream</p>	Water, direct contact with waste	<p>Site personnel/ visitors</p> <p>Surrounding site users/occupiers</p> <p>Nearby and on-site deciduous woodland – priority habitats</p> <p>Surface waters surrounding the site</p> <p>Dee estuary SSSI, SAC, SPA & Ramsar</p> <p>Flora & fauna</p> <p>Release of contaminated water through ground by seepage into the culvert under the site linking the SSSI, SAC, SPA</p>	A to F	Mi to S	3	Low	<p>Reference should be made to Section 5.7 of the EMS which details contingency measures in the event of adverse weather conditions i.e. heavy rainfall which could lead to the site flooding.</p> <p>All waste storage takes place on an impermeable concrete surface with sealed drainage and refer to Section 3.9.6 of the EMS in terms of daily inspections.</p> <p>Flooding emergency plan kept in site office.</p> <p>Reference should be made to Section 12.2 of the FPMP which details fire water containment procedures in the event of a fire at the site.</p> <p>The site will not accept and damaged containers/drums as these would be rejected before being deposited at the site. The storage of contaminated residues will be done so in sealed containers.</p> <p>The operator has provided a significant amount of detail in terms of a Flood Risk Assessment and Drainage Strategy which has been agreed by the Local Planning Authority. This is shown in Appendix III of this ERA.</p>

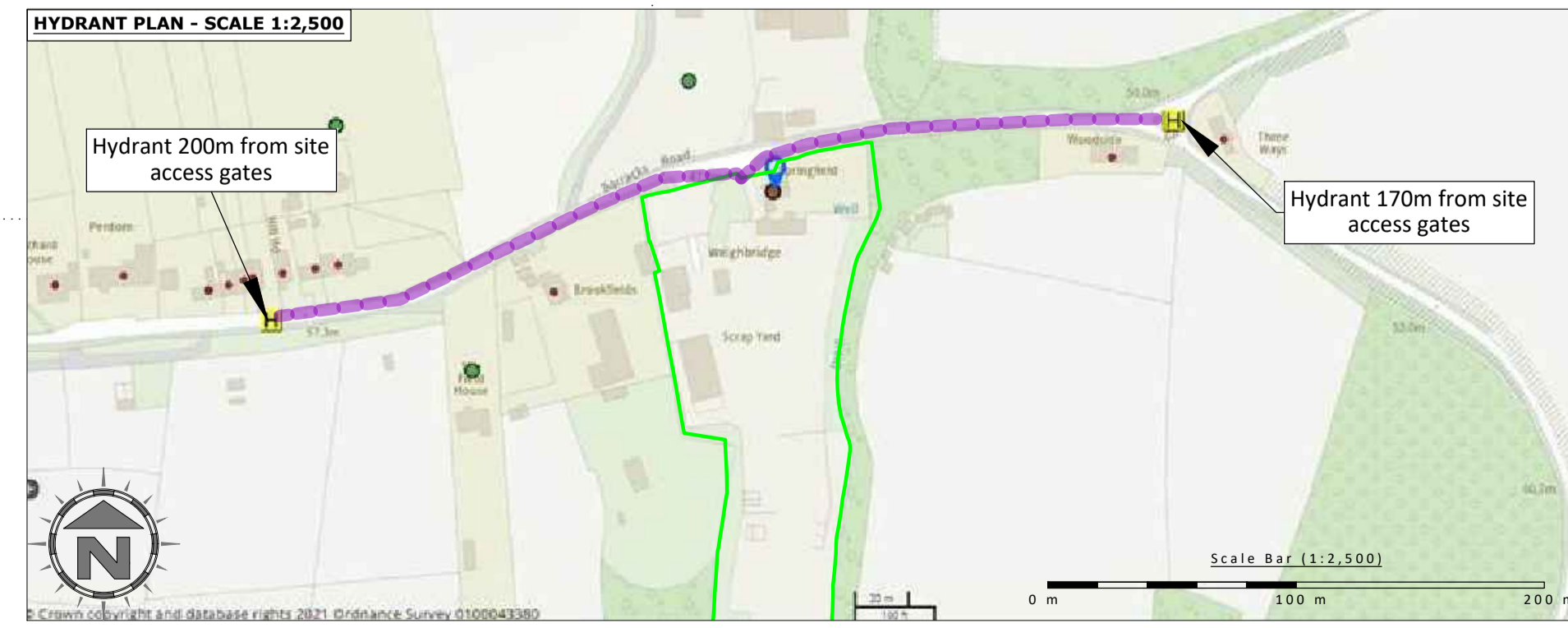
Appendix II

SITE LAYOUT & FIRE PLAN AND RECEPTOR PLAN

Plan Ref	Description	Storage type	Containment / type	Height of firewall (m)	Max Width (m)	Max Length (m)	Max storage height (m)	Approx. Area (m ²)	Conversion factor used	Approx. volume (m ³)	Max storage time
AREA 1	Depolluted ELV storage area (blocks of two)	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 42 ELVs = 350	1	42 x 13.25 = 560	<24 weeks
AREA 2	Depolluted ELV storage area (one block)	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 18 ELVs = 150	1	18 x 13.25 = 240	<24 weeks
AREA 3	Depolluted ELV storage area (blocks of two)	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 36 ELVs = 300	1	36 x 13.25 = 480	<24 weeks
AREA 4	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 42 ELVs = 350	1	42 x 13.25 = 560	<24 weeks
AREA 5	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 42 ELVs = 350	1	42 x 13.25 = 560	<24 weeks
AREA 6	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 42 ELVs = 350	1	42 x 13.25 = 560	<24 weeks
AREA 7	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 36 ELVs = 300	1	36 x 13.25 = 480	<24 weeks
AREA 8	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 30 ELVs = 250	1	15 x 13.25 = 400	<24 weeks
AREA 9	As above	Stored 3 ELVs high on racking	N/A due to racking	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 24 ELVs = 200	1	1 ELV = 13.25 x 24 = 320	<24 weeks
AREA 10	Lead acid batteries and catalytic converters	Unprocessed / sorted	Acid resistant base battery container	N/A	1.1	0.91	0.61	0.67 (per container)	1	0.67 (per container)	<4 weeks
AREA 11	Unpolluted ELVs	Unprocessed with battery disconnected	Freestanding pile / none	N/A	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8,325 x 6 ELVs = 50	1	50	<12 hours



- KEY**
- Permit boundary
 - Waste storage areas
 - Non-waste storage areas
 - Hazardous waste storage areas
 - Non-waste fuels, oils and other liquids storage
 - Temporary waste storage areas (clear prior to shutdown)
 - Waste recycling / storage buildings (impermeable concrete floor)
 - Other buildings i.e. workshops/offices
 - Impermeable concrete surfaces with sealed drainage
 - Contaminated surface water drainage
 - Clean surface water drainage
 - Surface water drainage fall direction
 - Gully's
 - Manholes
 - Quarantine area (with 6m buffer zone) based on AREA 10
 - Hose reels (indicative location)
 - Fire fighting equipment / extinguishers (indicative locations)
 - Plant/shaft (indicative locations)
 - Manual fire alarms (break glass / horns) - indicative location
 - Spill kits (indicative locations)
 - Designated smoking area
 - Access route for emergency services
 - Fire hydrants
 - Fire assembly points
 - Out-of-hours plant storage
 - Pan, tilt and zone cameras with 360° 50m coverage



Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants

DRAWING TITLE
SITE LAYOUT & FIRE PLAN (PART 1 OF 2)

CLIENT
Oaktree Environmental Ltd

PROJECT/SITE
The Breakers Yard, Barracks Road, Assington CO10 5LP

SCALE @ A0 1:200 **CLIENT NO** 3041 **JOB NO** 001

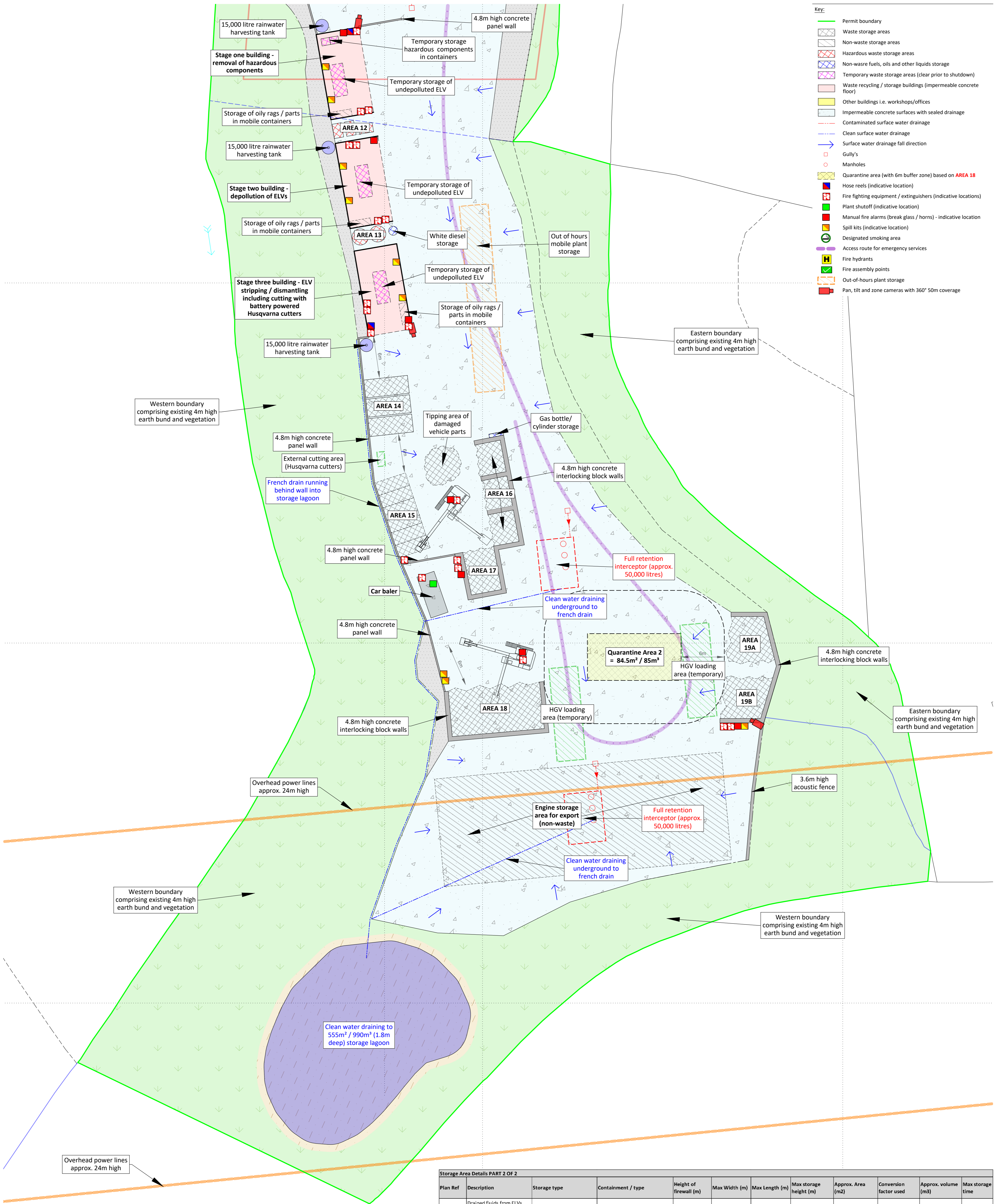
DRAWING NUMBER BAR/3041/03A **REV** A **STATUS** Issued

DRAWN BY CP **CHECKED** -- **DATE** 20.04.23

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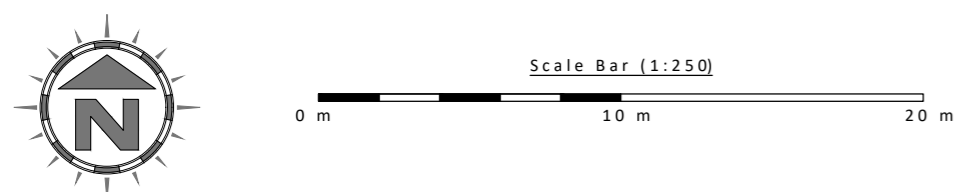
REVISION HISTORY			
Rev	Date	INT	Description
-	07.04.22	CP	Initial drawing
A	20.04.23	CP	Updated site layout



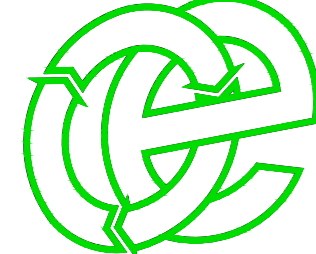


Storage Area Details PART 2 OF 2

Plan Ref	Description	Storage type	Containment / type	Height of fire wall (m)	Max Width (m)	Max Length (m)	Max storage height (m)	Approx. Area (m ²)	Conversion factor used	Approx. volume (m ³)	Max storage time
AREA 12	Drained fluids from ELVs comprising, oil, break fluid and screen wash	Unprocessed (liquid)	Double skinned/bunded tanks	N/A	N/A	N/A	1	N/A	1	10,000 litres	<12 weeks
AREA 13	Drained fluids from ELVs petrol, diesel, oil, brake fluid and screen wash	Unprocessed (liquid)	Double skinned/bunded tanks	N/A	N/A	N/A	1	N/A	1	10,000 litres	<12 weeks
AREA 14	Containers of scrap metal	Sealed skip (40 cubic yard)	Sealed skip / concrete panel wall	4.8	6.1	2.44	2.62	15 (per container)	1	40 (per container)	<1 week
AREA 15	Depolluted ELVs awaiting baling	Processed / fully stripped ELV shell	Freestanding / concrete panel wall	4.8	1.85 (per ELV)	4.8 (per ELV)	1.5 (per ELV)	8.325 x 6 ELVs = 50	1	50	<12 hours
AREA 16	Waste vehicle parts	Removed from ELV	Freestanding pile / interlocking block wall	4.8	4	4	1.5	16 (per bay)	0.75	20 (per bay)	<1 week
AREA 17	Waste vehicle parts	Removed from ELV	Freestanding pile / interlocking block wall	4.8	4	4	1.5	16 (per bay)	0.75	20 (per bay)	<1 week
AREA 18	Baled depolluted ELVs & waste vehicle parts	Processed	As above	4.8	13	6.5	1	82	1	82	<1 week
AREA 19A & 19B	Waste tyres and alloys wheels	Removed from ELV	Free standing pile / three-sided interlocking block wall	4.8	13	7	1	91	0.75	68	<1 week



Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants



DRAWING TITLE
SITE LAYOUT & FIRE PLAN (PART 2 OF 2)

CLIENT
Assington Autos Ltd

PROJECT/SITE
The Breakers Yard, Barracks Road, Assington CO10 5LP

SCALE @ A1
1:250

CLIENT NO
3041

JOB NO
001

DRAWING NUMBER
BAR/3041/03B

REV
A

STATUS
Issued

DRAWN BY
CP

CHECKED
AAL

DATE
20.04.23

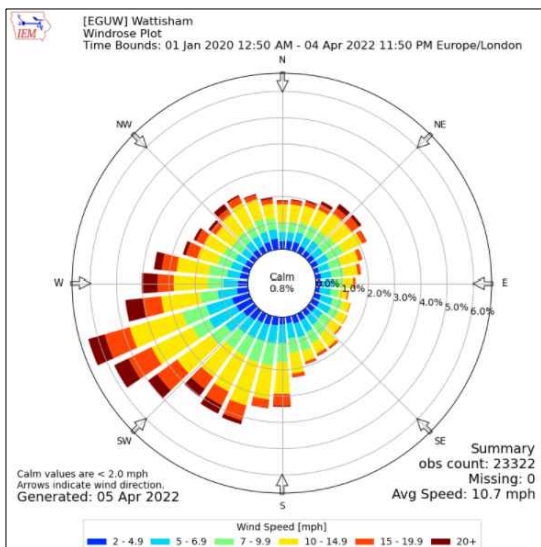
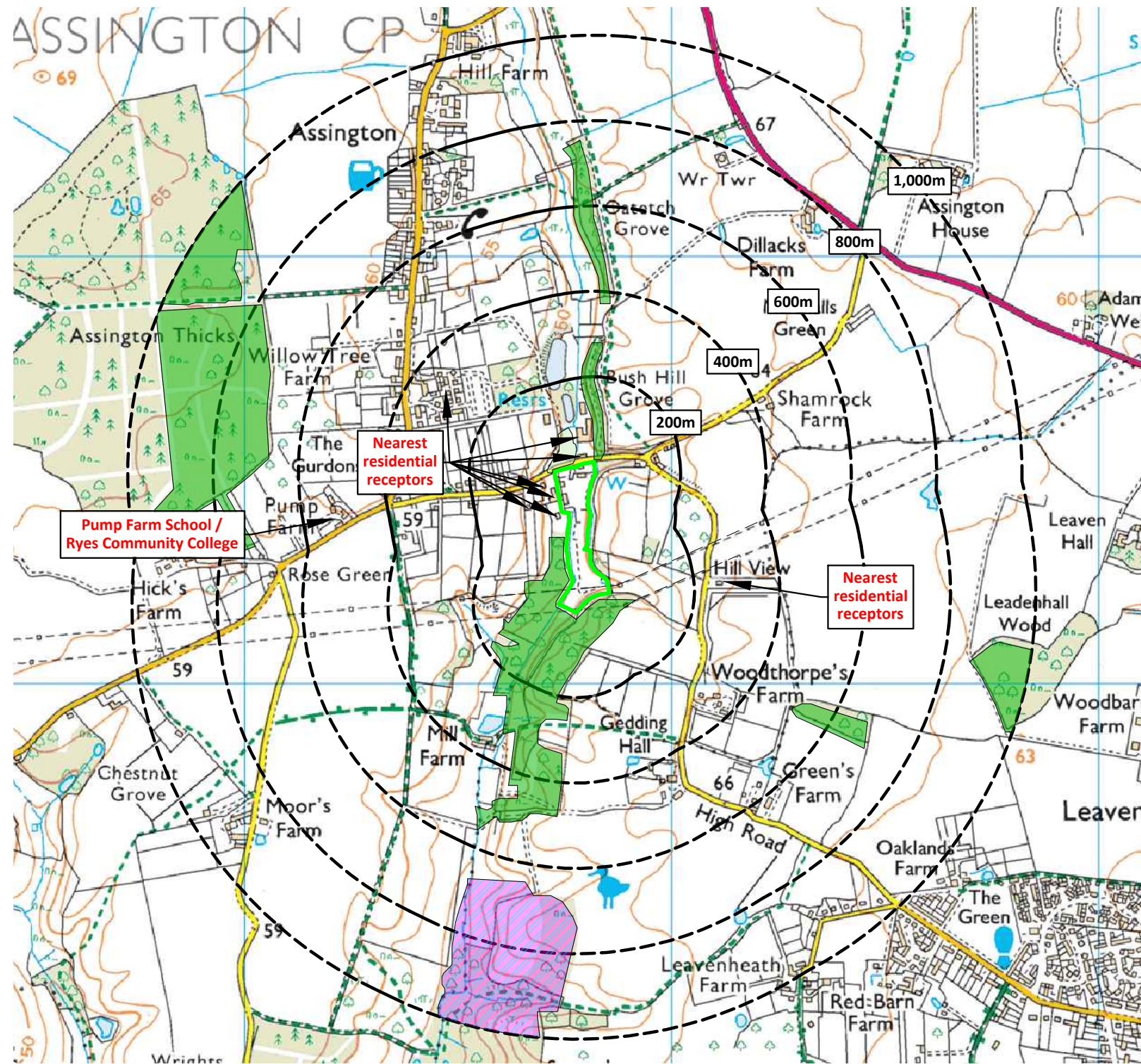
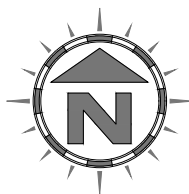
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REVISION HISTORY

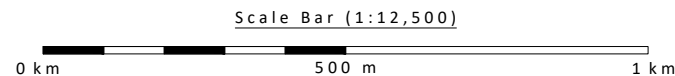
Rev:	Date:	Init:	Description:
-	07.04.22	CP	Application copy
A	20.04.23	CP	Updated site layout + infrastructure improvements

KEY:

- Permit boundary
- Surface water (river / stream / beck)
- Surface water (estuary / pond / pool / lake / resevoir)
- Areas with mix of residential, retail and commercial properties
- Workplaces (includes agriculture industry, commerce and retail)
- Class A roads
- Class B roads
- Class C roads
- Priority Habitat - Deciduous Woodland
- SSSI - Argen Fen
- 🌳 Non-protected woodland areas



Compass Wind Rose for Wattisham (EGUW)
 Period 2020 - 2022
 - source: Iowa State University



NOTES

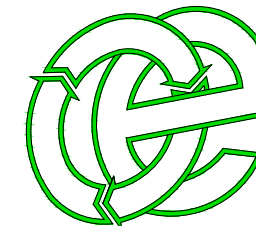
1. Boundaries are shown indicatively.
2. Wind rose data shows the prevailing wind direction to be blowing northeast from the southwest.

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REVISION HISTORY

Rev:	Date:	Init:	Description:
-	05.04.22	CP	Initial drawing

Oaktree Environmental Ltd
 Waste, Planning and Environmental Consultants



DRAWING TITLE
 RECEPTOR PLAN

CLIENT
 Assington Autos Ltd

PROJECT/SITE
 The Breakers Yard, Barracks Road, Assington
 CO10 5LP

SCALE @ A3	CLIENT NO	JOB NO
1:12,500	3041	001

DRAWING NUMBER	REV	STATUS
BAR/3041/04	-	Issued

DRAWN BY	CHECKED	DATE
CP	--	05.04.22

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Appendix III

FLOOD RISK INFORMATION & DRAINAGE STRATEGY SUBMITTED & APPROVED BY THE LOCAL PLANNING AUTHORITY

Project Number: 22-0611

Project Title: Assington Autos, Assington

Client: Assington Autos

Location: Assington Autos, Cotton Wood, Barracks Road, Assington,
Suffolk, CO10 5LP

Date: 04/05/2023

Prepared By: SCB **Checked By:** TG



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In relation to planning application DC/21/02579, Suffolk County Council as Lead Local Flood Authority (LLFA) have requested additional information regarding the drainage strategy for the proposed development. The points raised by the LLFA have been included below for reference, with our responses following each relevant point:

1. The points from the consultation reply dated Nov 2021 have not been addressed in full.

The revised Flood Risk Assessment by Innervision Design, submitted September 2022, has addressed the risk of flooding from the two small ponds to the north of the site. However, given that they are not classed as reservoirs under the Reservoir Management Act 1975, an assessment is not required to achieve planning permission.

The quality of surface water runoff has been addressed sufficiently in accordance with the Simple Index Approach of the CIRIA SuDS Manual (C753) within the BSP Consulting Drainage Statement dated 02/02/2023.

2. Applicant needs to demonstrate that the proposed attenuation basin will be located outside of fluvial flood zone 3.

The drainage strategy plan has been updated, clearly demonstrating that the proposed basin is outside of Flood Zone 3.

3. Applicant needs to demonstrate that the proposed attenuation basin will meet the LLFA min design requirements.

a. Submit a cross section of the proposed basin depicting 1:4 side slopes, 1.5m wet dry benches every 0.6m depth of water, 300-500mm of freeboard and a 3m maintenance strip

The design criteria above appear to be based upon those set out under DCG/SSG for an adoptable basin. However, the proposed basin will be privately owned and managed and will not be offered up for adoption.

The basin has been designed in accordance with CIRIA C753 and C768. As requested, a cross-section of the basin has been included, confirming freeboard of 391mm and 1:4 side slopes. However, given the space available for the basin and the required storage volume, it will not be possible to include benching. As such, and as per the designer's risk assessment point 8, it is proposed that security fencing is installed with adequate signage. These, in addition to the fact that the site has no public access, should be sufficient to ensure nothing can enter the basin.

b. Water depths shall be no greater than 1.2m, ideally no greater than 1.0m

We can confirm that the modelled peak 1 in 100-year plus 25% water level within the basin is 46.709m AOD, 0.909m in depth.

4. The applicant is proposing to use an orifice diameter less than 100mm diameter to meet the Qbar rate. Therefore, the applicant need to demonstrate how blockages will be mitigated.

Managing Director: Carl J Hilton MSc BSc(Hons) CEng MStructE MAPM

Directors: Clive Roddick BSc(Hons) CEng MICE Mark Rayers BSc(Hons) FCILT MCIHT Paul Elphick BSc(Hons) CEng MICE Tony Goddard BEng (Hons) CEng MStructE

Associate Directors: Jason Davenport BEng(Hons) MCIHT Monika Anszperger MEng CEng MStructE

Associates: Carol Ell BEng(Hons) CEng MICE James Payne Joanna Posnett BA(Hons) MCIHT Paul Hammersley BEng(Hons) CEng MStructE

Stephen Hardman BEng(Hons) IEng MICE Gareth Ellison BEng(Hons)

Derby Office: 5 Pride Point Drive, Pride Park, Derby, DE24 8BX Leicester Office: Floor 4, 24 De Montfort Street, Leicester LE1 7GB Sheffield Office: Smithy Wood House, Smithy Wood Crescent, Sheffield, S8 0NU
Breakwell Sumner Partnership Ltd. Registered Office: 12 Oxford Street, Nottingham NG1 5BG. Registered in England and Wales No. 3669014



In accordance with The CIRIA SuDS Manual (C753), orifice diameters below 100mm are sufficient. That said, we have prepared a Maintenance Record (included with this letter) detailing routine inspection and maintenance measures to be undertaken on a regular basis, ensuring the system remains free from blockage. We have also included design specifications from the manufacturer.

5. **Climate change values with the drainage strategy are proposed as 25%. Applicant will need to provide a justification for using central allowance CC of 25%.**

This has been fully covered in the BSP Consulting Drainage Statement dated 02/02/2023.

The current Environment Agency guidance for the application of climate change to surface water drainage design states that:

- For temporary uses with a lifetime of up to 2060, the central allowance for the 2050s epoch should be applied.
- For uses with a lifetime between 2061 and 2100 (generally commercial), the central allowance for the 2070s epoch should be applied.
- For uses with a lifetime beyond 2100 (generally residential), the upper end allowance for the 2070s epoch should be applied.

Note: the EA have renamed the 2070s epoch to the 2080s on the mapping, but the guidance remains the same.


The proposed commercial development will have a shorter lifetime that will not exceed 2100. Realistically, the lifetime may not exceed 2060, though as a worst case assessment it is assumed that the development will be present beyond 2061. Therefore, in accordance with the EA's guidance, the 2080s epoch central allowance for the Combined Essex Management Catchment of 25%. It would be wholly inappropriate to apply an allowance of 40% to the proposed development.

6. **Update the flood flow exceedance plan to show the exceedance routing if the basin outlet gets blocked or the basins design capacity is exceeded.**

We have updated the drainage strategy plan to include exceedance flow routing in the event of a failure, as requested.

7. **Submit a designer's risk assessment for the attenuation basin.**

Please see our designer's risk assessment included with this response (22-0611-BSP-CE00-XX-XX-D-C-P01_Design_Risk_Assessment).

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Date 04/05/2023 File 22-0611_SW_3LS 230503.MDX	Designed by Pedro Navarro Checked by PN	
Micro Drainage	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	100	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm




Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.263	4-8	0.024

Total Area Contributing (ha) = 0.287

Total Pipe Volume (m³) = 6.179

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.000	23.130	0.140	165.2	0.073	1.00	0.0	0.600	o	225	Pipe/Conduit		
2.000	17.300	0.535	32.3	0.016	1.00	0.0	0.600	o	150	Pipe/Conduit		
1.001	40.320	0.245	164.6	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit		

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	100.00	1.38	46.550	0.073	0.0	0.0	0.0	1.01	40.3	19.8
2.000	100.00	1.16	47.020	0.016	0.0	0.0	0.0	1.78	31.4	4.3
1.001	95.14	2.04	46.410	0.141	0.0	0.0	0.0	1.02	40.4	36.3

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Micro Drainage		Network 2019.1



Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
3.000	20.300	0.915	22.2	0.043	1.00	0.0	0.600	o	225	Pipe/Conduit	🔒
4.000	9.100	0.420	21.7	0.055	1.00	0.0	0.600	o	150	Pipe/Conduit	🔒
1.002	7.100	0.030	236.7	0.048	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
1.003	7.750	0.033	234.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
1.004	11.650	0.050	233.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	🔒
1.005	28.800	2.100	13.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	100.00	1.12	47.080	0.043	0.0	0.0	0.0	2.79	110.9	11.6
4.000	100.00	1.07	46.660	0.055	0.0	0.0	0.0	2.17	38.4	14.9
1.002	93.77	2.16	46.090	0.287	0.0	0.0	0.0	1.02	71.9«	72.9
1.003	92.34	2.28	46.060	0.287	0.0	0.0	0.0	1.02	72.2«	72.9
1.004	90.27	2.47	45.800	0.287	0.0	0.0	0.0	1.03	72.5«	72.9
1.005	88.46	2.65	45.750	0.287	0.0	0.0	0.0	2.73	48.3«	72.9

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
---------------------	--------------	--------------	--------------	------------------	----------	--------


1.005 45.000 43.650 0.000 0 0

Simulation Criteria for Storm

Volumetric Runoff Coeff 0.840 Additional Flow - % of Total Flow 0.000
Areal Reduction Factor 1.000 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Flow per Person per Day (l/per/day) 0.000
Manhole Headloss Coeff (Global) 0.500 Run Time (mins) 60
Foul Sewage per hectare (l/s) 0.000 Output Interval (mins) 1


Number of Input Hydrographs 0 Number of Storage Structures 1
Number of Online Controls 1 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

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12 Oxford Street Nottingham NG1 5BG	Assington Autos	
Date 04/05/2023 File 22-0611_SW_3LS 230503.MDX	Designed by Pedro Navarro Checked by PN	
Micro Drainage	Network 2019.1	

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	15
Ratio R	0.341		

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Micro Drainage	Network 2019.1	

Online Controls for Storm


Hydro-Brake® Optimum Manhole: 5, DS/PN: 1.005, Volume (m³): 5.1

Unit Reference	MD-SCL-0077-3000-1100-3000
Design Head (m)	1.100
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise blockage risk
Application	Surface
Sump Available	Yes
Diameter (mm)	77
Invert Level (m)	45.750
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.100	3.0
Flush-Flo™	0.273	3.0
Kick-Flo®	0.614	2.3
Mean Flow over Head Range	-	2.6

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	2.4	1.200	3.1	3.000	4.8	7.000	7.1
0.200	2.9	1.400	3.3	3.500	5.1	7.500	7.3
0.300	3.0	1.600	3.6	4.000	5.4	8.000	7.5
0.400	2.9	1.800	3.8	4.500	5.7	8.500	7.7
0.500	2.7	2.000	3.9	5.000	6.0	9.000	8.0
0.600	2.4	2.200	4.1	5.500	6.3	9.500	8.2
0.800	2.6	2.400	4.3	6.000	6.6		
1.000	2.9	2.600	4.4	6.500	6.8		


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Micro Drainage	Network 2019.1	

Storage Structures for Storm

Tank or Pond Manhole: 4, DS/PN: 1.004

Invert Level (m) 45.800

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	66.0	1.300	340.0

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12 Oxford Street Nottingham NG1 5BG	Assington Autos	
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Micro Drainage	Network 2019.1	

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 1
Number of Online Controls 1 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details


Rainfall Model FSR Ratio R 0.343
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 25


PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Summer	2	+0%	30/15 Summer	100/15 Summer		
2.000	2	15 Summer	2	+0%	100/15 Summer			
1.001	2	15 Summer	2	+0%	30/15 Summer			
3.000	3	15 Summer	2	+0%				
4.000	4	15 Summer	2	+0%	100/15 Summer			
1.002	3	15 Summer	2	+0%	30/15 Summer			
1.003	7	15 Summer	2	+0%	30/15 Summer			
1.004	4	120 Winter	2	+0%	2/60 Winter			
1.005	5	120 Winter	2	+0%	2/15 Summer			

PN	US/MH Name	Water Surcharged			Flooded		Pipe		Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)	Pipe Flow (l/s)	Status	
1.000	1	46.666	-0.109	0.000	0.43		16.1	OK	1
2.000	2	47.058	-0.112	0.000	0.13		3.9	OK	

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)				
1.001	2	46.549	-0.086	0.000	0.63		24.0	OK		
3.000	3	47.130	-0.175	0.000	0.11		10.6	OK		
4.000	4	46.729	-0.081	0.000	0.40		13.5	OK		
1.002	3	46.320	-0.070	0.000	0.94		49.2	OK		
1.003	7	46.285	-0.075	0.000	0.89		47.8	OK		
1.004	4	46.124	0.024	0.000	0.08		4.8	SURCHARGED		
1.005	5	46.154	0.254	0.000	0.06		3.0	SURCHARGED		

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Micro Drainage	Network 2019.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 1
Number of Online Controls 1 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details


Rainfall Model FSR Ratio R 0.343
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600,
720, 960, 1440, 2160, 2880, 4320, 5760,
7200, 8640, 10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 25

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) SurchARGE	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Summer	30	+0%	30/15 Summer	100/15 Summer		
2.000	2	15 Summer	30	+0%	100/15 Summer			
1.001	2	15 Summer	30	+0%	30/15 Summer			
3.000	3	15 Summer	30	+0%				
4.000	4	15 Summer	30	+0%	100/15 Summer			
1.002	3	15 Summer	30	+0%	30/15 Summer			
1.003	7	15 Summer	30	+0%	30/15 Summer			
1.004	4	240 Winter	30	+0%	2/60 Winter			
1.005	5	240 Winter	30	+0%	2/15 Summer			

PN	US/MH Name	Water Surcharged Flooded			Pipe		Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)		
1.000	1	46.979	0.204	0.000	0.78	28.9	SURCHARGED	1
2.000	2	47.073	-0.097	0.000	0.25	7.4	OK	

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Micro Drainage	Network 2019.1	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Water		Surcharged		Flooded		Pipe	
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)	Flow (l/s)	Status	Level Exceeded
1.001	2	46.905	0.270	0.000	1.13	43.2	SURCHARGED		
3.000	3	47.150	-0.155	0.000	0.20	20.2	OK		
4.000	4	46.776	-0.034	0.000	0.75	25.5	OK		
1.002	3	46.566	0.176	0.000	1.65	85.9	SURCHARGED		
1.003	7	46.438	0.078	0.000	1.63	87.2	SURCHARGED		
1.004	4	46.411	0.311	0.000	0.07	4.3	SURCHARGED		
1.005	5	46.440	0.540	0.000	0.06	3.0	SURCHARGED		

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	1
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.343
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.000	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 0, 25

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
1.000	1	15 Summer	100	+25%	30/15 Summer	100/15 Summer		
2.000	2	15 Summer	100	+25%	100/15 Summer			
1.001	2	15 Summer	100	+25%	30/15 Summer			
3.000	3	15 Summer	100	+25%				
4.000	4	15 Summer	100	+25%	100/15 Summer			
1.002	3	15 Summer	100	+25%	30/15 Summer			
1.003	7	360 Winter	100	+25%	30/15 Summer			
1.004	4	360 Winter	100	+25%	2/60 Winter			
1.005	5	480 Winter	100	+25%	2/15 Summer			

PN	US/MH Name	Water			Surcharged		Flooded		Pipe Flow (l/s)	Pipe Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)					
1.000	1	47.750	0.975	0.035	1.03	38.1	FLOOD	1			
2.000	2	47.702	0.532	0.000	0.32	9.2	SURCHARGED				

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Date 04/05/2023 File 22-0611_SW_3LS 230503.MDX		Designed by Pedro Navarro Checked by PN
Micro Drainage		Network 2019.1



100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water		Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Level (m)	Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Flow (l/s)				
1.001	2	47.643	1.008	0.000	1.66	63.8	FLOOD RISK			
3.000	3	47.171	-0.134	0.000	0.33	32.7	OK			
4.000	4	47.355	0.545	0.000	0.97	32.7	SURCHARGED			
1.002	3	46.914	0.524	0.000	2.56	133.6	SURCHARGED			
1.003	7	46.711	0.351	0.000	0.42	22.3	SURCHARGED			
1.004	4	46.709	0.609	0.000	0.08	4.7	SURCHARGED			
1.005	5	46.814	0.914	0.000	0.06	3.0	SURCHARGED			

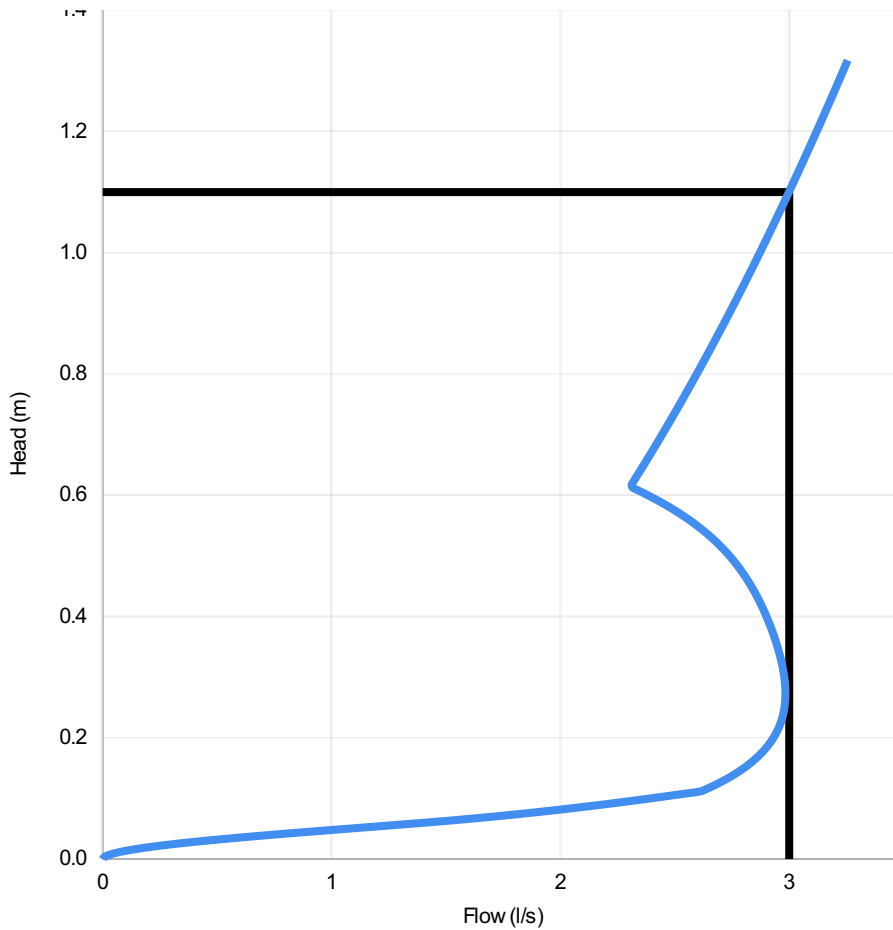
Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	1.100	3.000
Flush-Flo	0.273	2.983
Kick-Flo®	0.614	2.304
Mean Flow		2.594



PT/329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.038	0.670
0.076	1.858
0.114	2.628
0.152	2.808
0.190	2.912
0.228	2.965
0.266	2.983
0.303	2.977
0.341	2.955
0.379	2.923
0.417	2.880
0.455	2.826
0.493	2.755
0.531	2.658
0.569	2.525
0.607	2.346
0.645	2.356
0.683	2.417
0.721	2.477
0.759	2.535
0.797	2.591
0.834	2.646
0.872	2.700
0.910	2.752
0.948	2.803
0.986	2.854
1.024	2.903
1.062	2.951
1.100	2.999

DESIGN ADVICE

The head/flow characteristics of this SCL-0077-3000-1100-3000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.



The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.



DATE	03/05/2023 14:27
Site	Assington Autos
DESIGNER	Pedro Navarro
Ref	AAAS-BSP-ZZ-ZZ-DR-C-FC

SCL-0077-3000-1100-3000
Hydro-Brake Optimum®

Risk Assessment for Design



Assessment Details					
Project Name	Assington Autos	Project Number	22-0611	Revision	P01
Client	Assington Autos Ltd	Project Description	Change of use of land to extend an Authorised Treatment Facility (Salvage yard).		
Client Address	The Breakers Yard, Barracks Rd, Assington CO10 5LP				
Site Address	The Breakers Yard, Barracks Rd, Assington CO10 5LP	Activity	Construction of 5 n. storage buildings and other associated operational works		
Activity to be performed by	Main Contractor	Date			
Assessed By	FE	Date	04-05-2023		
Reviewed By	PN	Date	04-05-2023		
Construction (Design & Management) Regulations 2015					

Risk Assessment for Design



Ref No.	Activity/ Element	Potential Hazard	Persons at Risk	Risk Rating L = Likelihood S = Severity R = Risk (Low/Medium/High)			Action at Design Stage	Will Risk Be Adequately Controlled by Design Measures & Contractor's Normal Controls?	Issues Requiring Special Controls or Consideration by the Contractor
				L	S	R			
1.	Site Set Up	Unauthorized Access to Site	General Public	H	M	M	Ensure site is reasonably secure at all times.	Yes	None
2.	Site Traffic	Contact with moving vehicles / plant	All Operatives	M	H	H	Control all movements. Separation of pedestrians / vehicles if possible Communication and cooperation required between all sites.	Yes	None
3.	Access Routes through site	Obstructed Access Unprotected Construction Area	All Operatives	M	M	M	Clear signage. Adequate protection/guarding	Yes	None
4.	Existing Services	Existing services exposed and cut	All Operatives	M	H	M	Check existing service record drawings. Existing services to be traced and made safe before starting work.	Yes	None
5.	Ground Contamination	Hazardous Materials	All Operatives	M	H	M	Refer to site investigation reports and soil testing data.	Yes	None
6.	Earthworks	Hazardous materials / gases.	All Operatives	M	H	M	Refer to ground investigation report for details of sub-strata, hazardous materials	Yes	None
7.	Deep Excavations	Danger of Collapse. Falls.	All Operatives	M	M	M	Adequate trench support and edge protection. Plant kept suitable distance away.	Yes	None
8.	Attenuation basin	Danger of falls	All Operatives	M	M	L	Fence around the basin. Clear signage. Adequate protection / guarding	Yes	Protective fence around the basin to remain in place during its use.

Risk Assessment for Design



Ref No.	Activity/Element	Potential Hazard	Persons at Risk	Risk Rating L = Likelihood S = Severity R = Risk (Low/Medium/High)			Action at Design Stage	Will Risk Be Adequately Controlled by Design Measures & Contractor's Normal Controls?	Issues Requiring Special Controls or Consideration by the Contractor
				L	S	R			
9.	Deep Excavations	Site water collecting in excavations	All Operatives	M	M	M	Use of sumps and pumps to discharge water collecting to avoid softening/deterioration of sub grade.	Yes	None

Technical Specification

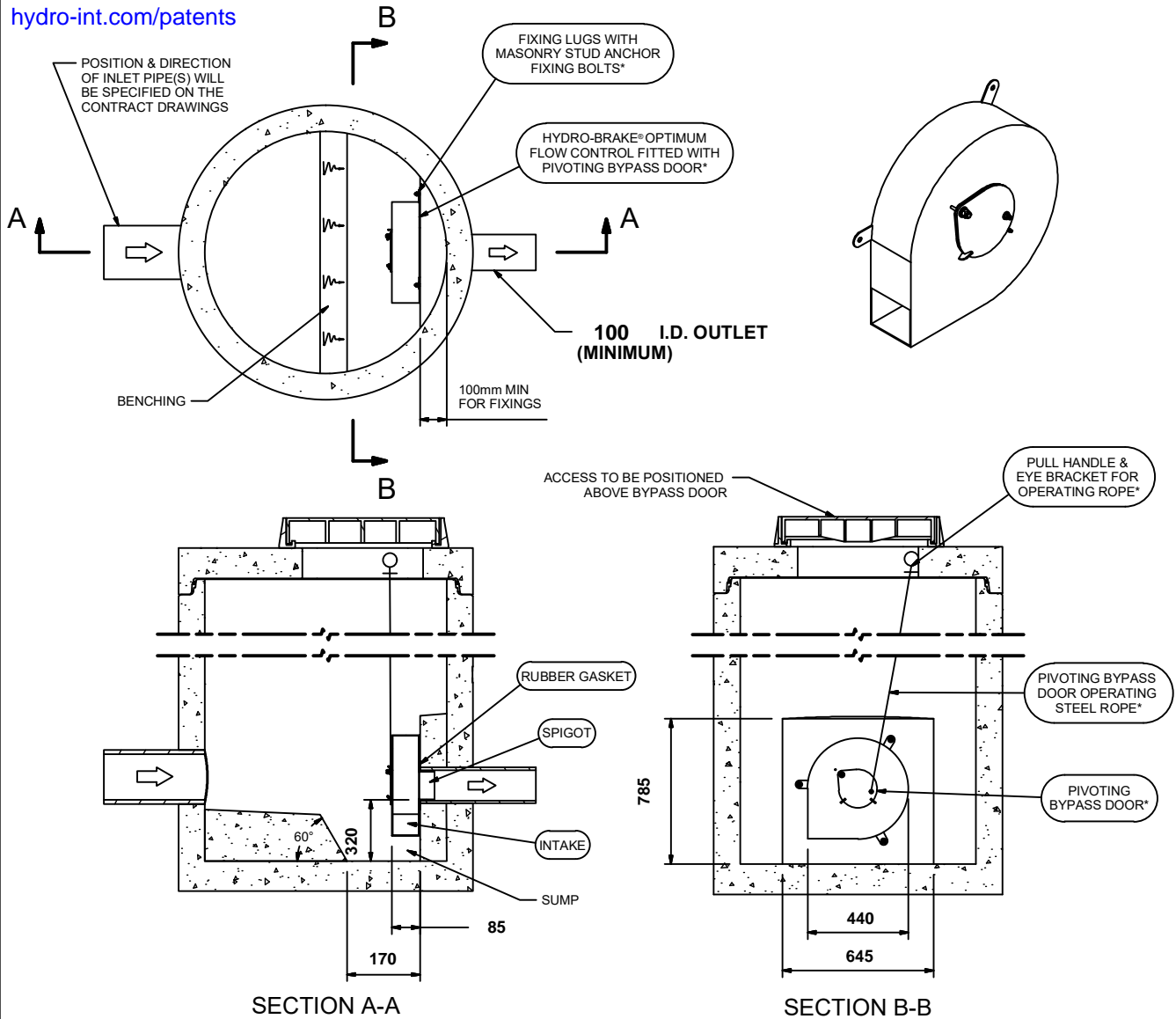
Control Point	Head (m)	Flow (l/s)
Primary Design	1.100	3.000
Flush-Flo™	0.273	2.983
Kick-Flo®	0.614	2.304
Mean Flow		2.594

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 10 kg



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IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE



The head/flow characteristics of this SCL-0077-3000-1100-3000 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

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 International®

DATE 03/05/2023 14:27

SITE Assington Autos

DESIGNER Pedro Navarro

REF AAAS-BSP-ZZ-ZZ-DR-C-FC

SCL-0077-3000-1100-3000

Hydro-Brake® Optimum

Project Number: 22-0611

Project Title: Assington Autos, Assington

Client: Assington Autos Ltd

Location: The Breakers Yard, Barracks Road, Assington, Suffolk

Date: 02/02/2023

Prepared By: AKS **Checked By:** SCB



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Nottingham
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Drainage Statement

1.0 Introduction

- 1.1.1 This Drainage Statement has been prepared in accordance with the Department for Communities and Local Government (DCLG) publication 'Technical Guidance to the National Planning Policy Framework, published in July 2018 and updated in July 2021, and according to best practice guidance. For and on behalf of Assington Autos Ltd.
- 1.1.2 The proposed development site is located within Suffolk, just to the east of the village of Assington, centred on OSNGR 593792E, 237376N. The site, shown by the red boundary in Figure 1.1 below, occupies an approximate area of 1.5ha.



Figure 1.1 Assington Autos, Assington
– Site Location

- 1.1.3 The northern area of the site is currently occupied by the existing Assington Autos car recycling facility, with concrete hardstanding, gravel and existing buildings covering most of the land; the southern area of the site comprises a grassed field at present. Two existing drainage ditches run adjacent to the western and eastern boundaries of the site, with a bund present along the lefthand bank of the western ditch. A topographical survey of the site has been included in **Appendix A**, with the existing site plan included in **Appendix B**. Existing ground levels on-site are generally flat with a very gentle fall across the southern half of the site from east to west.

2.0 Existing Drainage Regime

- 2.1.1 The site is situated within a local low spot, within the valley of Unnamed Watercourse A, meaning surface water runoff from the north and east of the catchment drain towards this site, via both drainage ditches. Unnamed Watercourse B drains along the eastern boundary of the site, falling from both north and south towards the middle of the site, where it then runs across the site via two culverts, both of which outfall into Unnamed Watercourse A. Unnamed Watercourse A drains along the western boundary of the site in a southerly direction, eventually discharging into the River Stour approximately 4.3km to the southeast of the site.
- 2.1.2 With regards to the site itself, as the southern half of the site is currently an undeveloped grass field, surface water runoff from this area of the site currently drains to ground at source, with any rainfall exceeding the drainage capacity of the soils running overground towards the west of the site, through a purposeful low point in the western bund on-site, towards Unnamed Watercourse A. The existing concrete hardstanding areas to the north of the site are sloped to fall towards collection grids which lead to large underground sealed storage tanks. These tanks ensure no contaminants (e.g. oils) are allowed to wash into the drainage ditches or leach into the ground. The tanks are regularly emptied by 645 Services Limited, who specialise in the processing and recycling of waste oil. The current gravel storage areas on-site are permeable and therefore, continue to drain to ground as surface water runoff from these areas of the site are uncontaminated.

3.0 Development Description

- 3.1.1 The proposed development comprises the change of use of land to extend an Authorised Treatment Facility, new storage buildings and associated operational works. The extension of the current Assington Autos site will involve the creation of a new access road, vehicle maintenance building, and three covered sheds, along with new concrete hardstanding. The proposed site plan is included in **Appendix C**.

4.0 Climate Change

- 4.1.1 The implications of climate change should be taken into account in relation to surface water drainage. The updated planning practice guidance to the NPPF on Flood Risk and Coastal Change recommends that non-residential development, such as the proposed, should be considered to have a minimum lifetime of 75 years, unless otherwise stated. Therefore, for the purpose of this assessment the development is assumed to have a lifetime of 75 years.
- 4.1.2 Guidance from the EA advises that for developments with a lifetime between 2061 and 2100, such as the proposed, the central allowances for the 2070s epoch for both the 1 in 30-year (3.3% AEP) and 1 in 100-year (1% AEP) events should be assessed, with the development designed to ensure that there is no increase in flood risk elsewhere and the

development will be safe from surface water flooding during the 1 in 100-year event when the central allowance for climate change is applied. In this instance, peak rainfall intensity for longer lifetime non-residential developments within the Combined Essex Management Catchment is estimated to increase by 20% for the 3.3% AEP event and 25% for the 1% AEP event. Therefore, it is recommended that the central allowance of 25% is applied to design rainfall intensity to allow for the potential implications of climate change.

5.0 Existing Surface Water Runoff Assessment

5.1.1 Of the 1.5ha site, 0.9ha is currently developed, with 0.6ha to the south of the site currently undeveloped. Of this undeveloped area, 0.12ha is proposed to be drained to the sealed storage tanks, 0.02ha is to comprise gravel, 0.23ha is to be left undeveloped, and 0.29ha is to comprise new impermeable area which will need a positive discharge from the site.

5.1.2 Therefore, for the purpose of this runoff assessment, the ICP SUDS and IH124 (Flood Studies Report) methods have also been used to calculate the surface water runoff from the 0.29ha greenfield area of the site which is proposed to be hard paved and requires a positive discharge; this methodology is detailed below:

$$QBAR_{RURAL} = 0.00108 \times (0.01 \times AREA)^{0.89} \quad \text{Where} \quad AREA = \quad \text{Area (ha)}$$

$$\times SAAR^{1.17} \times SPR^{2.17}$$

SAAR = Standard Average Annual Rainfall (mm, 1941-1970)

SPR = Standard Percentage Runoff Coefficient

5.1.1 With an area of 0.29ha and using Flood Studies Report values for SAAR (600mm) and SPR (0.400), this results in a $QBAR_{RURAL}$ rate of **0.8l/s** and discharge rates for the following return periods:

1 in 1-year	0.7l/s
1 in 30-year	1.9l/s
1 in 30-year + 20% Climate Change	2.3l/s
1 in 100-year	2.6l/s
1 in 100-year + 25% Climate Change	3.3l/s

5.1.2 The above greenfield runoff calculation is provided in **Appendix D**.

6.0 Proposed Surface Water Discharge Rate

6.1.1 In accordance with DEFRA guidance, the peak surface water runoff rate for greenfield developments should be restricted to the pre-development discharge rate where reasonably practicable. However, in this instance restricting to 0.8l/s will result in an orifice which would be at high risk of blockage. Therefore, in line with best practice, in order to maintain a minimum orifice diameter of 75mm, the proposed flow control will be set to a minimum of **3.0l/s**.

7.0 Surface Water Drainage Proposals

- 7.1.1 The proposed development will comprise on an impermeable footprint of approximately 0.41ha; however, as previously discussed, 0.12ha of the new impermeable surfaces will drain to the existing sealed surface tanks to avoid any contamination of surface water drainage ditches and groundwater. As a greater impermeable area is proposed to drain to these tanks, suitable arrangements should be made with 645 Services Limited to ensure the tanks are emptied more frequently. For the 0.29 area of the site which is to be positively drained in order to maintain the discharge rate of **3.0l/s** for all storms up to and including the 100-year return period with a 25% allowance for climate change, attenuation is required which provides in the order of **240.8m³** of surface water storage. The required surface water attenuation volume should be provisioned by 1.8m deep private storage basin, which outfalls to Unnamed Watercourse A to the west of the site. Surface water runoff from the uncontaminated area of the site will be collected by a series of linear drains and will pass through an oil separator prior to reaching the proposed attenuation basin.
- 7.1.2 As a new 4.8m high concrete panel wall is proposed adjacent to the existing bund to the west of the site, there is a risk that surface water runoff from the bund itself could become trapped and undermine the wall. Therefore, it is proposed to install a new land drain along the length of the wall to collect surface water from the bottom of the bund, directing flows towards the proposed basin.
- 7.1.3 An impermeable areas plan, surface water drainage strategy plan, supporting calculations and an exceedance flow plan are provided in **Appendix E**.
- 7.1.4 The proposed surface water drainage strategy will be subject to agreement with Suffolk County Council as Lead Local Flood Authority (LLFA).

7.2 Water Quality

Simple Index Approach

- 7.2.1 In order to determine whether the proposed SuDS features for the development will be sufficient at removing pollutants from surface water runoff, the CIRIA SuDS Manual (2015) Simple Index Approach has been applied. This approach provides pollution hazard levels and indices to relevant pollutants based upon contributing hardstanding surfaces.
- 7.2.2 Table 7.1 below provides an extract of the land use types and pollutant indices from the CIRIA SuDS Manual which are relevant to the proposed development.

Table 7.1: Pollution hazard indices for different land use classifications (Source: CIRIA SuDS Manual 2015)

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2	0.05
Commercial yard and delivery areas, non-residential car parking with frequent change, all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7

Sites with heavy pollution sites where chemicals and fuels are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways	High	0.8	0.8	0.9
--	------	-----	-----	-----

7.2.3 Based upon the above, the worst case indices for the development are 0.8 (Total Suspended Solids), 0.8 (Metals) and 0.9 (Hydrocarbons). However, areas of the site which have a high pollution hazard level are proposed to drain to sealed storage tanks which are regularly emptied by 645 Services Limited. As such, for the proposed positively drained areas of the site which will outfall at a restricted rate to Unnamed Watercourse A, the worst case indices are 0.7 (Total Suspended Solids), 0.6 (Metals) and 0.7 (Hydrocarbons).

7.2.4 Table 7.2 below indicates the mitigation indices for different types of SuDS components, with only those relevant to the development included. Under the Simple Index Approach, in order to suitably mitigate surface water pollutants, the total combined indices for any SuDS components will need to be greater than the worst case indices above. Where multiple SuDS components are proposed, the primary component is given its full indices, while subsequent component indices are applied with a factor of 50%.

Table 7.2: Indicative SuDS mitigation indices for discharges to surface waters (Source: CIRIA SuDS Manual 2015)

Type of SuDS Component	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Detention Basin	0.5	0.5	0.6
Proprietary Treatment Systems	These must demonstrate that they can address each of the contaminant types to acceptable levels for frequent events up to approximately the 1 in 1 year return period event, for inflow concentrations relevant to the contributing drainage area.		

7.2.6 Based upon the above, the proposed detention basin on its own cannot provide the required level of surface water treatment. However, as all surface water runoff is to pass through a suitable oil separator upstream of the basin, any surface water leaving the site will be suitably clean.

7.3 Maintenance

7.3.1 The proposed surface water drainage system will require routine maintenance to ensure it remains fully operational and effective. The proposed attenuation basin will be maintained by site management and should be inspected and maintained in accordance with the proposed maintenance schedule included in **Appendix F**.

8.0 Recommendations

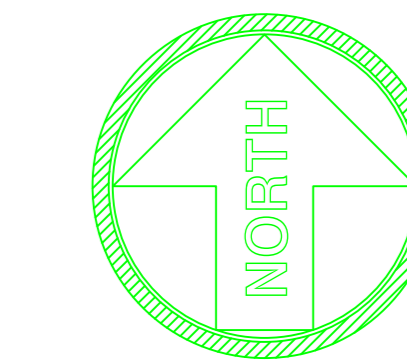
The following recommendations are made to ensure flood risk at this site is minimised:

- The proposed surface water drainage system should be designed to accommodate the 1 in 30-year rainfall event without any surface water flooding and should be capable of retaining the 1 in 100-year plus climate change (25%) storm event on site without flooding any buildings.
- For the purpose of this report it has been assumed that soakaways or similar will not be viable.
- It is proposed to restrict surface water runoff to **3.0l/s** for all storms up to and including 100-year plus 22% climate change return periods. In order to achieve this discharge rate an attenuation volume in the order of **240.8m³** will need to be provided.
- The required surface water storage volume should be provided by a 1.8m deep attenuation basin before restricted discharge to Unnamed Watercourse A to the east of the site. All surface water should pass through an oil interceptor before reaching the proposed attenuation basin.

Appendix A

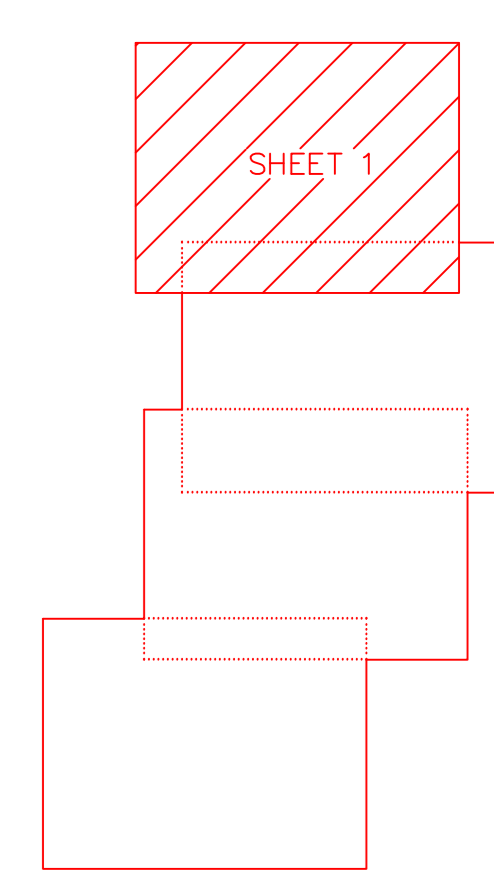
Topographical Survey

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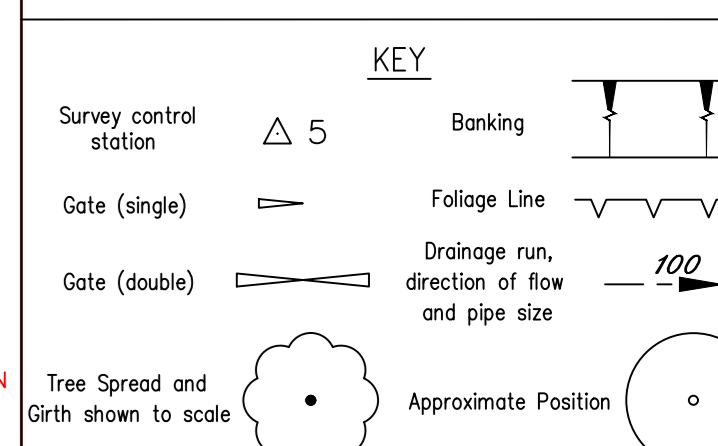


Station	Co-ordinate Table	Easting	Northing	Level
1	59374.427	237500.343	47.249	
2	59374.427	237500.343	47.249	
3	59374.884	237500.900	47.540	
4	59376.637	237475.895	47.090	
5	59376.497	237458.177	47.229	

All levels related to Ordnance Survey active GPS network of survey station 3.



DISCLAIMERS
This survey is related to OSGB36(15) coordinate system by GPS 'rapid static' methods. No scale factor has been applied to the survey information. All horizontal distances taken from this drawing are ground distances.
Every effort has been made to confirm tree species on site, yet it is advised to confirm these details with an arborist before proceeding with any design.



ABBREVIATIONS

AMU	Water Meter	WM
BB	Level Level	LL
BD	Ridge Level	RL
BH	Roof Level	RFL
BT	Soffit Level	SFL
CTV	Threshold Level	THL
DC	Parapet Wall Level	PWL
EC	Finished Floor Level	FFL
EP	Head Level	HL
ER	Sill Level	SL
FH	Cover Level	CL
GV	Invert Level	IL
GP	No. Visible Pipes	NVP
GY	Unable to Lift	UL
FW	Foot Water	FW
IC	Junction Box	JB
IS	Surface Water	SW
LP	Brick Pavers	BP
MH	Concrete	CON
MK	Concrete Paving Slabs	CPS
F	Flower Bed	F/B
PE	Shrub Bed	S/B
RS	Tactile Paving	TAC
RS	Unsurfaced	USF
SP	Brick Wall	BW
SP	Retaining Wall	RW
SV	Obstacle Fence	OF
ST	Chestnut Paling Fence	CPF
TP	Iron Rolling Fence	IRF
TL	Metal Security Fence	MSF
VP	Post and Chain Fence	PCF
PPF	Post and Rail Fence	PPF
WPF	Wooden Panel Fence	WPF

Client
ASSINGTON AUTOS

Project
ASSINGTON AUTOS, BARRACKS ROAD, CO10 5LP.

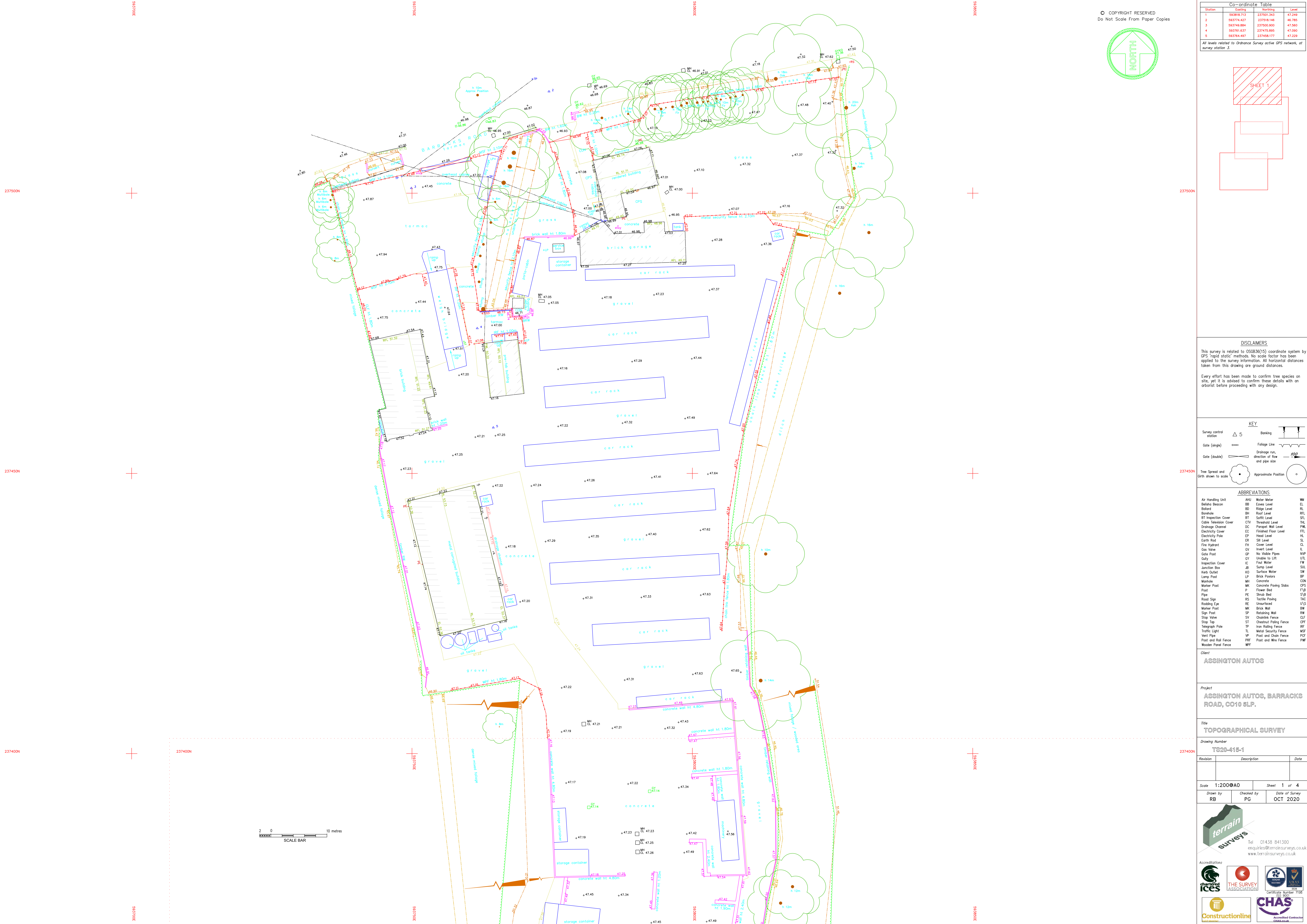
Title
TOPOGRAPHICAL SURVEY

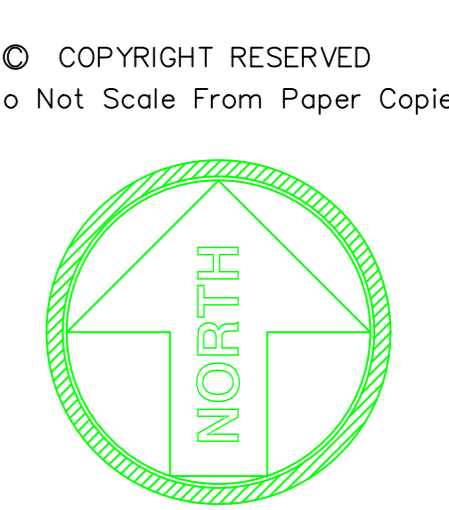
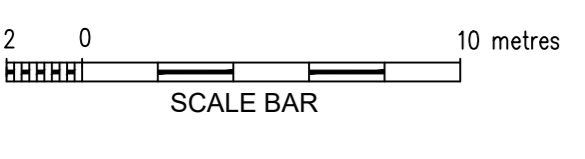
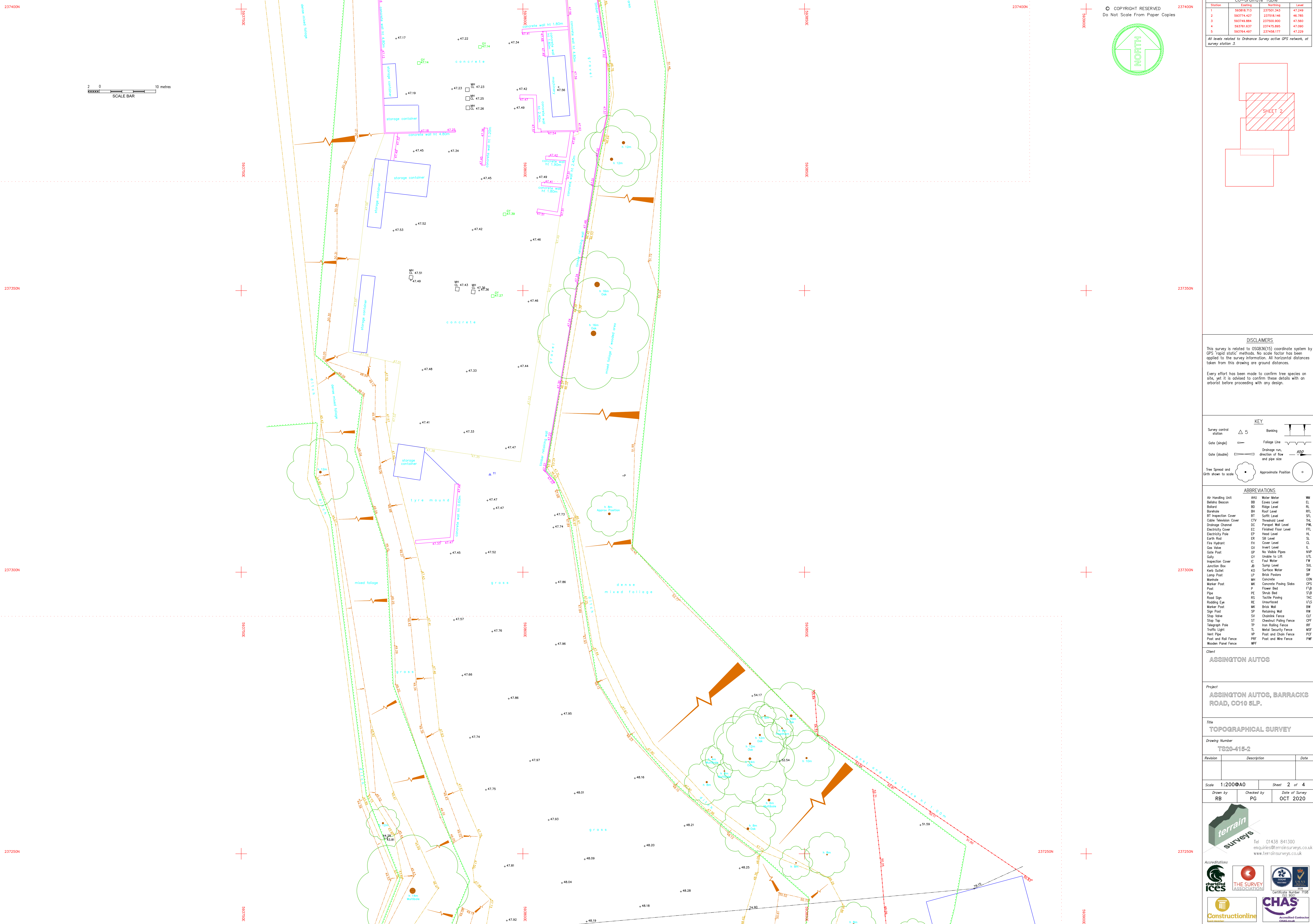
Drawing Number
TS20-615-1

Revision	Description	Date

Scale: **1:200@A0** Sheet: **1 of 4**

Drawn by	Checked by	Date of Survey
RB	PG	OCT 2020

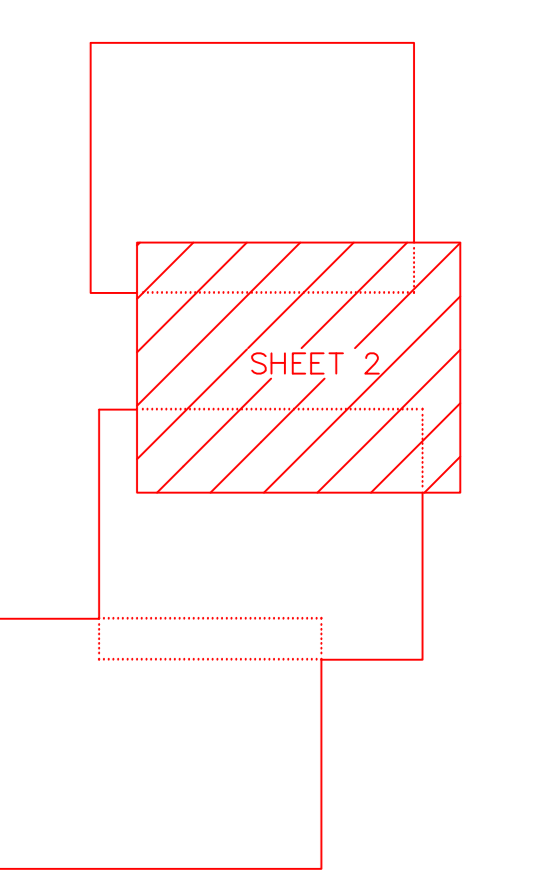




Co-ordinate Table

Station	Easting	Northing	Level
1	59374.713	237501.343	47.249
2	59374.427	237516.146	46.785
3	59374.884	237500.900	47.560
4	59376.637	237475.895	47.090
5	59376.497	237458.177	47.229

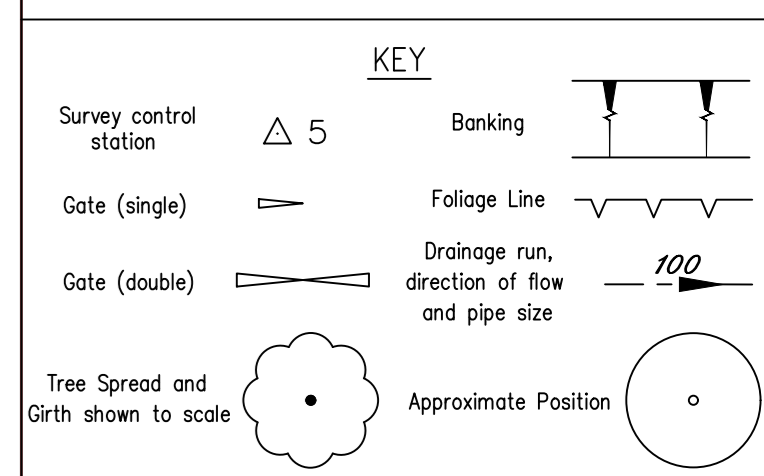
All levels related to Ordnance Survey active GPS network of survey station 3.



DISCLAIMERS

This survey is related to OSGB36(15) coordinate system by GPS 'rapid static' methods. No scale factor has been applied to the survey information. All horizontal distances taken from this drawing are ground distances.

Every effort has been made to confirm tree species on site, yet it is advised to confirm these details with an arborist before proceeding with any design.



ABBREVIATIONS

AMU	Water Meter	WM
BB	Level Level	LL
BD	Ridge Level	RL
BH	Roof Level	RFL
BT	Soffit Level	SFL
CTV	Threshold Level	THL
DC	Parapet Wall Level	PWL
EC	Finished Floor Level	FFL
EP	Head Level	HL
ER	Sill Level	SL
FH	Cover Level	CL
GV	Invert Level	IL
GP	No. Visible Pipes	NVP
GY	Unable to Lift	UTL
FW	Foot Note	FN
IC	Sump Level	SUL
KB	Surface Water	SW
LP	Brick Paviors	BP
MH	Concrete	CON
MK	Concrete Paving Slabs	CPS
P	Flower Bed	F/B
PE	Shrub Bed	S/B
RS	Tactile Paving	TAC
RS	Unsurfaced	UNS
SP	Relating Wall	RW
SV	Obstacle Fence	OF
ST	Chestnut Paling Fence	CPF
TP	Iron Rolling Fence	IRF
TL	Metal Security Fence	MSF
VP	Post and Chain Fence	PCF
WF	Post and Wire Fence	PWF
WF	Wooden Panel Fence	WPF

Client
ASSINGTON AUTOS

Project
ASSINGTON AUTOS, BARRACKS ROAD, CO10 5LP.

Title
TOPOGRAPHICAL SURVEY

Drawing Number
TS20-615-2

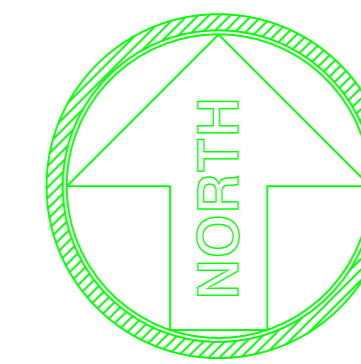
Revision	Description	Date

Scale: **1:200@A0** Sheet: **2 of 4**

Drawn by: **RB** Checked by: **PG** Date of Survey: **OCT 2020**

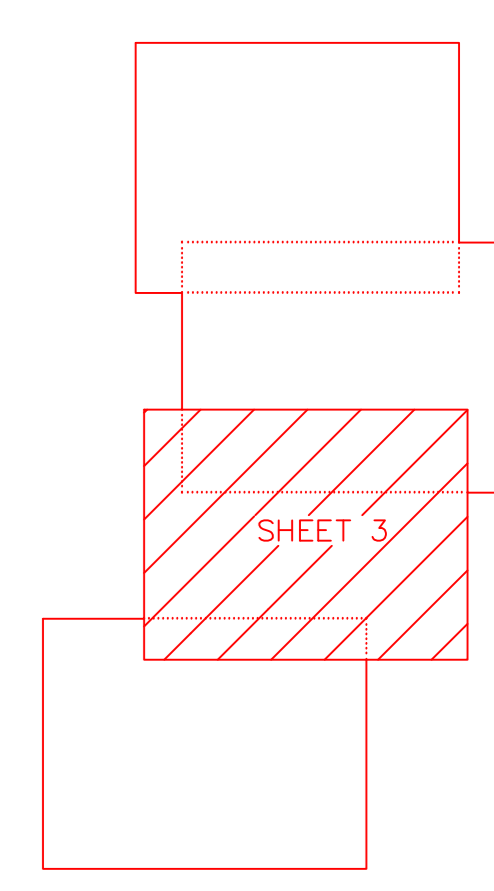


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Station	Co-ordinate Table	Easting	Northing	Level
1	59374.427	237501.343	47.249	
2	59374.427	237501.343	46.785	
3	59374.884	237500.900	47.560	
4	593761.637	237475.895	47.090	
5	593764.497	237458.177	47.229	

All levels related to Ordnance Survey active GPS network of survey station 3.

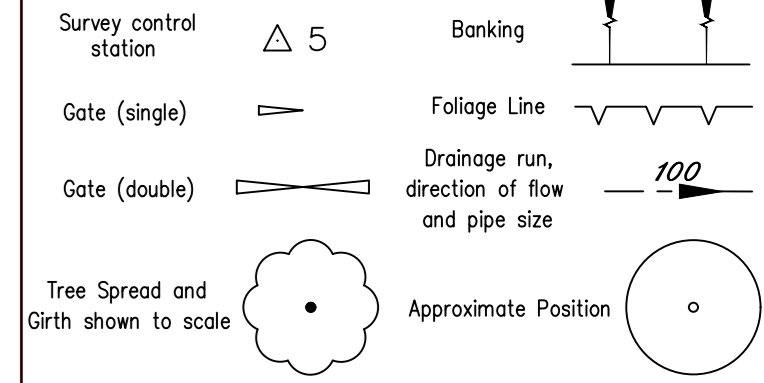


DISCLAIMERS

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KEY



ABBREVIATIONS

AMU	Water Meter	WM
BB	Level Level	LL
BD	Ridge Level	RL
BH	Roof Level	RFL
BT	Soffit Level	SL
CTV	Threshold Level	TL
DC	Parapet Wall Level	PWL
EC	Finished Floor Level	FFL
EP	Head Level	HL
ER	Sill Level	SL
FH	Cover Level	CL
GV	Invert Level	IL
GP	No. Visible Pipes	NVP
GY	Unable to Lift	UTL
FW	Foot Water	FW
IS	Sump Level	SUL
IC	Surface Water	SW
JB	Brick Paviors	BP
KB	Concrete	CON
KO	Concrete Paving Slabs	CPS
LP	Flower Bed	F/B
LP	Shrub Bed	S/B
LP	Tactile Paving	TAC
LP	Unsurfaced	UNS
LP	Brick Wall	BW
LP	Retaining Wall	RW
LP	Chalkline Fence	CLF
LP	Overhaul Paving Fence	OPF
LP	Iron Rolling Fence	IRF
LP	Metal Security Fence	MSF
LP	Post and Chain Fence	PCF
LP	Post and Rail Fence	PRF
LP	Post and Wire Fence	PWF
LP	Wooden Panel Fence	WPF

Client

ASSINGTON AUTOS

Project
ASSINGTON AUTOS, BARRACKS ROAD, CO10 5LP.

Title
TOPOGRAPHICAL SURVEY

Drawing Number
TS20-415-3

Revision	Description	Date

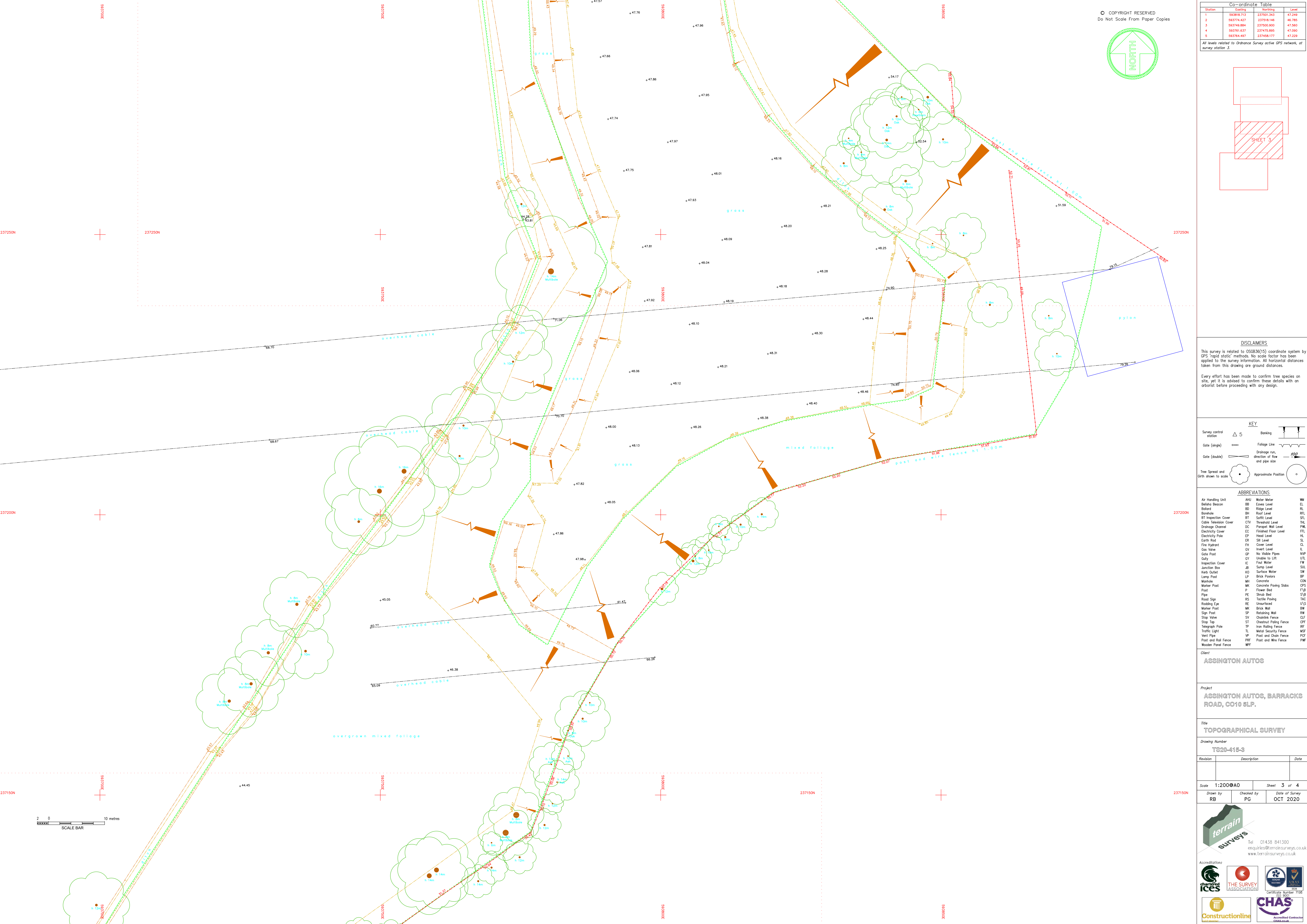
Scale	Sheet	Date of Survey
1:200@A0	3 of 4	OCT 2020

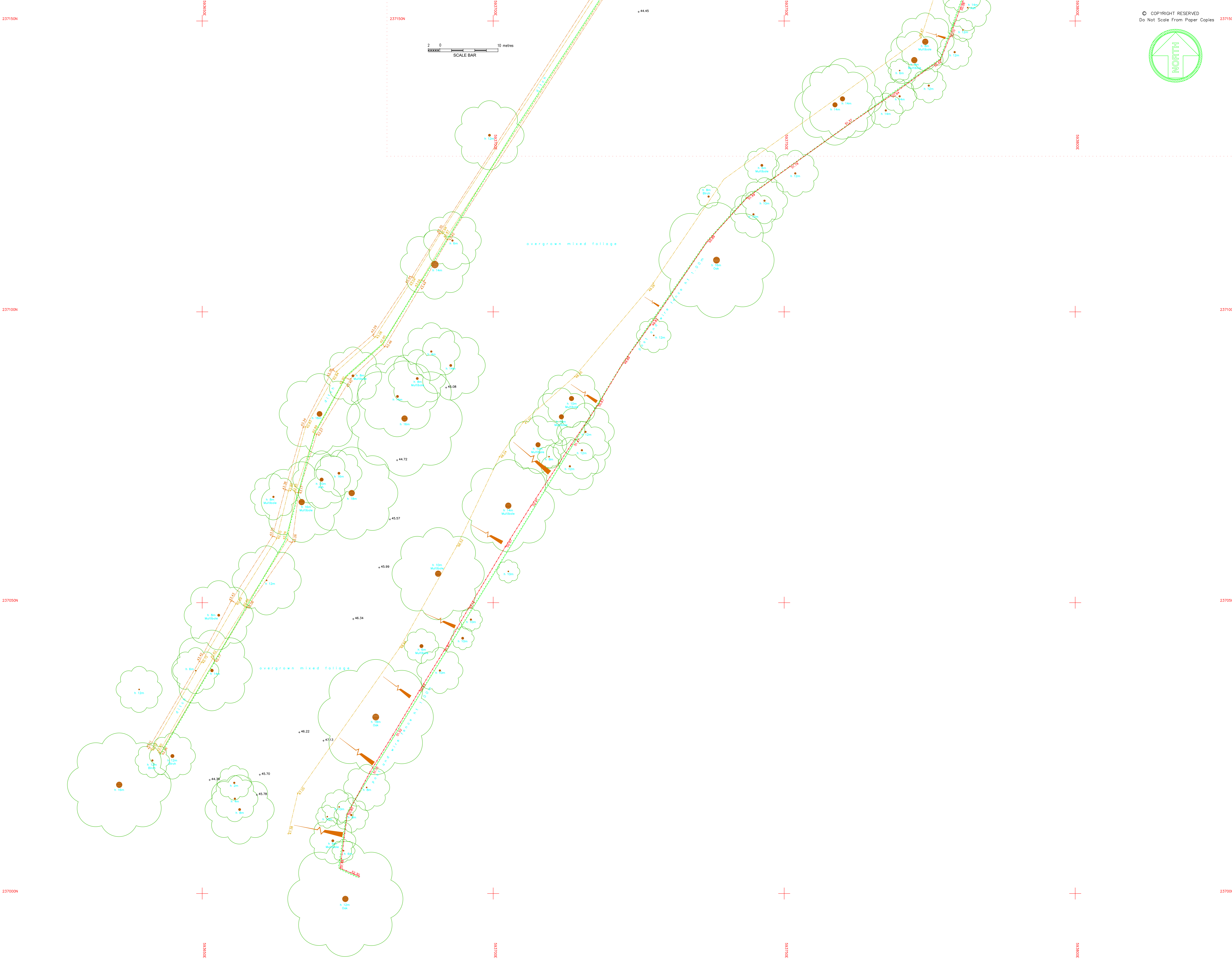
Drawn by: **RB** Checked by: **PG**

Tel: 01438 841300
 enquiries@terrainsurveys.co.uk
 www.terrainsurveys.co.uk

Accreditation:

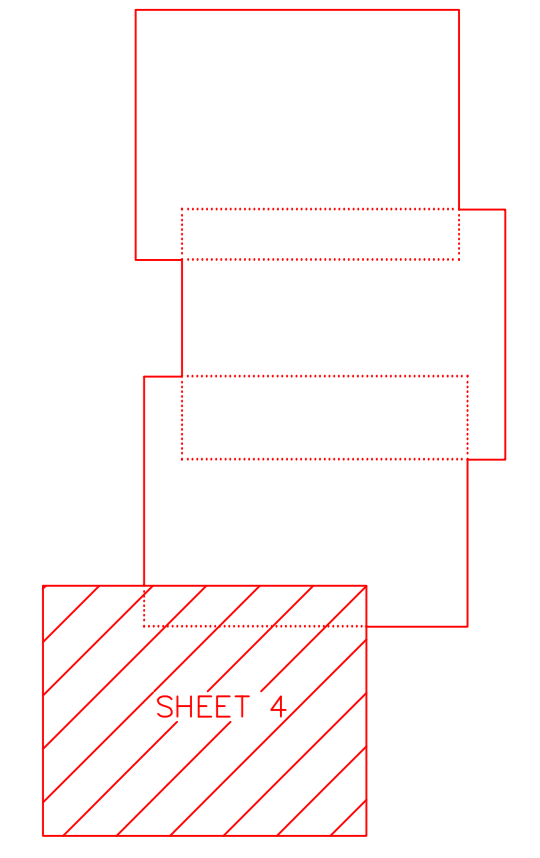
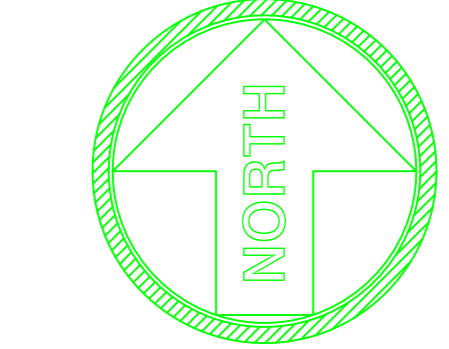
CHAS Accredited Contractor
 CHAS.co.uk





Station	Co-ordinate Table	Easting	Northing	Level
1	59374.713	237501.343	47.249	
2	59374.427	237518.148	46.785	
3	593749.884	237500.900	47.540	
4	593761.637	237475.895	47.090	
5	593764.497	237458.177	47.229	

All levels related to Ordnance Survey active GPS network of survey station 3.



DISCLAIMERS

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Every effort has been made to confirm tree species on site, yet it is advised to confirm these details with an arborist before proceeding with any design.

KEY

Survey control station		Banking	
Gate (single)		Foliage Line	
Gate (double)		Drainage run, direction of flow and pipe size	
Tree Spread and Girth shown to scale		Approximate Position	

ABBREVIATIONS

AMU	Water Meter	WM
BB	Level Level	LL
BS	Ridge Level	RL
BR	Roof Level	RFL
BT	Soffit Level	SFL
BT	Inspection Cover	IC
CTV	Threshold Level	TL
DC	Parapet Wall Level	PWL
EC	Finished Floor Level	FFL
EP	Head Level	HL
ER	Sill Level	SL
FH	Cover Level	CL
GV	Invert Level	IL
GP	No. Visible Pipes	NVP
GY	Unable to Lift	UL
FW	Frost Water	FW
IC	Sump Level	SUL
KB	Surface Water	SW
LP	Brick Pavers	BP
MH	Concrete	CON
MK	Concrete Paving Slabs	CPS
P	Flower Bed	F/B
S/B	Shrub Bed	S/B
PE	Unsurfaced	US
RS	Tactile Paving	TAC
RS	Unsurfaced	US
US	Unsurfaced	US
MK	Brick Wall	BW
SW	Retaining Wall	RW
SV	Obstacle Fence	OF
ST	Obstacle Paving Fence	OPF
TP	Iron Rolling Fence	IRF
TL	Metal Security Fence	MSF
VP	Post and Chain Fence	PCF
PPF	Post and Wire Fence	PWF
WP	Wooden Panel Fence	WPF

Client
ASSINGTON AUTOS

Project
ASSINGTON AUTOS, BARRACKS ROAD, CO10 5LP.

Title
TOPOGRAPHICAL SURVEY

Drawing Number
TS20-615-4

Revision	Description	Date

Scale: 1:200@A0 Sheet: 4 of 4

Drawn by: RB Checked by: PG Date of Survey: OCT 2020

Tel: 01438 841300
enquiries@terrainsurveys.co.uk
www.terrainsurveys.co.uk

Accreditation:

Constructionline Gold Member

Certificate Number 7198 (31/03/2021)

Accredited Contractor CHAS.co.uk

Appendix B


Existing Site Plan

Appendix C

Proposed Site Plan

Appendix D

Greenfield Runoff Calculation

BSP Consulting Ltd		Page 1
12 Oxford Street Nottingham NG1 5BG	22-0611 Assington Autos, Barracks Road Assington, Suffolk	
Date 09/01/2023 File GREENFIELD_RUNOFF_P01.SRCX	Designed by AKS Checked by SCB	
Micro Drainage	Source Control 2020.1.3	

ICP SUDS Mean Annual Flood

Input

Return Period (years) 1 SAAR (mm) 600 Urban 0.000
Area (ha) 0.290 Soil 0.400 Region Number Region 6

Results 1/s

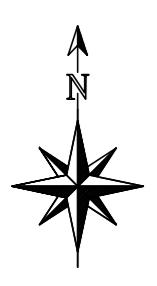
QBAR Rural 0.8
QBAR Urban 0.8

Q1 year 0.7

Q1 year 0.7
Q30 years 1.9
Q100 years 2.6

Appendix E

Impermeable Areas Plan, Surface Water Drainage Strategy Plan, Supporting Calculations & Exceedance Flow Plan



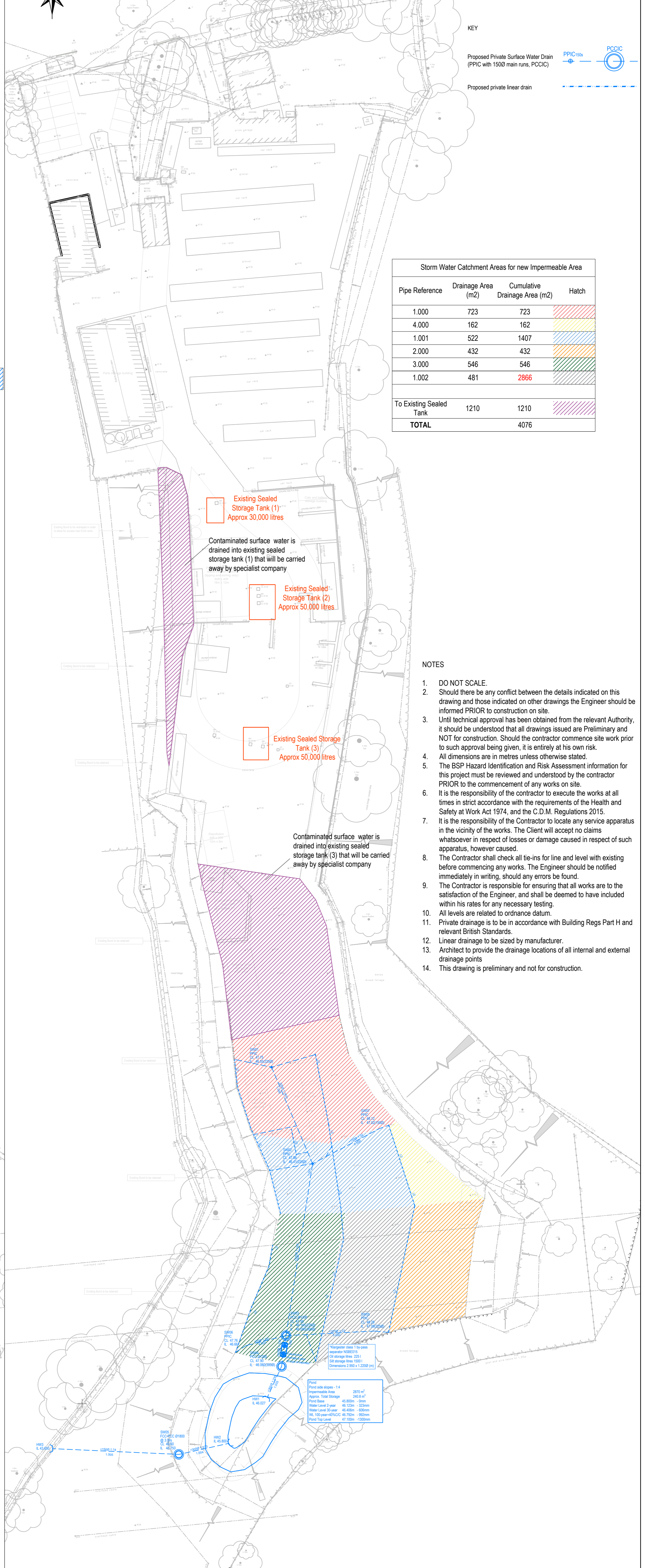
Existing Layout
1:500



Existing Impermeable Area 8966m²



Proposed Layout
1:500



KEY
Proposed Private Surface Water Drain (PPIC with 1500 main runs, PCCIC)
Proposed private linear drain

Pipe Reference	Drainage Area (m ²)	Cumulative Drainage Area (m ²)	Hatch
1.000	723	723	[Red Hatch]
4.000	162	162	[Yellow Hatch]
1.001	522	1407	[Blue Hatch]
2.000	432	432	[Green Hatch]
3.000	546	546	[Orange Hatch]
1.002	481	2866	[Purple Hatch]
To Existing Sealed Tank	1210	1210	[Pink Hatch]
TOTAL		4076	

Existing Sealed Storage Tank (1)
Approx 30,000 litres

Contaminated surface water is drained into existing sealed storage tank (1) that will be carried away by specialist company

Existing Sealed Storage Tank (2)
Approx 50,000 litres

Existing Sealed Storage Tank (3)
Approx 50,000 litres

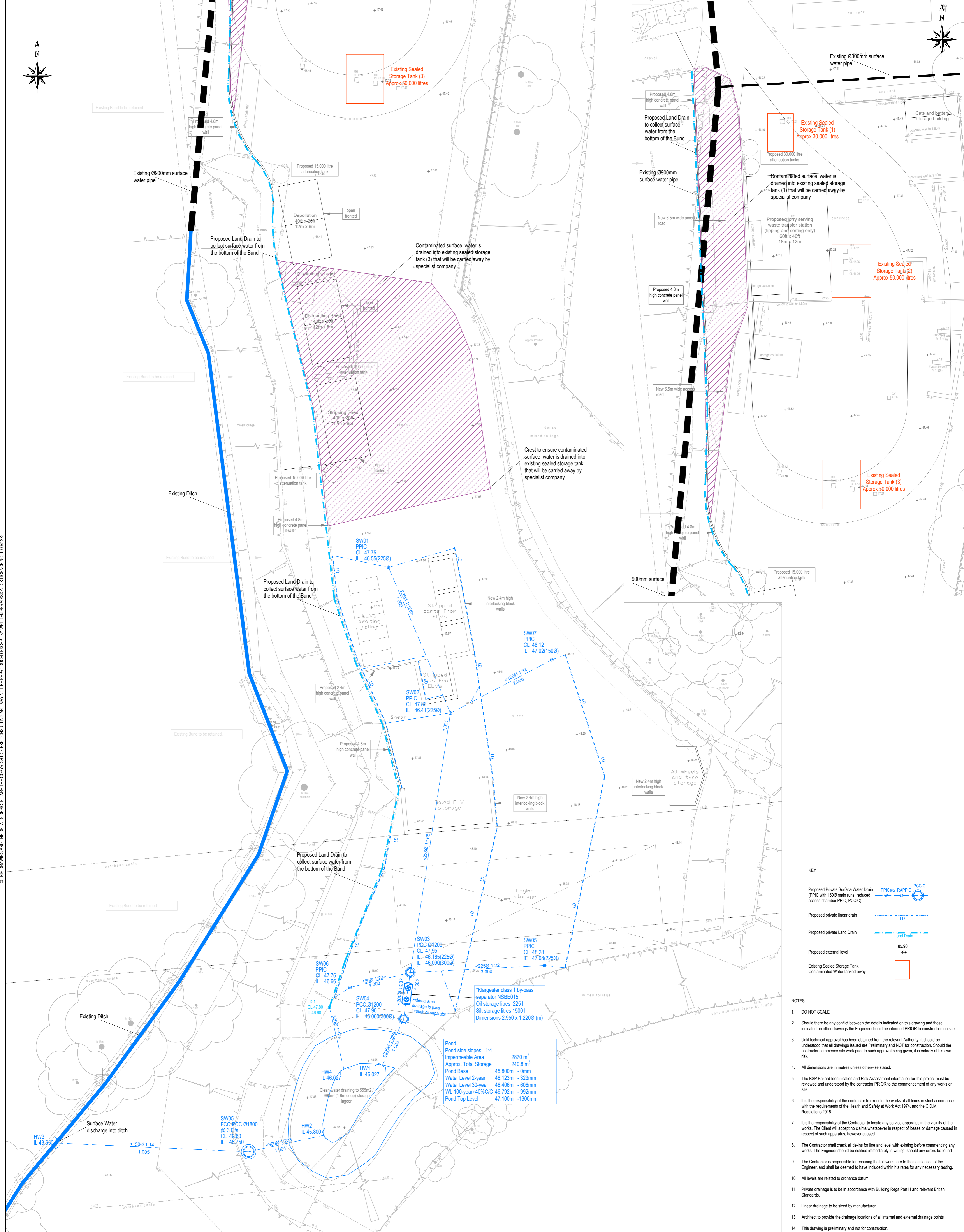
Contaminated surface water is drained into existing sealed storage tank (3) that will be carried away by specialist company

NOTES

- DO NOT SCALE.
- Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
- Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
- All dimensions are in metres unless otherwise stated.
- The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
- It is the responsibility of the contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety at Work Act 1974, and the C.D.M. Regulations 2015.
- It is the responsibility of the Contractor to locate any service apparatus in the vicinity of the works. The Client will accept no claims whatsoever in respect of losses or damage caused in respect of such apparatus, however caused.
- The Contractor shall check all tie-ins for line and level with existing before commencing any works. The Engineer should be notified immediately in writing, should any errors be found.
- The Contractor is responsible for ensuring that all works are to the satisfaction of the Engineer, and shall be deemed to have included within his rates for any necessary testing.
- All levels are related to ordnance datum.
- Private drainage is to be in accordance with Building Regs Part H and relevant British Standards.
- Linear drainage to be sized by manufacturer.
- Architect to provide the drainage locations of all internal and external drainage points
- This drawing is preliminary and not for construction.

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<p>Construction Risks Maintenance/cleaning Risks Demolition/adaptation Risks</p> <p>In addition to the hazards/risks normally associated with the type of works detailed on this drawing take note of the above. It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.</p> <p>SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX</p>			<table border="1"> <tr><td>REV</td><td>COMMENT</td><td>DATE</td><td>CHECKED BY</td><td>DATE</td><td>APPROVED BY</td><td>DATE</td></tr> <tr><td>P01</td><td>First Issue</td><td>31/01/23</td><td>PN</td><td>31/01/23</td><td>TG</td><td>31/01/23</td></tr> </table>			REV	COMMENT	DATE	CHECKED BY	DATE	APPROVED BY	DATE	P01	First Issue	31/01/23	PN	31/01/23	TG	31/01/23	<table border="1"> <tr><td>CLIENT APPROVAL</td><td colspan="2">A - APPROVED</td></tr> <tr><td></td><td colspan="2">B - APPROVED WITH COMMENTS</td></tr> <tr><td></td><td colspan="2">C - DO NOT USE</td></tr> <tr><td>STATUS</td><td colspan="2">S1 PRELIMINARY</td></tr> <tr><td>TITLE</td><td colspan="2">Drainage Areas</td></tr> </table>			CLIENT APPROVAL	A - APPROVED			B - APPROVED WITH COMMENTS			C - DO NOT USE		STATUS	S1 PRELIMINARY		TITLE	Drainage Areas		<table border="1"> <tr><td>PROJECT</td><td colspan="2">Assington Autos</td></tr> <tr><td>CLIENT</td><td colspan="2">Assington Autos Ltd</td></tr> </table>			PROJECT	Assington Autos		CLIENT	Assington Autos Ltd		<p>• CIVIL • STRUCTURAL • TRANSPORTATION • GEOTECHNICAL • ENVIRONMENTAL</p> <p>bsp CONSULTING</p> <p>12 Oxford Street Nottingham, NG1 5BG Tel: 0345 413 4000 e-mail: info@bsp-consulting.co.uk Also offices in Derby, Leicester and Sheffield</p> <p>bsi BIM Design and Construction KITEMARK™</p> <p>AAAS-BSP-ZZ-ZZ-DR-C-0145 P01</p>		
REV	COMMENT	DATE	CHECKED BY	DATE	APPROVED BY	DATE																																											
P01	First Issue	31/01/23	PN	31/01/23	TG	31/01/23																																											
CLIENT APPROVAL	A - APPROVED																																																
	B - APPROVED WITH COMMENTS																																																
	C - DO NOT USE																																																
STATUS	S1 PRELIMINARY																																																
TITLE	Drainage Areas																																																
PROJECT	Assington Autos																																																
CLIENT	Assington Autos Ltd																																																



KEY

- Proposed Private Surface Water Drain (PPIC with 1500 main runs, reduced access chamber PPIC, PCC/C)
- Proposed private linear drain
- Proposed private Land Drain
- Proposed external level
- Existing Sealed Storage Tank Contaminated Water tanked away

- NOTES**
- DO NOT SCALE.
 - Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
 - Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
 - All dimensions are in metres unless otherwise stated.
 - The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
 - It is the responsibility of the contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety at Work Act 1974, and the C.D.M. Regulations 2015.
 - It is the responsibility of the Contractor to locate any service apparatus in the vicinity of the works. The Client will accept no claims whatsoever in respect of losses or damage caused in respect of such apparatus, however caused.
 - The Contractor shall check all tie-ins for line and level with existing before commencing any works. The Engineer should be notified immediately in writing, should any errors be found.
 - The Contractor is responsible for ensuring that all works are to the satisfaction of the Engineer, and shall be deemed to have included within his rates for any necessary testing.
 - All levels are related to ordnance datum.
 - Private drainage is to be in accordance with Building Regs Part H and relevant British Standards.
 - Linear drainage to be sized by manufacturer.
 - Drainage to provide the drainage locations of all internal and external drainage points
 - This drawing is preliminary and not for construction.

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Construction Risks	Maintenance/Cleaning Risks	Demolition/Adaptation Risks
<p>In addition to the hazards/risks normally associated with the type of works detailed on this drawing like role of the above. It is assumed that all works on the drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.</p>		
SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX		

REV	COMMENT	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	First Issue	30/01/23	PN	30/01/23	TG	30/01/23
SCALE @ A1		ISSUING OFFICE		PROJECT NUMBER		
1:250		NOTTINGHAM		22-0611		

CLIENT APPROVAL	
A - APPROVED	
B - APPROVED WITH COMMENTS	
C - DO NOT USE	
STATUS	PURPOSE OF ISSUE
S1	PRELIMINARY
TITLE	
Drainage Strategy	

PROJECT	Assington Autos
CLIENT	Assington Autos Ltd

CIVIL	STRUCTURAL	TRANSPORTATION	GEOTECHNICAL	ENVIRONMENTAL
12 Oxford Street Nottingham, NG1 5BG Tel: 0345 413 4000 e-mail: info@bsp-consulting.co.uk Also offices in Derby, Leicester and Sheffield				
PROJECT ORIGINATOR FUNCTIONAL SPATIAL FORM DISCIPLINE NUMBER				REV
AAAS-BSP-ZZ-ZZ-DR-C-0140				P01

BSP Consulting		Page 1
12 Oxford Street Nottingham NG1 5BG	Assington Autos	
Date 31/01/2023 File 22-0611_SW_31s.MDX	Designed by Pedro Navarro Checked by PN	
Innovyze	Network 2019.1	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	0
Ratio R	0.400	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	100	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm



Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.263	4-8	0.024

Total Area Contributing (ha) = 0.287

Total Pipe Volume (m³) = 6.179


Network Design Table for Storm

« - Indicates pipe capacity < flow








PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	23.130	0.140	165.2	0.073	1.00	0.0	0.600	o	225	Pipe/Conduit	
2.000	17.300	0.535	32.3	0.016	1.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	100.00	1.38	46.550	0.073	0.0	0.0	0.0	1.01	40.3	19.8
2.000	100.00	1.16	47.020	0.016	0.0	0.0	0.0	1.78	31.4	4.3


BSP Consulting		Page 2
12 Oxford Street Nottingham NG1 5BG	Assington Autos	
Date 31/01/2023 File 22-0611_SW_31s.MDX	Designed by Pedro Navarro Checked by PN	
Innovyze	Network 2019.1	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.001	40.320	0.245	164.6	0.052	0.00	0.0	0.600	o	225	Pipe/Conduit	
3.000	20.300	0.915	22.2	0.043	1.00	0.0	0.600	o	225	Pipe/Conduit	
4.000	9.100	0.420	21.7	0.055	1.00	0.0	0.600	o	150	Pipe/Conduit	
1.002	7.100	0.030	236.7	0.048	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.003	7.750	0.033	234.8	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.004	11.650	0.050	233.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
1.005	28.800	2.100	13.7	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.001	95.14	2.04	46.410	0.141	0.0	0.0	0.0	1.02	40.4	36.3
3.000	100.00	1.12	47.080	0.043	0.0	0.0	0.0	2.79	110.9	11.6
4.000	100.00	1.07	46.660	0.055	0.0	0.0	0.0	2.17	38.4	14.9
1.002	93.77	2.16	46.090	0.287	0.0	0.0	0.0	1.02	71.9<	72.9
1.003	92.34	2.28	46.060	0.287	0.0	0.0	0.0	1.02	72.2<	72.9
1.004	90.27	2.47	45.800	0.287	0.0	0.0	0.0	1.03	72.5<	72.9
1.005	88.46	2.65	45.750	0.287	0.0	0.0	0.0	2.73	48.3<	72.9


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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	Pipe Out		Pipes In			Backdrop (mm)
					PN	Invert Level (m)	Diameter (mm)	PN	Invert Level (m)	
1	47.750	1.200	Open Manhole	1200	1.000	46.550	225			
2	48.120	1.100	Open Manhole	1200	2.000	47.020	150			
2	47.860	1.450	Open Manhole	1200	1.001	46.410	225	1.000	46.410	225
								2.000	46.485	150
3	48.280	1.200	Open Manhole	1200	3.000	47.080	225			
4	47.760	1.100	Open Manhole	1200	4.000	46.660	150			
3	47.950	1.860	Open Manhole	1200	1.002	46.090	300	1.001	46.165	225
								3.000	46.165	225
								4.000	46.240	150
7	47.900	1.840	Open Manhole	1200	1.003	46.060	300	1.002	46.060	300
4	47.100	1.300	Open Manhole	1200	1.004	45.800	300	1.003	46.027	300
5	49.600	3.850	Open Manhole	1200	1.005	45.750	150	1.004	45.750	300
	45.000	1.350	Open Manhole	0		OUTFALL		1.005	43.650	150

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No coordinates have been specified, layout information cannot be produced.

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	1	47.750	46.550	0.975	Open Manhole	1200
2.000	o	150	2	48.120	47.020	0.950	Open Manhole	1200
1.001	o	225	2	47.860	46.410	1.225	Open Manhole	1200
3.000	o	225	3	48.280	47.080	0.975	Open Manhole	1200
4.000	o	150	4	47.760	46.660	0.950	Open Manhole	1200
1.002	o	300	3	47.950	46.090	1.560	Open Manhole	1200
1.003	o	300	7	47.900	46.060	1.540	Open Manhole	1200
1.004	o	300	4	47.100	45.800	1.000	Open Manhole	1200
1.005	o	150	5	49.600	45.750	3.700	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	23.130	165.2	2	47.860	46.410	1.225	Open Manhole	1200
2.000	17.300	32.3	2	47.860	46.485	1.225	Open Manhole	1200
1.001	40.320	164.6	3	47.950	46.165	1.560	Open Manhole	1200
3.000	20.300	22.2	3	47.950	46.165	1.560	Open Manhole	1200
4.000	9.100	21.7	3	47.950	46.240	1.560	Open Manhole	1200
1.002	7.100	236.7	7	47.900	46.060	1.540	Open Manhole	1200
1.003	7.750	234.8	4	47.100	46.027	0.773	Open Manhole	1200
1.004	11.650	233.0	5	49.600	45.750	3.550	Open Manhole	1200
1.005	28.800	13.7		45.000	43.650	1.200	Open Manhole	0

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	1	225	0.975	1.225	Unclassified	1200	0	0.975	Unclassified
2.000	2	150	0.950	1.225	Unclassified	1200	0	0.950	Unclassified
1.001	2	225	1.225	1.560	Unclassified	1200	0	1.225	Unclassified
3.000	3	225	0.975	1.560	Unclassified	1200	0	0.975	Unclassified
4.000	4	150	0.950	1.560	Unclassified	1200	0	0.950	Unclassified
1.002	3	300	1.540	1.560	Unclassified	1200	0	1.560	Unclassified
1.003	7	300	0.773	1.540	Unclassified	1200	0	1.540	Unclassified
1.004	4	300	1.000	3.550	Unclassified	1200	0	1.000	Unclassified
1.005	5	150	1.200	3.700	Unclassified	1200	0	3.700	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005		45.000	43.650	0.000	0	0


Simulation Criteria for Storm

Volumetric Runoff Coeff	0.840	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m ³ /ha Storage	0.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	2	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	15
Ratio R	0.341		

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Online Controls for Storm


Hydro-Brake® Optimum Manhole: 5, DS/PN: 1.005, Volume (m³): 5.1

Unit Reference	MD-SHE-0081-3000-1100-3000
Design Head (m)	1.100
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	81
Invert Level (m)	45.750
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.100	3.0	Kick-Flo®	0.682	2.4
Flush-Flo™	0.333	3.0	Mean Flow over Head Range	-	2.6

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	2.4	1.200	3.1	3.000	4.8	7.000	7.1
0.200	2.9	1.400	3.4	3.500	5.1	7.500	7.3
0.300	3.0	1.600	3.6	4.000	5.5	8.000	7.6
0.400	3.0	1.800	3.8	4.500	5.8	8.500	7.8
0.500	2.9	2.000	4.0	5.000	6.1	9.000	8.0
0.600	2.7	2.200	4.1	5.500	6.3	9.500	8.2
0.800	2.6	2.400	4.3	6.000	6.6		
1.000	2.9	2.600	4.5	6.500	6.9		


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Storage Structures for Storm

Tank or Pond Manhole: 4, DS/PN: 1.004

Invert Level (m) 45.800

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	66.0	1.300	340.0

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.343
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Summer	2	+0%	30/15 Summer	100/15 Summer			46.666
2.000	2	15 Summer	2	+0%	100/15 Summer				47.058
1.001	2	15 Summer	2	+0%	30/15 Summer				46.549
3.000	3	15 Summer	2	+0%					47.130
4.000	4	15 Summer	2	+0%	100/15 Summer				46.729
1.002	3	15 Summer	2	+0%	30/15 Summer				46.320
1.003	7	15 Summer	2	+0%	30/15 Summer				46.285
1.004	4	120 Winter	2	+0%	2/60 Winter				46.123
1.005	5	360 Summer	2	+0%	2/15 Summer				46.246

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2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged		Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow (l/s)					
1.000	1	-0.109	0.000	0.43		16.1		OK	2
2.000	2	-0.112	0.000	0.13		3.9		OK	
1.001	2	-0.086	0.000	0.63		24.0		OK	
3.000	3	-0.175	0.000	0.11		10.6		OK	
4.000	4	-0.081	0.000	0.40		13.5		OK	
1.002	3	-0.070	0.000	0.94		49.2		OK	
1.003	7	-0.075	0.000	0.89		47.8		OK	
1.004	4	0.023	0.000	0.06		3.6		SURCHARGED	
1.005	5	0.346	0.000	0.06		3.0		SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.343
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF


Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Summer	30	+0%	30/15 Summer	100/15 Summer			46.957
2.000	2	15 Summer	30	+0%	100/15 Summer				47.073
1.001	2	15 Summer	30	+0%	30/15 Summer				46.900
3.000	3	15 Summer	30	+0%					47.150
4.000	4	15 Summer	30	+0%	100/15 Summer				46.772
1.002	3	15 Summer	30	+0%	30/15 Summer				46.560
1.003	7	15 Summer	30	+0%	30/15 Summer				46.435
1.004	4	180 Winter	30	+0%	2/60 Winter				46.406
1.005	5	360 Winter	30	+0%	2/15 Summer				46.564

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Surcharged		Flooded		Pipe Flow (l/s)	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap.	Overflow (l/s)			
1.000	1	0.182	0.000	0.78		28.9	SURCHARGED	2
2.000	2	-0.097	0.000	0.25		7.4	OK	
1.001	2	0.265	0.000	1.12		43.2	SURCHARGED	
3.000	3	-0.155	0.000	0.20		20.2	OK	
4.000	4	-0.038	0.000	0.76		25.6	OK	
1.002	3	0.170	0.000	1.65		86.0	SURCHARGED	
1.003	7	0.075	0.000	1.61		86.1	SURCHARGED	
1.004	4	0.306	0.000	0.07		4.1	SURCHARGED	
1.005	5	0.664	0.000	0.06		3.0	SURCHARGED	

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Innovyze	Network 2019.1	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 0.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 1 Number of Real Time Controls 0


Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.343
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

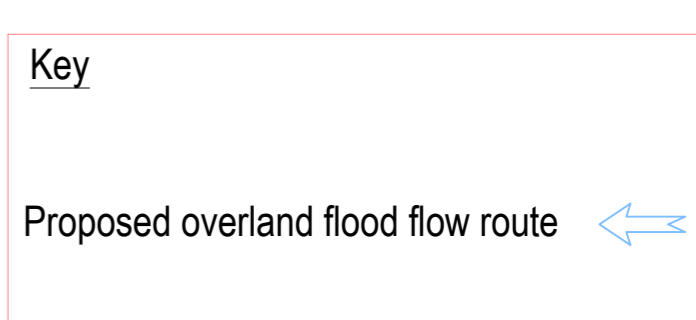
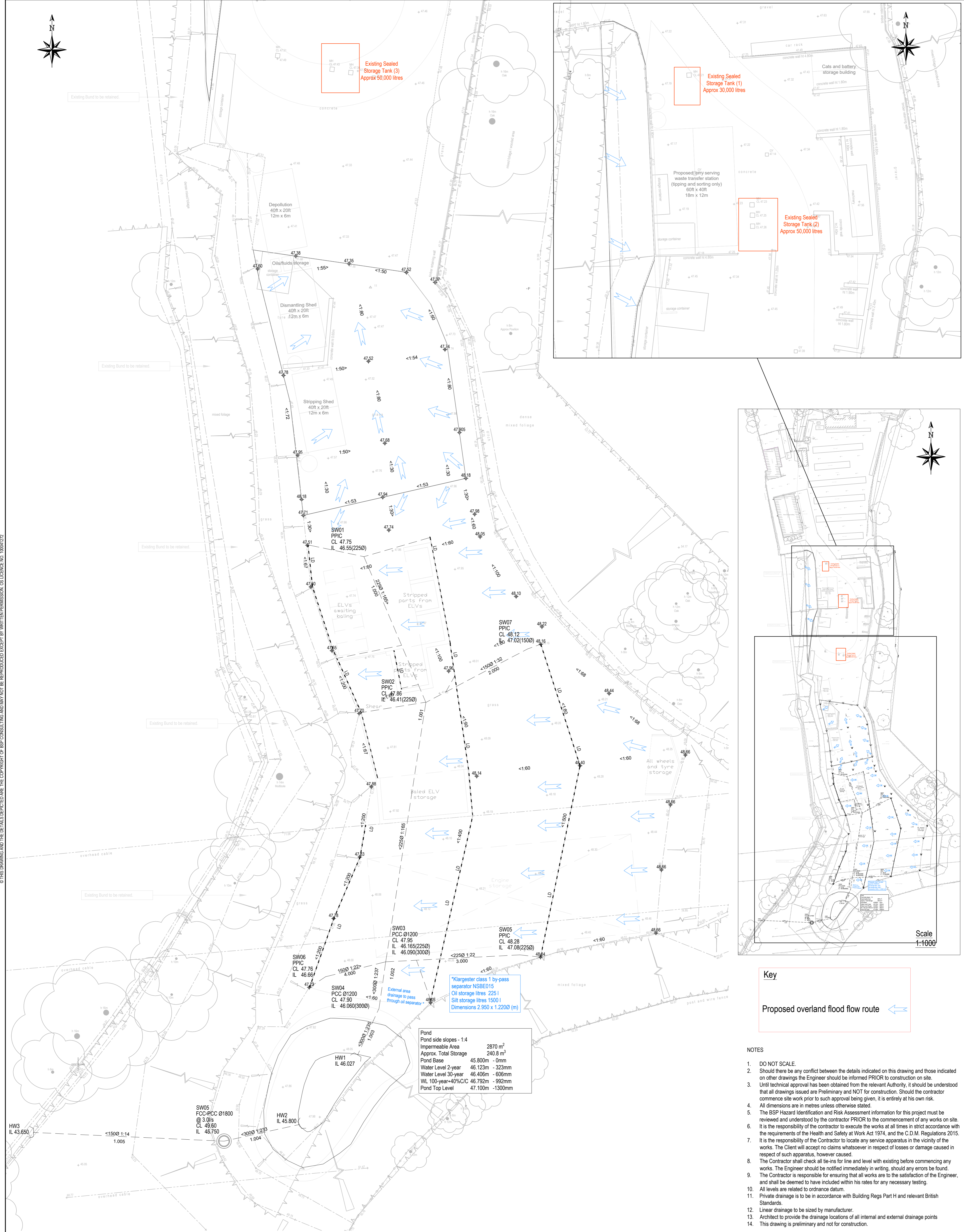
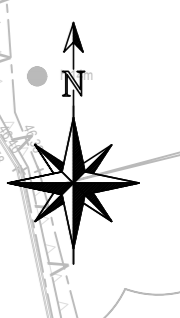
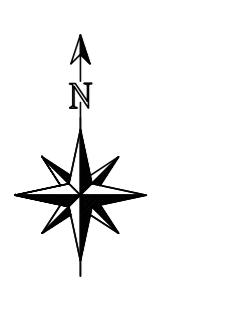
Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,
10080
Return Period(s) (years) 2, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+40%	30/15 Summer	100/15 Summer			47.752
2.000	2	15 Winter	100	+40%	100/15 Summer				47.772
1.001	2	15 Winter	100	+40%	30/15 Summer				47.700
3.000	3	15 Summer	100	+40%					47.177
4.000	4	15 Summer	100	+40%	100/15 Summer				47.536
1.002	3	15 Winter	100	+40%	30/15 Summer				47.016
1.003	7	360 Winter	100	+40%	30/15 Summer				46.794
1.004	4	360 Winter	100	+40%	2/60 Winter				46.792
1.005	5	360 Winter	100	+40%	2/15 Summer				46.965

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

PN	US/MH Name	Surcharged		Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow (l/s)					
1.000	1	0.977	1.575	1.01	37.5	FLOOD	2		
2.000	2	0.602	0.000	0.34	9.9	SURCHARGED			
1.001	2	1.065	0.000	1.76	67.6	FLOOD RISK			
3.000	3	-0.128	0.000	0.36	36.7	OK			
4.000	4	0.726	0.000	1.07	36.1	FLOOD RISK			
1.002	3	0.626	0.000	2.79	145.6	SURCHARGED			
1.003	7	0.434	0.000	0.45	23.8	SURCHARGED			
1.004	4	0.692	0.000	0.10	5.6	SURCHARGED			
1.005	5	1.065	0.000	0.06	3.0	SURCHARGED			



- NOTES
- DO NOT SCALE.
 - Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
 - Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
 - All dimensions are in metres unless otherwise stated.
 - The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
 - It is the responsibility of the contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety at Work Act 1974, and the C.D.M. Regulations 2015.
 - It is the responsibility of the Contractor to locate any service apparatus in the vicinity of the works. The Client will accept no claims whatsoever in respect of losses or damage caused in respect of such apparatus, however caused.
 - The Contractor shall check all tie-ins for line and level with existing before commencing any works. The Engineer should be notified immediately in writing, should any errors be found.
 - The Contractor is responsible for ensuring that all works are to the satisfaction of the Engineer, and shall be deemed to have included within his rates for any necessary testing.
 - All levels are related to ordnance datum.
 - Private drainage is to be in accordance with Building Regs Part H and relevant British Standards.
 - Linear drainage to be sized by manufacturer.
 - Architect to provide the drainage locations of all internal and external drainage points
 - This drawing is preliminary and not for construction.

Construction Risks	Maintenance/Cleaning Risks	Demolition/Adaptation Risks
In addition to the hazard risks normally associated with the type of works detailed on this drawing like role of the above.		
It is assumed that all works on the drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.		
SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX		

REV	COMMENT	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	First Issue	31/01/23	PN	31/01/23	TG	31/01/23
SCALE @ A1						
ISSUING OFFICE		PROJECT NUMBER				
NOTTINGHAM		22-0611				

CLIENT APPROVAL	
A - APPROVED	
B - APPROVED WITH COMMENTS	
C - DO NOT USE	
STATUS	PURPOSE OF ISSUE
S1	PRELIMINARY
TITLE	Exceedance Flow Plan

PROJECT	Assington Autos
CLIENT	Assington Autos Ltd

CIVIL	STRUCTURAL	TRANSPORTATION	GEOTECHNICAL	ENVIRONMENTAL
PROJECT ORIGINATOR FUNCTIONAL SPATIAL FORM DISCIPLINE NUMBER REV AAAS-BSP-ZZ-ZZ-DR-C-0180 P01				

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Appendix F

Maintenance Schedules

SUDS MAINTENANCE MANUAL DATA SHEET – PAGE 1



Reference: MM-A-02

V3 – July 2015

SUDS Element:

SUDS Attenuation Basin

Function Served:

Basin serves secondary treatment elements for much of the site.
Basin and associated pump set restrict outfall rate from the site to 3.0l/s

Features:

Inlet (x2) and outlet concrete headwalls

Owned:

Site Management

Location:

Refer to drawing AAAS-BSP-ZZ-ZZ-DR-C-0140_P01_Drainage_Strategy

Routine Maintenance (typically monthly):

Maintenance Activity	Comments	Frequency
Litter and debris removal	Litter and debris (removed prior to any grass cutting activity) to minimise risk of shredding litter. Particular attention should be paid to inlet/outlet pipes. i.e. rake the trash screen	Monthly
Grass cutting: Landscaped areas and access routes	All cuttings to be removed from SUDS components	Monthly (during growing season) or as required
Cut and remove bank vegetation from water's edge to a minimum of 1m above water level.	To provide access to pond edge/emergent vegetation for maintenance inspection.	Monthly (for the first 3 years) then as required.
Inspect inlet and outlet structures for evidence of poor operation		Monthly
Inspect banksides, structures, pipework etc for evidence of physical damage		Monthly
Inspect water body for signs of eutrophication		Monthly (May-October)
Safety signage and safety equipment inspection	Ensure permanent and seasonal safety signs are in place. Safety equipment should be inspected to ensure it available and in good repair	Monthly
Inspection of safety fencing		Monthly

Occasional Maintenance (typically 6 monthly):

Maintenance Activity	Comments	Frequency
Inspect inlets for silt accumulation	Includes visual inspection of inlet chambers	6 monthly
Check mechanical devices within chambers (pumps)	Checks undertaken under maintenance contract by specialist	6 monthly
Ice warning safety signage		To be erected at the end of September and removed at the end of March

Note; where defects are found for inlet structures, flow control chambers etc. this should be reported to DPFP LLP maintenance team.

Emergency Procedure

Emergency procedure boards should be displayed around the attenuation pond, these will contain current contact details for DPFP LLP maintenance team.

The pump station is constructed with twin pumps which are to alternative duty and stand-by. Pumps are alarmed in case of failure. Where both pumps fail the valve set is designed to facilitate over-pumping of the water.

SUDS MAINTENANCE MANUAL DATA SHEET – PAGE 2



Reference: MM-A-02

V3 – July 2015

General Notes:

Maintenance strategy should be reviewed on a regular basis and performance of the maintenance activities assessed.

Reference should be made to recognised industry standards in undertaking maintenance.

Where activities are required outside ownership permission must be sought from relevant party.

Refer to SuDS Manual for discussion on maintenance techniques.

Requirement for reporting of inspections to be confirmed by responsible party. May be required as evidence of activities to prove activity as part of funding arrangements.

Annual Activities:

Maintenance Activity	Comments	Frequency
Tidy all dead growth before start of growing season		Annually
Prune and trim trees and remove cuttings	Where vegetation is planted as a barrier management of upward growth to encourage outward growth is necessary (after shrub seedlings are established).	As required
Inspect ancillary structures	Inspection of banks for signs of deterioration. Remove troublesome plant growth.	Annually
Remove sediment from sumps	Remove accumulated silt with suction tanker when 50% full.	As required

Infrequent/Corrective Activities:

Maintenance Activity	Comments	Frequency
Remove dead vegetation from pond edge		1-3 years or as required
Hand cut submerged and emergent aquatic plants (at a minimum of 0.1m above pond base; max 1/3 of pond surface)	Thinning of emergent barrier vegetation. Areas of tall emergent plants obscuring visual inspection (for safety) of the open water should be regularly trimmed.	As required
Re-seed or replant areas of poor vegetation growth		As required
Remove sediment from main body of large ponds when pool volume is reduced by 20%	Sediment level will be dependent upon presence and type of upstream SUDS, size and land use of catchment as well as local soil conditions. Care must be taken not to damage the pond liner	>25 years usually or as required
Repair erosion or other damage	Required to maintain the bed at original design level	As required
Aerate pond when signs of eutrophication are detected		As required
Repair/rehabilitation of inlets, outlets and overflows.		As required
Rehabilitation following a pollution event		As required

SUDS MAINTENANCE MANUAL DATA SHEET



Reference: MM-GS-02

V1 – Nov 2016

SUDS Element:

Filter Drains

Function Served:

Drainage feature providing positive drainage to impermeable yard area.

Features:

600mm wide, 950mm deep single sized stone filled trench surrounded by geotextile providing sump for water allowing infiltration. Perforated pipe allowing for inspection and maintenance.

Owned:

Site Management

Location:

Refer to AAAS-BSP-ZZ-ZZ-DR-C-0140_P01_Drainage_Strategy

General Notes:

N/A

Part A: Routine Maintenance (typically monthly):

Maintenance Activity	Comments	Frequency
Litter and debris removal		Monthly
Grass cutting of landscaped areas	All cuttings to be removed from SUDS components	Monthly (during growing season) or as required
Manage other vegetation and remove nuisance plants.	Weeding should be conducted by hand or use non-toxic and biodegradable weed killer. Invasive species should be removed in accordance with best practice	Monthly (at implementation) then as required.
Inspect structures for evidence of poor operation		Monthly

Where Part A activities do not address deficient performance refer to Part B, see General Notes.

Part B: Occasional Maintenance (typically 6 monthly):

Maintenance Activity	Comments	Frequency
Inspect inlet catch pits and pre-treatment components for silt accumulation	Includes visual inspection of inlet chamber, forebay and inspection of flow control.	6 monthly
Visual inspection catch-pits, linking pipework etc for evidence of physical damage	Visual inspection from surface only, CCTV survey required if evidence present of structural issues.	6 monthly
Undertake trial hole within filter drain to ascertain condition at base of drain	Membrane or stone may be blocked with silt	As required

Annual Activities:

Maintenance Activity	Comments	Frequency
Remove sediment from catch-pits	Remove accumulated silt with suction tanker when 50% full.	As required

Infrequent/Corrective Activities:

Maintenance Activity	Comments	Frequency
Repair/replace geotextile surround.	If drain does not function following routine maintenance intrusive works may be required to clear the stone and replace the geotextile surround.	As required
Rehabilitate/replace filter medium	Required when all mechanical elements checked and performance remains inadequate.	As required Evidence from similar structures from around the country suggests full replacement may be required during 100 year life.
Jetting linking pipework	Where CCTV survey shows siltation of pipework has occurred	As required

Technical Specification

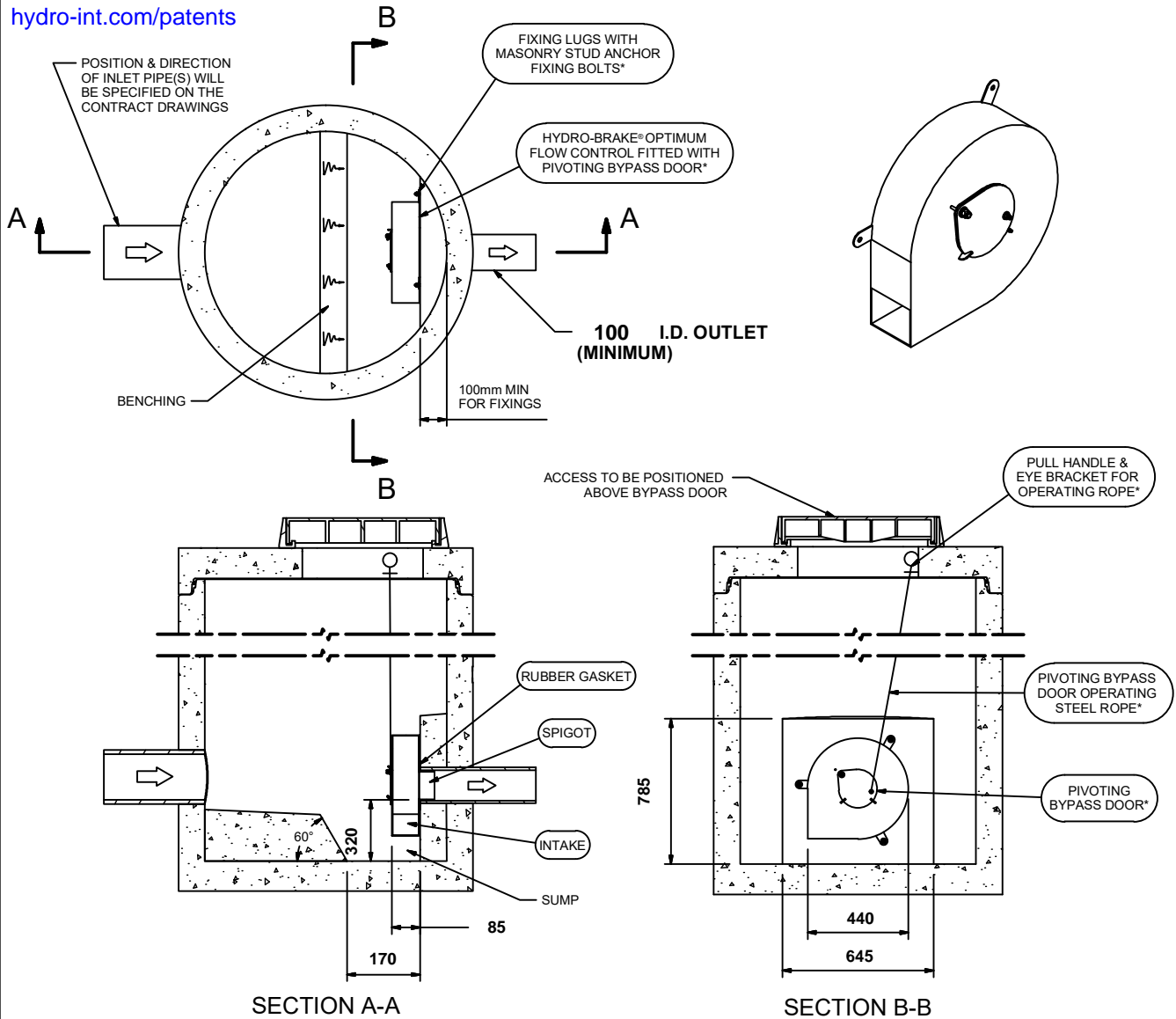
Control Point	Head (m)	Flow (l/s)
Primary Design	1.100	3.000
Flush-Flo™	0.273	2.983
Kick-Flo®	0.614	2.304
Mean Flow		2.594

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet
- Indicative Weight: 10 kg



hydro-int.com/patents



IMPORTANT: ○ LIMIT OF HYDRO INTERNATIONAL SUPPLY
 THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
 FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
 ALL CIVIL AND INSTALLATION WORK BY OTHERS
 * WHERE SUPPLIED
 HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW
 CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE

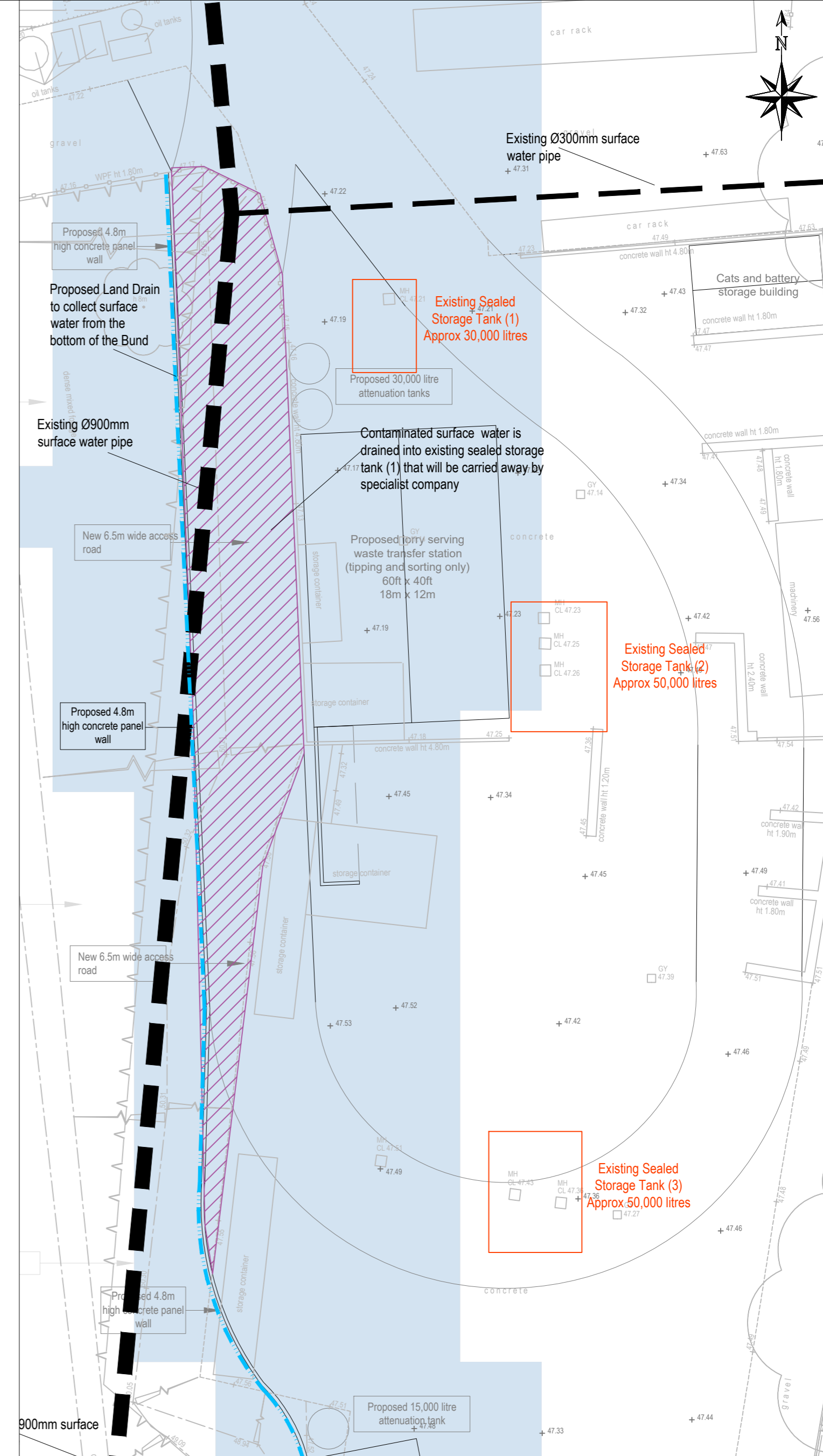
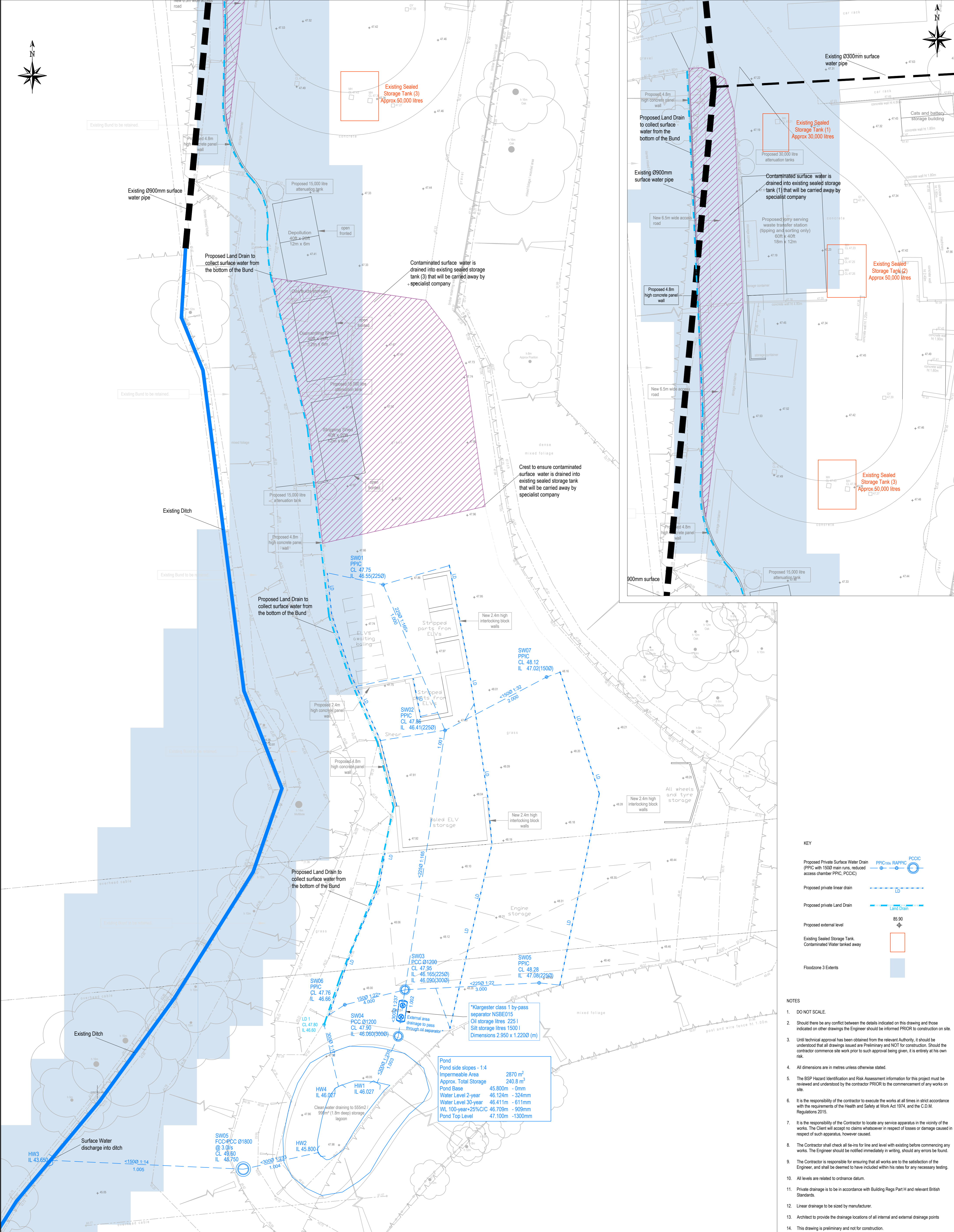
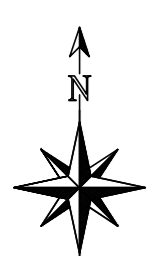


The head/flow characteristics of this SCL-0077-3000-1100-3000 Hydro-Brake® Optimum Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.
The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro
 International®

DATE	03/05/2023 14:27
SITE	Assington Autos
DESIGNER	Pedro Navarro
REF	AAAS-BSP-ZZ-ZZ-DR-C-FC

SCL-0077-3000-1100-3000
 Hydro-Brake® Optimum



KEY

- Proposed Private Surface Water Drain (PPIC) with 1500 main runs, reduced access chamber PPIC, PCCIC
- Proposed private linear drain
- Proposed private Land Drain
- Proposed external level
- Existing Sealed Storage Tank, Contaminated Water tanked away
- Floodzone 3 Extents

- NOTES**
- DO NOT SCALE.
 - Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
 - Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
 - All dimensions are in metres unless otherwise stated.
 - The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
 - It is the responsibility of the contractor to execute the works at all times in strict accordance with the requirements of the Health and Safety at Work Act 1974, and the C.D.M. Regulations 2015.
 - It is the responsibility of the Contractor to locate any service apparatus in the vicinity of the works. The Client will accept no claims whatsoever in respect of losses or damage caused in respect of such apparatus, however caused.
 - The Contractor shall check all tie-ins for line and level with existing before commencing any works. The Engineer should be notified immediately in writing, should any errors be found.
 - The Contractor is responsible for ensuring that all works are to the satisfaction of the Engineer, and shall be deemed to have included within his rates for any necessary testing.
 - All levels are related to ordnance datum.
 - Private drainage is to be in accordance with Building Regs Part H and relevant British Standards.
 - Linear drainage is to be sized by manufacturer.
 - The Contractor to provide the drainage locations of all internal and external drainage points
 - This drawing is preliminary and not for construction.

Pond

Pond side slopes - 1:4
 Impermeable Area 2870 m²
 Approx. Total Storage 240.8 m³
 Pond Base 45.800m - 0mm
 Water Level 2-year 46.124m - 324mm
 Water Level 30-year 46.411m - 611mm
 WL 100-year-25% C/C 46.709m - 903mm
 Pond Top Level 47.100m -1300mm

*largest class 1 by-pass separator NSBE015
 Oil storage litres 225 l
 Silt storage litres 1500 l
 Dimensions 2.950 x 1.220 (m)

Construction Risks	Maintenance/cleaning Risks	Demolition/adaptation Risks
In addition to the hazards/risks normally associated with the type of works detailed on this drawing take note of the above. It is assumed that all works on the drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.		
SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX		

Change to the HydroBrake type	FE	04/05/23	PN	04/05/23	TG	04/05/23	
First Issue	FE	30/01/23	PN	30/01/23	TG	30/01/23	
SCALE @ A1	1:250		ISSUING OFFICE	NOTTINGHAM		PROJECT NUMBER	22-0611

CLIENT APPROVAL	A - APPROVED
	B - APPROVED WITH COMMENTS
	C - DO NOT USE
STATUS	PURPOSE OF ISSUE
S1	PRELIMINARY
TITLE	Drainage Strategy

PROJECT	Assington Autos
CLIENT	Assington Autos Ltd

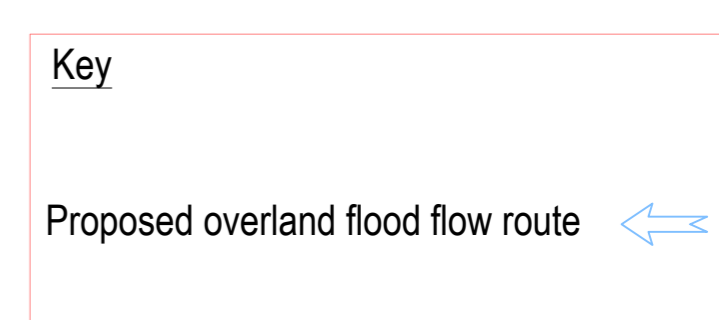
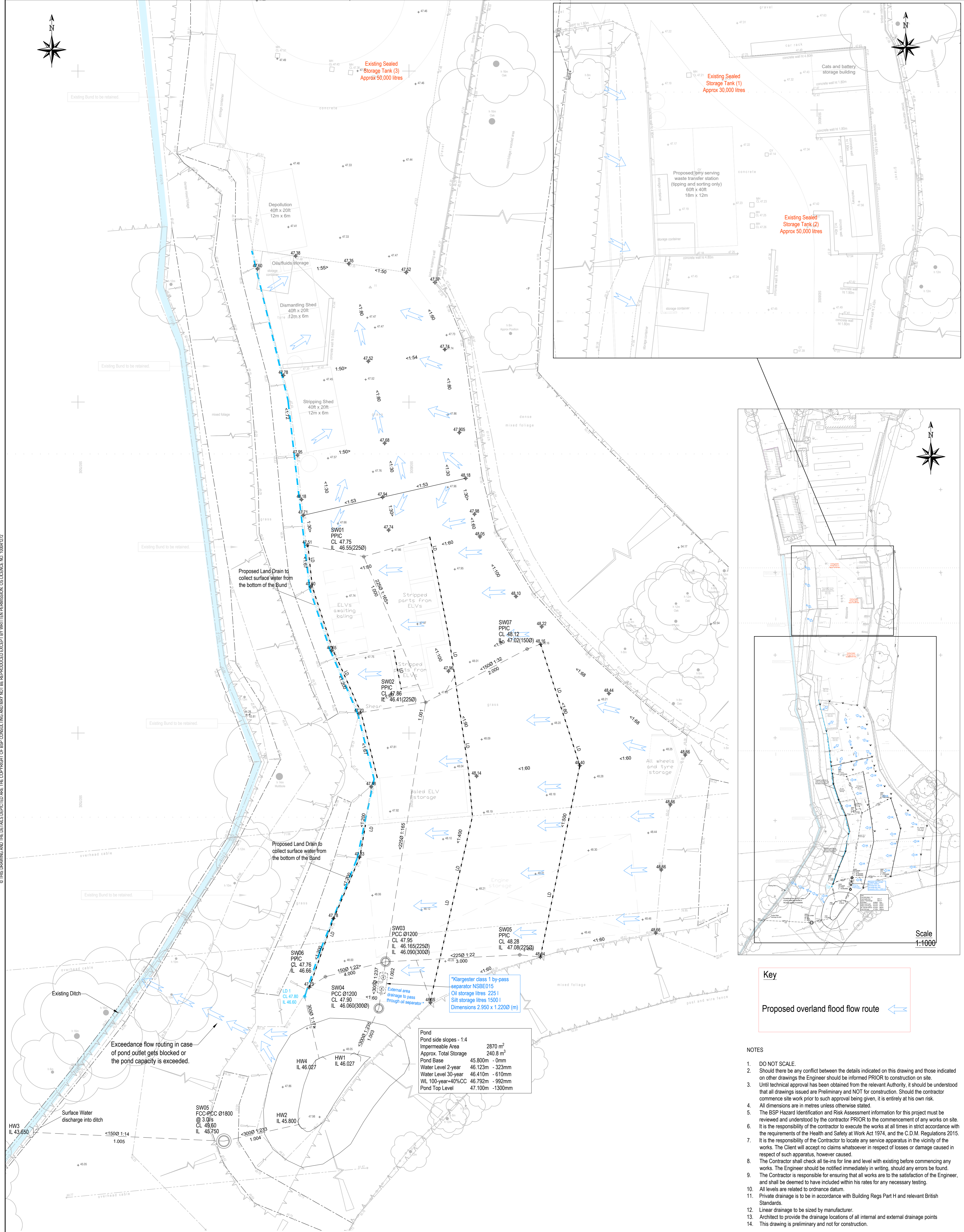
bsp CONSULTING

12 Oxford Street
 Nottingham, NG1 5BG
 Tel: 0345 413 4000
 e-mail: info@bsp-consulting.co.uk
 Also offices in Derby, Leicester and Sheffield

bsi BIM Design and Construction KITEMARK

PROJECT ORIGINATOR FUNCTIONAL SPATIAL FORM DISCIPLINE NUMBER REV
 AAAS-BSP-ZZ-ZZ-DR-C-0140 P02

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- NOTES
- DO NOT SCALE.
 - Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
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 - All dimensions are in metres unless otherwise stated.
 - The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
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 - Linear drainage to be sized by manufacturer.
 - Architect to provide the drainage locations of all internal and external drainage points
 - This drawing is preliminary and not for construction.

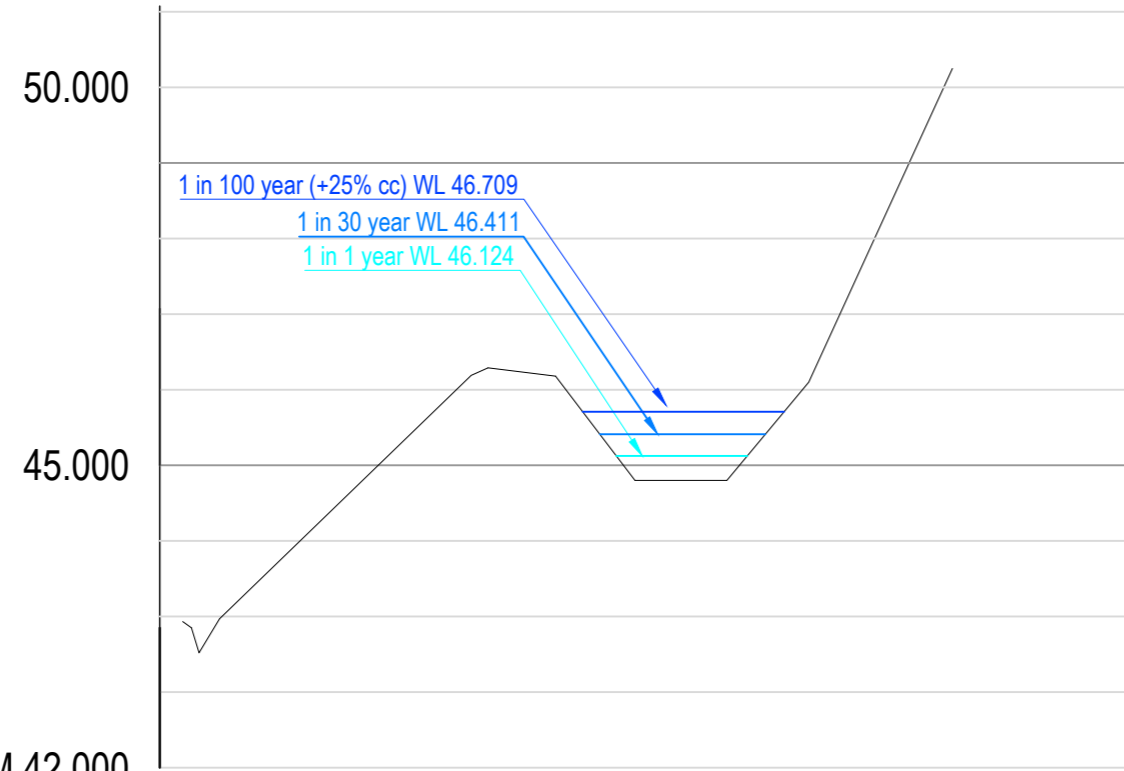
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<p>Construction Risks</p> <p>Maintenance/cleaning Risks</p> <p>Demolition/adaptation Risks</p> <p>In addition to the hazards/risks normally associated with the type of works detailed on this drawing take note of the above. It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.</p> <p>SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX</p>		<table border="1"> <tr> <th>REV</th> <th>COMMENT</th> <th>DATE</th> <th>CHECKED BY</th> <th>DATE</th> <th>APPROVED BY</th> <th>DATE</th> </tr> <tr> <td>1</td> <td>ISSUING OFFICE</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>NOTTINGHAM</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	REV	COMMENT	DATE	CHECKED BY	DATE	APPROVED BY	DATE	1	ISSUING OFFICE						2	NOTTINGHAM						<table border="1"> <tr> <th>CLIENT APPROVAL</th> <th>PROJECT</th> </tr> <tr> <td>A - APPROVED</td> <td>Assington Autos</td> </tr> <tr> <td>B - APPROVED WITH COMMENTS</td> <td></td> </tr> <tr> <td>C - DO NOT USE</td> <td></td> </tr> </table>	CLIENT APPROVAL	PROJECT	A - APPROVED	Assington Autos	B - APPROVED WITH COMMENTS		C - DO NOT USE		<table border="1"> <tr> <th>STATUS</th> <th>PURPOSE OF ISSUE</th> <th>CLIENT</th> </tr> <tr> <td>S1</td> <td>PRELIMINARY</td> <td>Assington Autos Ltd</td> </tr> </table>	STATUS	PURPOSE OF ISSUE	CLIENT	S1	PRELIMINARY	Assington Autos Ltd	<table border="1"> <tr> <th>TITLE</th> <th>PROJECT ORIGINATOR</th> <th>FUNCTIONAL SPATIAL FORM DISCIPLINE NUMBER</th> <th>REV</th> </tr> <tr> <td>Exceedance Flow Plan</td> <td>AAAS-BSP-ZZ-ZZ-DR-C-0180</td> <td></td> <td>P02</td> </tr> </table>	TITLE	PROJECT ORIGINATOR	FUNCTIONAL SPATIAL FORM DISCIPLINE NUMBER	REV	Exceedance Flow Plan	AAAS-BSP-ZZ-ZZ-DR-C-0180		P02
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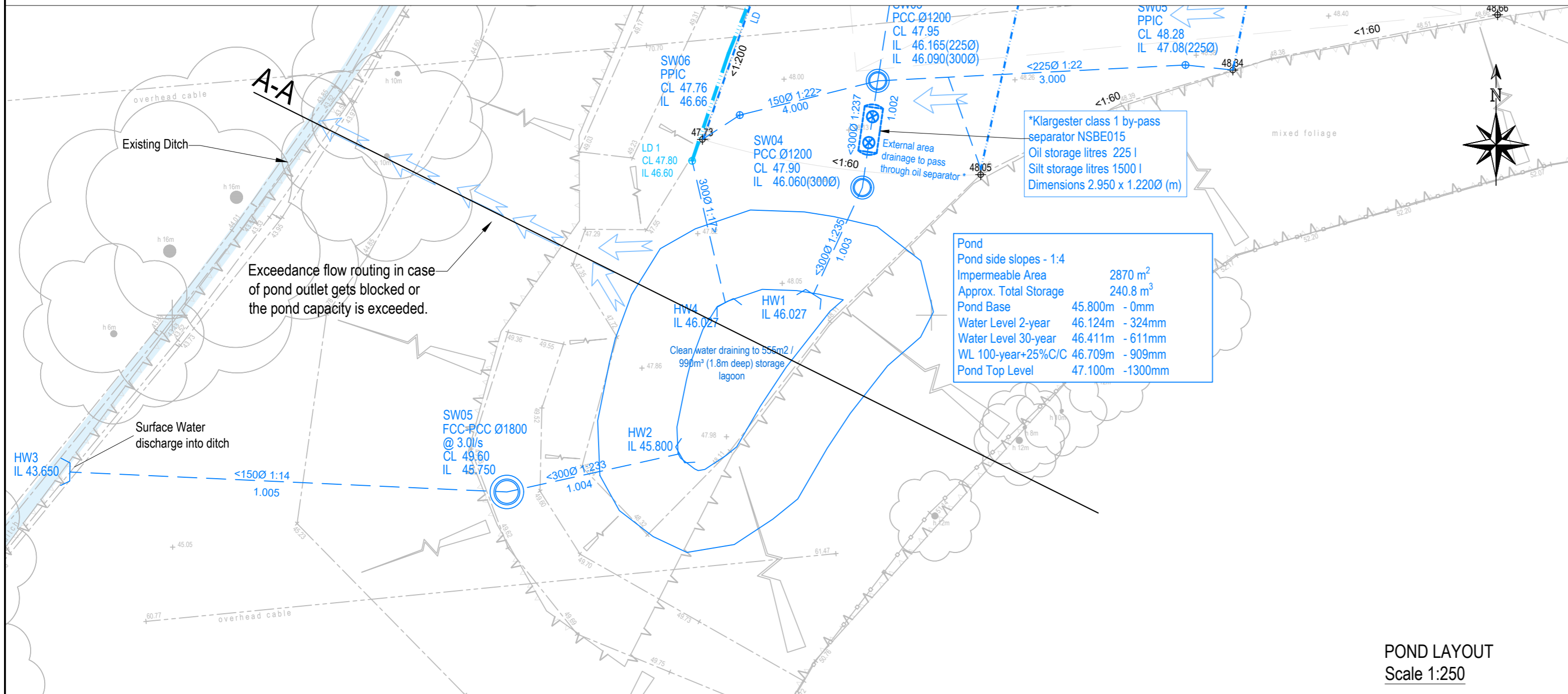
Section A-A

DATUM 42.000



CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000
PROPOSED FINISHED LEVEL	43.520	43.850	43.970	47.190	47.290	51.250	
PROPOSED POND LEVEL				47.100	45.800	45.800	47.100

Scale H-1:500 V-1:100



POND LAYOUT
Scale 1:250

NOTES

- DO NOT SCALE.
- Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
- Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
- All dimensions are in millimetres unless otherwise stated.
- The BSP Hazard Identification and Risk Assessment information for this project must be reviewed and understood by the contractor PRIOR to the commencement of any works on site.
- This drawing contains the following model files:
- This drawing to be viewed in conjunction with:

KEY PLAN

Construction Risks	Maintenance/cleaning Risks	Demolition/adaptation Risks

In addition to the hazard/risks normally associated with the type of works detailed on this drawing take note of the above.
It is assumed that all works on this drawing will be carried out by a competent contractor working, where appropriate, to an appropriate method statement.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION BOX					

P01	First Issue	FE	04/05/23	PN	04/05/23	PN	04/05/23
REV	COMMENT	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

SCALE @ A2	ISSUING OFFICE	PROJECT NUMBER
As shown	NOTTINGHAM	22-0611

CLIENT APPROVAL	
A - APPROVED	
B - APPROVED WITH COMMENTS	
C - DO NOT USE	

STATUS	PURPOSE OF ISSUE
S1	PRELIMINARY

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 Nottingham, NG1 5BG
 Tel: 0345 413 4000
 e-mail: info@bsp-consulting.co.uk
 Also offices in Derby, Leicester and Sheffield

PROJECT
Assington Autos

TITLE
Pond Section

CLIENT
Assington Autos Ltd

PROJECT ORIGINATOR	FUNCTIONAL	SPATIAL	FORM	DISCIPLINE	NUMBER	REV
AAAS-BSP-ZZ-ZZ-DR-C-0185						P01

Appendix IV

BIODIVERSITY NET GAIN REPORT APPROVED BY THE LOCAL PLANNING AUTHORITY



28 November 2022

Lynda Bacon
Babergh District Council
Endeavour House
8 Russell Road
Ipswich IP1 2BX

By email only

Thank you for requesting advice on this outline application from Place Services' ecological advice service. This service provides advice to planning officers to inform Babergh District Council planning decisions with regard to potential ecological impacts from development. Any additional information, queries or comments on this advice that the applicant or other interested parties may have, must be directed to the Planning Officer who will seek further advice from us where appropriate and necessary.

Application: DC/21/02579
Location: Assington Autos Cotton Wood Barracks Road Assington CO10 5LP
Proposal: Planning Application. Change of use of land to extend an Authorised Treatment Facility (salvage yard); construction of 5no storage buildings, and other associated operational works.

Dear Lynda

Thank you for re-consulting Place Services on the above application.

No objection subject to securing ecological mitigation and enhancement measures

Summary

We have reviewed the updated Preliminary Ecological Appraisal (Writtle Forest Consultancy, October 2021), the Biodiversity Net Gain Report – Version 2 (Writtle Forest Consultancy Ltd & Samsara Ecology Ltd, October 2022), the Biodiversity Metric 3.1 Calculations and the Great Crested Newt District Level Licensing Impact Assessment & Conservation Payment Certificate, provided by the applicant, relating to the likely impacts of development on designated sites, protected & Priority species and habitats.

We are satisfied that sufficient ecological information is available for determination, now that the proposal to culvert a 0.18m section of a stream has been removed from the application.

This provides certainty for the LPA of the likely impacts on designated sites, Protected and Priority Species & Habitats and, with appropriate mitigation measures secured, the development can be made acceptable.



The mitigation measures identified in Ecology and Nature Conservation Report (Susan Deakin Ecology, May 2020) and the Ecology Update (Susan Deakin Ecology, June 2022) should be secured and implemented in full.

It is highlighted that the applicant has confirmed their intention to proceed under the Great Crested Newt District Level Licensing scheme, via the provision of the Impact Assessment & Conservation Payment Certificate, which has been countersigned by Natural England. As a result, a copy of the licence should be secured as a pre-commencement condition of any consent.

We also recommend that a Wildlife Friendly Lighting Strategy is implemented for this application. Therefore, technical specification should be submitted prior to occupation, which demonstrates measures to avoid lighting impacts to foraging / commuting bats, which are likely present within the local area. This should summarise the following measures will be implemented:

- Light levels should be as low as possible as required to fulfil the lighting need.
- Warm White lights should be used at <3000k. This is necessary as lighting which emit an ultraviolet component or that have a blue spectral content have a high attraction effect on insects. This may lead in a reduction in prey availability for some light sensitive bat species.
- The provision of motion sensors or timers to avoid the amount of 'lit-time' of the proposed lighting.
- Lights should be designed to prevent horizontal spill e.g. cowls, hoods, reflector skirts or shields.

We are also pleased to see that based on the habitats present currently, the proposals will deliver a measurable biodiversity net gain of 10.22% for Habitat units and 100% for linear units. This is not sufficient to compensate for the loss of the Lowland Mixed Deciduous Woodland, which was cleared outside of planning permission in the last 5 years. However, as the current habitat present must be considered as part of this development, we are pleased that a measurable biodiversity net gain can be achieved in principle, as outlined under Paragraph 174 [d] of the National Planning Policy Framework 2021.

In addition, we support the proposed bespoke biodiversity enhancements. Therefore, the bespoke enhancement measures should be outlined within a Biodiversity Enhancement Strategy, which should be secured as a condition of any consent prior to beneficial use.

This will enable LPA to demonstrate its compliance with its statutory duties including its biodiversity duty under s40 NERC Act 2006.

Impacts will be minimised such that the proposal is acceptable subject to the conditions below based on BS42020:2013.

Submission for approval and implementation of the details below should be a condition of any planning consent.



Recommended conditions

1. ACTION REQUIRED IN ACCORDANCE WITH ECOLOGICAL APPRAISAL RECOMMENDATIONS

"All mitigation measures and/or works shall be carried out in accordance with the details contained in the updated Preliminary Ecological Appraisal (Writtle Forest Consultancy, October 2021) as already submitted with the planning application and agreed in principle with the local planning authority prior to determination."

Reason: To conserve protected and Priority species and allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 (Priority habitats & species).

2. PRIOR TO COMMENCEMENT ACTION REQUIRED: SUBMISSION OF A COPY OF NATURAL ENGLAND MITIGATION LICENCE FOR GREAT CRESTED NEWT

"Ground works shall not in in any circumstances commence unless the local planning authority has been provided with either:

- a) a Great Crested Newt Licence issued by Natural England pursuant to Regulation 55 of The Conservation of Habitats and Species Regulations 2017 (as amended) authorizing the specified activity/development to go ahead; or*
- b) a statement in writing from the Natural England to the effect that it does not consider that the specified activity/development will require a licence."*

Reason: To conserve protected species and allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 (as amended) and s17 Crime & Disorder Act 1998.

3. PRIOR TO BENEFICIAL USE: BIODIVERSITY ENHANCEMENT STRATEGY

"A Biodiversity Enhancement Strategy for Protected and Priority species shall be submitted to and approved in writing by the local planning authority.

The content of the Biodiversity Enhancement Strategy shall include the following:

- a) Purpose and conservation objectives for the proposed enhancement measures;*
- b) detailed designs to achieve stated objectives;*
- c) locations of proposed enhancement measures by appropriate maps and plans;*
- d) persons responsible for implementing the enhancement measures;*
- e) details of initial aftercare and long-term maintenance (where relevant).*

The works shall be implemented in accordance with the approved details and shall be retained in that manner thereafter."

Reason: To enhance protected and Priority species and allow the LPA to discharge its duties under the NPPF and s40 of the NERC Act 2006 (Priority habitats & species).



4. PRIOR TO BENEFICIAL USE: WILDLIFE SENSITIVE LIGHTING DESIGN SCHEME

“A lighting design scheme for biodiversity shall be submitted to and approved in writing by the local planning authority. The scheme shall identify those features on site that are particularly sensitive for bats and that are likely to cause disturbance along important routes used for foraging; and show how and where external lighting will be installed so that it can be clearly demonstrated that areas to be lit will not disturb or prevent bats using their territory.

All external lighting shall be installed in accordance with the specifications and locations set out in the scheme and maintained thereafter in accordance with the scheme. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.”

Reason: To conserve protected and Priority species and allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 (Priority habitats & species).

Please contact us with any queries.

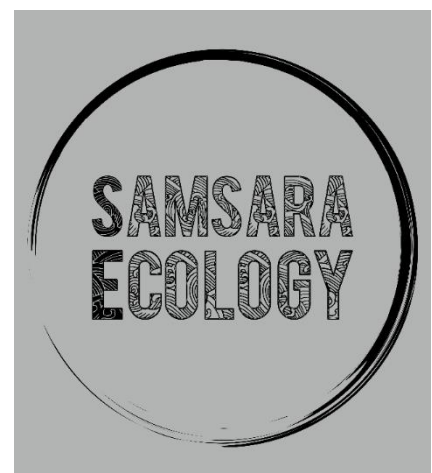
Yours sincerely,

Hamish Jackson ACIEEM BSc (Hons)
Senior Ecological Consultant
placeservicesecology@essex.gov.uk

Place Services provide ecological advice on behalf of Babergh District Council

Please note: This letter is advisory and should only be considered as the opinion formed by specialist staff in relation to this particular matter.

Biodiversity Net Gain
Assington Autos (Ref: 210818)
Fredrick Cook
Project Number: 077
Version: 2
October 2022



Assington Autos

Document Control

Project Information	
Client	Fredrick Cook
Project Type	Biodiversity Net Gain
Project Name	Assington Autos
Project Location	Barracks Road, Assington, CO10 5LP

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It is important that planning decisions are based on up-to-date ecological reports and survey data. However, it is difficult to set a specific timeframe over which reports, or survey data should be considered valid, as this will vary in different circumstances. In some cases, there will be specific guidance on this (such as for the age of data which may be used to support an EPS licence application). In circumstances where such advice does not already exist, CIEEM provides general advice in its Advice Note on the Lifespan of Ecological Reports and Surveys¹, which should be referred to if this report is not submitted within 12 months of the first production.

¹ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

Assington Autos

Technical Summary

Writtle Forest Consultancy commissioned Samsara Ecology Ltd on behalf of Fredrick Cook to complete a biodiversity net gain assessment of the change of use application at Assington Autos in 2021.

This net gain assessment has been updated in October 2022 following a change of use application and consultation with Essex Place Services

The assessment has been undertaken in accordance with Natural England's Biodiversity Metric 3.1 – auditing and accounting for biodiversity. This is the most recent version of the metric currently available.

The proposed development will result in the loss of an area of bare ground with ruderal/ephemeral vegetation. If the proposals include the creation of a pond and mixed scrub and the planting of four trees, then a 10.22 % net gain in habitat units can be achieved.

In addition, recommendations for features that would enhance the site for nesting birds and roosting bats have been set out.

The assessment has shown that the application can result in a net gain in biodiversity in line with the measurable gains outlined in Chapter 15 of the National Planning Policy Framework.

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1 Introduction

- 1.1.1 Samsara Ecology Ltd was commissioned by Writtle Forest Consultancy Ltd on behalf of Fredrick Cook (the Client) in September 2021 to undertake a Biodiversity Net Gain (BNG) assessment at Assington Autos, The Breakers Yard, Barracks Rd, Assington CO10 5LP (the Site) [Ordnance Survey (OS) grid reference TL 93794 37375].
- 1.1.2 The Site is approximately 1.7 ha and comprises a breakers yard for cars. The red line indicates the land ownership boundaries in Figure 1.

Figure 1 - The Site Boundaries



- 1.1.3 The Client has submitted an application for a change of use of land to extend an authorised treatment facility (salvage yard) and construct five storage buildings and other associated operational works within the blue areas shown in Figure 1.
- 1.1.4 Following consultation with the planning authority and Essex Place Services, the proposals have changed, and the section of the stream at the front of the Site will now not be culverted. Figure 2 shows the areas of work with the changed design.

Figure 2 - New Proposed Works Areas

1.2 Purpose of the Report

1.2.1 This report has been written in accordance with the Chartered Institute for Ecological and Environmental Management's (CIEEM) guidelines for report writing and aims to:

- Classify the existing habitats within the Site.
- Evaluate the site's biodiversity value and assess the impact on the value with the proposed development.
- Make recommendations for compensation and or enhancement measures which will result in a net gain in biodiversity.

1.2.2 The relevant planning policies as they relate to biodiversity net gain are presented in **Appendix 1**.

1.3 Suitably Qualified Ecologist (SQE)

1.3.1 The report has been written by Hayley Farnell, BSc, MSc (hons), an SQE with over 18 years of professional experience in environmental consultancy. Hayley is a full member of the Chartered Institute of Ecological and Environmental Management (CIEEM), of which Samsara Ecology is also a registered practice.

1.3.2 Training completed regarding biodiversity net gain includes:

- CIEEM – Calculating and Using Biodiversity Units (October 2020)
- UKHab – UK Hab and Biodiversity Net Gain (May 2022)

2 Methodology

- 2.1.1 The 25-year environmental plan² and the National Planning Policy Framework (NPPF)³ include policies that aim for all developments to achieve a net gain in biodiversity. This is to be achieved through compensation and/or enhancement of habitats.
- 2.1.2 Ideally, the net gain should be achieved within the Site boundaries; however, biodiversity offsetting can be applied where this can't be done. This allows a developer to achieve a net gain by creating or enhancing habitats beyond the Site's boundaries.

2.2 Habitat mapping

- 2.2.1 The habitats have been mapped in accordance with the UK habitat classification system⁴. The classifications used within this system are those used within the biodiversity metric 3.1 published by Natural England⁵.
- 2.2.2 Samsara Ecology Ltd produced a Phase 1 habitat map in January 2021 as part of a Preliminary Ecological Appraisal (PEA). The classifications used within the Phase 1 habitat map have been translated into UK habitat classifications using the tools provided within the biodiversity metric.
- 2.2.3 QGIS has been used to digitise habitat data and calculate the area of habitats (ha) and length of linear features (km).

2.2.2 Biodiversity net gain

- 2.2.4 The biodiversity metric is a spreadsheet-based system that can be used to calculate the existing value of the Site and the potential change to that value with the proposed development.
- 2.2.5 If the value is calculated as a negative number with the proposed development, this indicates a potential net loss. A positive number indicates a net gain.
- 2.2.6 The metric uses different multipliers within the calculators. These are:
- Habitat distinctiveness
 - Habitat condition
 - Strategic significance
- 2.2.7 The distinctiveness multipliers are pre-determined within the spreadsheet. The habitat condition and strategic significance have been entered manually and are described as follows:
- **Habitat condition** – Aims to measure the biological 'working order' of a habitat type judged against that particular habitat's perceived ecological optimum state.

² Defra (2019), A Green Future: Our 25 Year Plan to Improve the Environment, HM Government

³ MHCLG (2021), National Planning Policy Framework, HM Government – Revised July 2021

⁴ Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). The *UK Habitat Classification User Manual 1.1* at <http://www.ukhab.org>

⁵ Stephen Panks, Nick White, Amanda Newsome, Jack Potter, Matt Heydon, Edward Mayhew, Maria Alvarez, Trudy Russell, Sarah J. Scott, Max Heaver, Sarah H. Scott, Jo Treweek, Bill butcher and Dave Stone. (2021). Biodiversity Metric 3.1: auditing and accounting for biodiversity value. User guide Natural England

A – Natural England, B – Imperial College, University of London, C – Environment Agency, D – Department for Environment, Food and Rural Affairs

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The habitat condition within this assessment has been determined by comparing the habitats recorded onsite to the descriptions detailed within 'Condition sheets' presented in the technical supplement of the metric's user guide.

- **Strategic significance** – Works at a landscape scale, and it gives additional unit value to habitats located in preferred locations for biodiversity and other environmental objectives. The local planning authorities' local plan and policies have been reviewed to determine the strategic significance of the habitats.

2.2.8 The ecologist has worked with the Client and relevant stakeholders to achieve a net gain through design.

2.2.9 A summary of the calculations is presented in this report, and detailed calculations are found in the spreadsheet that accompanies this document.

3 Baseline Ecological Conditions

3.1 Desk Study

3.1.1 There are ten designated sites for wildlife conservation within 2 km of the Site. These are described in Table 1.

Table 1 – Designated Wildlife Sites

Site Name	Designation	Distance and Location from the Site	Habitat and Species included in the designation
Assington meadow	CWS	0.4 km north	<ul style="list-style-type: none"> Water vole Wet grassland
Leadenhall Wood	CWS	0.6 km southeast	<ul style="list-style-type: none"> Ancient broadleaved woodland
Assington thicks	CWS	0.7 km west	<ul style="list-style-type: none"> Ancient broadleaved woodland Ponds Hazel dormouse
Arger Fen	SSSI, LNR	1 km south	<ul style="list-style-type: none"> Ancient broadleaved woodland. Fen. Wet grassland. Acidic grassland.
Babergh 179	CWS, RNR	1.1 km south-west	<ul style="list-style-type: none"> Lesser calamint
Assington churchyard	CWS	1.3 km north	<ul style="list-style-type: none"> Flower rich grassland
Tiger Hill	LNR	1.4 km south-west	<ul style="list-style-type: none"> Ancient coppice woodland. Newly regenerating woodland alongside wet meadows. One of only a few ancient woodlands with wild cherry.
Tiger Hill long meadow	CWS	1.6 km south-west	<ul style="list-style-type: none"> Wet acid fen meadow
Rowley Grove	CWS	1.6 km south	<ul style="list-style-type: none"> Ancient broadleaved woodland.
Breach Grove/ Kingsland Lane	CWS	1.8 km southeast	<ul style="list-style-type: none"> Ancient broadleaved woodland.
<ul style="list-style-type: none"> CWS – County Wildlife Site SSSI – Site of Special Scientific Interest LNR – Local Nature Reserve 			

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RNR – Roadside Nature Reserve

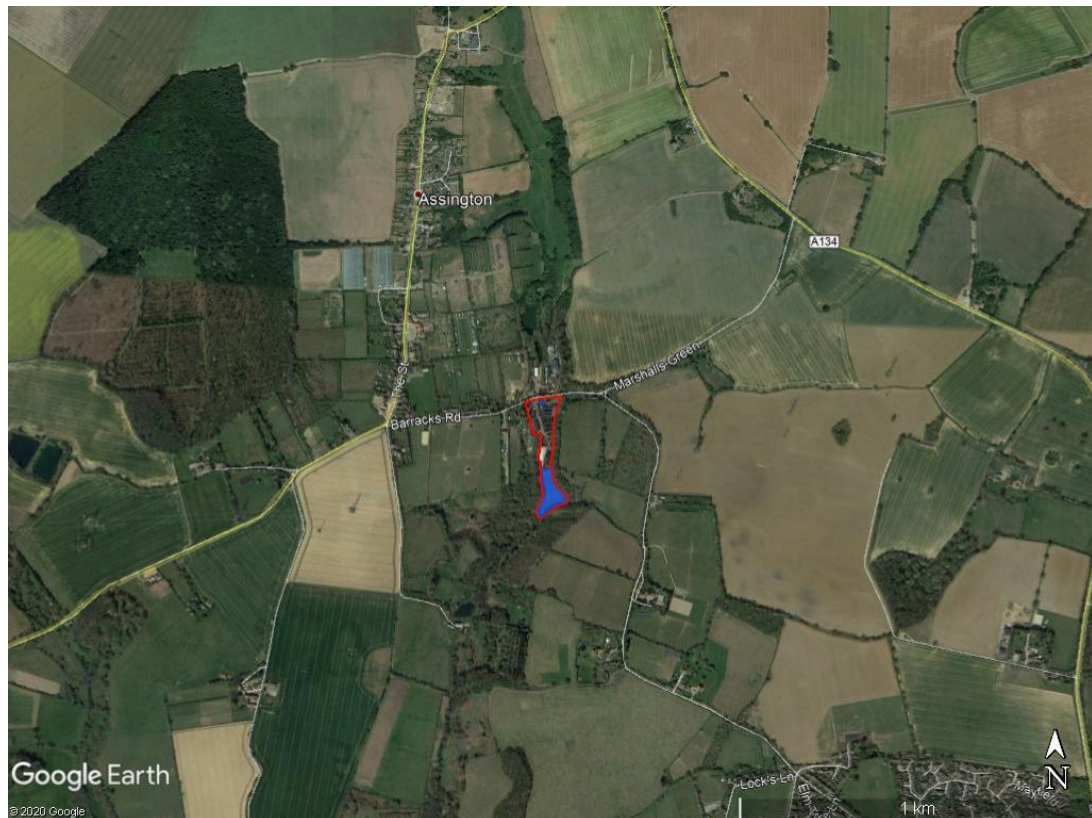
- 3.1.2 The proposed development will not cause the direct or indirect loss of the habitats included within the designations of the conservation sites.
- 3.1.3 The following policies and plans relating to biodiversity within Babergh District Council have been reviewed:
- Babergh Local Plan (2006)
 - Babergh Local Plan 2011-2031 Core Strategy and Policies (2014)
- 3.1.4 None of the habitats recorded within the development area of the Site are included within the biodiversity policies or plans, and so 'Area/compensation not in local strategy' has been applied for the strategic significance of the existing habitats.

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3.2 Habitats

3.2.1 The Site is located on the outskirts of the village of Assington. The surrounding habitats are predominantly arable and woodland. The proposed development area in the south of the Site is surrounded on three sides by woodland. The woodland supports mature alder (*Alnus glutinosa*) and crack willow (*Salix fragilis*). The ground flora includes common reeds (*Phragmites australis*) and great horsetail (*Equisetum telmateia*). A stream runs under the Site and through the woodland. The Site is shown in the context of the surrounding habitats in Figure 3.

Figure 3 - The Site in the Context of Surrounding Habitats

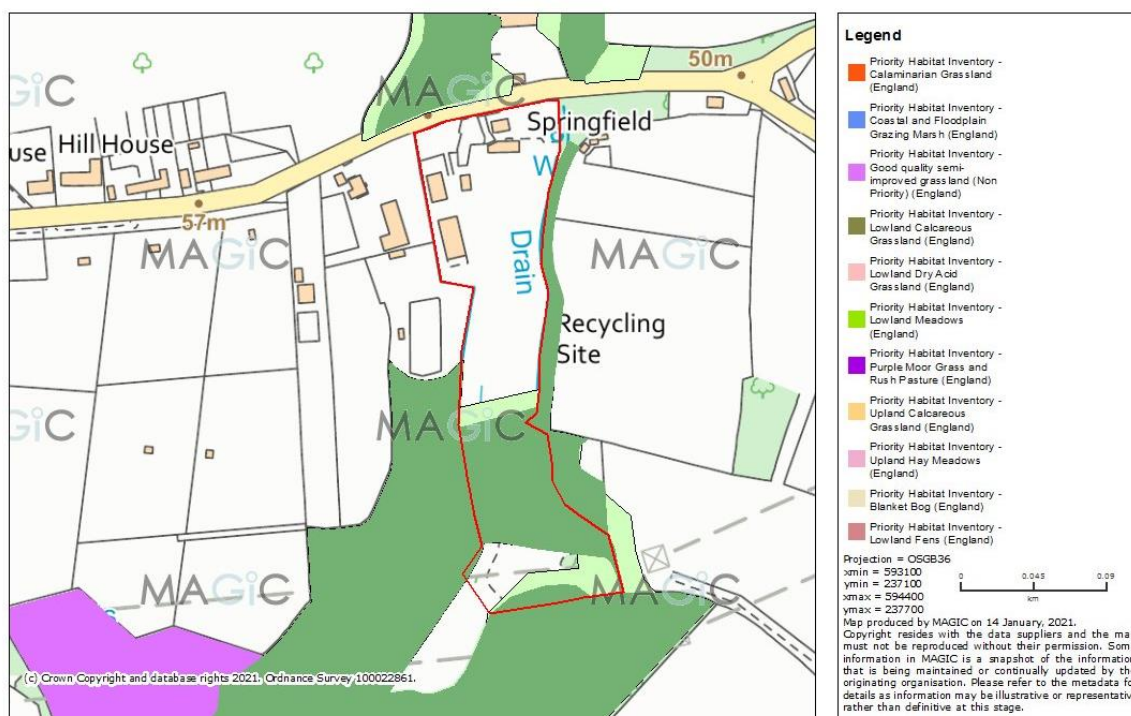


3.2.2 Notable and priority habitats are presented in the 'priority habitats' map in Figure 4. It should be noted that the woodland shown within the development area on the map is not the current habitat, and historic aerial images on Google Earth show that this area of woodland was removed sometime after 2015. On the map, the white area to the southeast of the site is part of the wet woodland and should be shown in green. Mature wild cherry trees are located in the Priority Inventory Habitat (PIH). In reference to the citation for Tiger Hill LNR, wild Cherry is rarer in Suffolk woodlands.

Figure 4 - Priority Habitats

MAGiC

Priority habitats



3.2.3 The composition of habitats within the Site is presented in Table 2 alongside the definitions given in the UK habitat classification guidance and the habitat type applied within the biodiversity metric.

Table 2 – Existing Habitats within the Site

Habitat	Area (ha)	Definition	Habitat type used in the metric
17 Ruderal/Ephemeral	0.6	Short patchy plant associations typical of unmanaged areas in arable landscapes, derelict urban sites, quarries and railway ballast.	Sparsely vegetated land – Ruderal/Ephemeral
u1b5 Buildings	0.02	A relatively permanent enclosed construction over a plot of land, having a roof and usually windows and often more than one level, used for a wide variety of activities, such as living, entertaining, or manufacturing.	Urban – Developed land; sealed surface

3.2.4 The conditions applied to each of the habitats and comments are presented in Table 3. These assessments were made with the aid of the condition assessment spreadsheet.

Table 3 – Condition Categories Applied to Existing Habitats

Habitat	Condition sheet identification	Condition applied
Sparsely vegetated land – Ruderal/Ephemeral	Urban	Poor – All core criteria are being failed.
Urban – Developed land; sealed surface	No condition sheet for this habitat type	N/A other – Default

3.3 Linear features

- 3.3.1 No existing linear features will be removed or changed with the proposed development.

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4 Proposed development

- 4.1.1 The Client has applied to change of use of land to extend an authorised treatment facility (salvage yard), the construction of five storage buildings and other associated operational works.
- 4.1.2 The works will result in the loss of areas of bare ground that is sparsely vegetated by ruderal/ephemeral vegetation.
- 4.1.3 The earth bund around the site's southern end and an area of ruderal/ephemeral vegetation in the south of the Site can be used to improve biodiversity through planting. The calculation assumes that the ruderal/ephemeral vegetated area will be lost but that the existing gorse scrub on the bund will be retained and mixed scrub planted alongside it to increase the coverage around the edge of the Site.

5 Biological Net Gain

5.1 Biodiversity Net Gain Calculations

5.1.1 The summary of the biological impact assessment calculations is presented in Table 4. The results show a net gain of 10.22% is achievable with the proposed development.

5.1.2 The habitat results are based on the following assumptions:

- An area of 0.06 ha in the south of the Site will be used to create a pond (non-priority habitat).
- The earth bund will be used to plant mixed scrub of moderate quality. A moderate quality can be achieved by planting a variety of native species.
- Trees will be planted to create a habitat of 0.27 ha 'urban tree'. This can be achieved by planting 2 small and 2 medium trees, which are assumed to be poor quality in the calculator.

5.1.3 The trees should be planted in a line on the top of the bund along the eastern or western boundary of the Site. This would create a 100% gain in linear units, as there are currently no trees along these sides.

Table 4 - Biodiversity Metric Results

Onsite Baseline	
Habitat units	1.20
Linear units	0.00
Onsite post-intervention (including habitat retention, creation, and enhancement & succession)	
Habitat units	1.32
Linear units	0.02
Total net % change (including all on-site and off-site habitat creation and retained habitats)	
Habitat units	10.22%
Linear units	100%

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5.2 Enhancement for wildlife

5.2.1 In addition to the net gain in biodiversity units, it is recommended that enhancement features are included for wildlife. These will include:

- The installation of at least three bird boxes to mature trees or new buildings with the proposals.
- The installation of at least three bat boxes to be attached to mature trees around the edge of the Site.

5.2.2 Examples of the enhancement features are presented in Table 5.

Table 5 – Examples of Enhancement Features for Wildlife

Description of Box	Example Dimensions	Example Image
<p>A single-chambered box is manufactured from WoodStone® with an entrance hole suitable for passerine birds such as tits, sparrows, nuthatches, and flycatchers.</p> <p>The box can be attached to facades or trees.</p>	<p>Width: 200 mm Height: 310 mm Length: 200 mm Weight: 6.9 kg</p>	 <p>Photo Courtesy of Vivara pro</p>
<p>This type of box is a suitable design for bat species that typically roost in woodland environments. It has two entrances at the rear and front and a domed top to allow bats to roost in clusters. Due to the open bottom, the box does not require cleaning or maintenance, and the design is effective against small predators and excludes drafts.</p>	<p>Height: 360 mm Diameter: 160 mm Weight: 4.3 kg</p>	 <p>Photo courtesy of Schwegler</p>

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5.3 Method of delivery

- 5.3.1 To achieve the biodiversity net gain and enhancement measures set out in this assessment, a Construction Environmental Management Plan (CEMP) and Landscape and Ecology Management Plan (LEMP) can be secured through conditions attached to the planning permission.
- 5.3.2 The CEMP would set out the means for protecting wildlife in the lead-up to and during construction. This would include (but not be limited to):
- Details of mitigation methods set out in district licences for great crested newts.
 - Details of two-staged vegetation cut on the earth bund as a precaution for reptiles.
 - Details on suitable timing for undertaking vegetation removal outside the nesting bird period.
 - Provision of ecological supervision if vegetation is removed during the nesting bird season.
 - Details on lighting restrictions on the site's edges to preserve dark corridors around the Site during the works.
- 5.3.3 The Landscape and Ecology Management Plan (LEMP) will be produced to set out the aims and objectives for habitat creation and enhancement within the Site, with long-term objectives and outline management practices. The LEMP would include (but not be limited to):
- Details of the planting required to achieve the biodiversity net gain calculated in this assessment.
 - Details of the bat and bird box locations.

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6 Conclusions

- 6.1.1 In September 2021, Samsara Ecology completed a biodiversity net gain assessment at Assington Autos, which has been updated in October 2022.
- 6.1.2 The assessment found that the development can result in a 10.22 % gain in habitat units if a pond and mixed scrub are created with the proposals.
- 6.1.3 Enhancement for wildlife has also been recommended to be included in the detailed designs of the proposed development.

Appendix 1 Biodiversity Net Gain Policies

Policy

National Planning Policy Framework (NPPF) (revised 2021)

Chapter 15 of the National Planning Policy Framework (NPPF) aims at conserving and enhancing the natural environment and states that planning policies and decisions should contribute to and enhance the natural and local environment. In terms of biodiversity, this should be achieved by:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils,
- recognising the intrinsic character and beauty of the countryside, and wider benefits from natural capital and ecosystem services, and
- minimising impacts on and providing net gains for biodiversity by establishing coherent ecological networks that are more resilient to current and future pressures.

The NPPF states that to protect and enhance biodiversity, [local] plans should:

- identify and safeguard components of wildlife-rich habitats and wider ecological networks, and
- promote the conservation and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

The NPPF states that when determining planning applications, local planning authorities should refuse applications that:

- cause significant harm to biodiversity which cannot be avoided, adequately mitigated or, as a last resort, compensated for,
- plan to develop on land within or outside of a Site of Special Scientific Interest (SSSI) and which is likely to have an adverse effect on it (either individually or in combination with other developments) and/or
- result in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) unless there are wholly exceptional reasons and where a suitable compensation strategy exists.

The local planning authority should support developments whose primary objective is to conserve or enhance biodiversity, while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

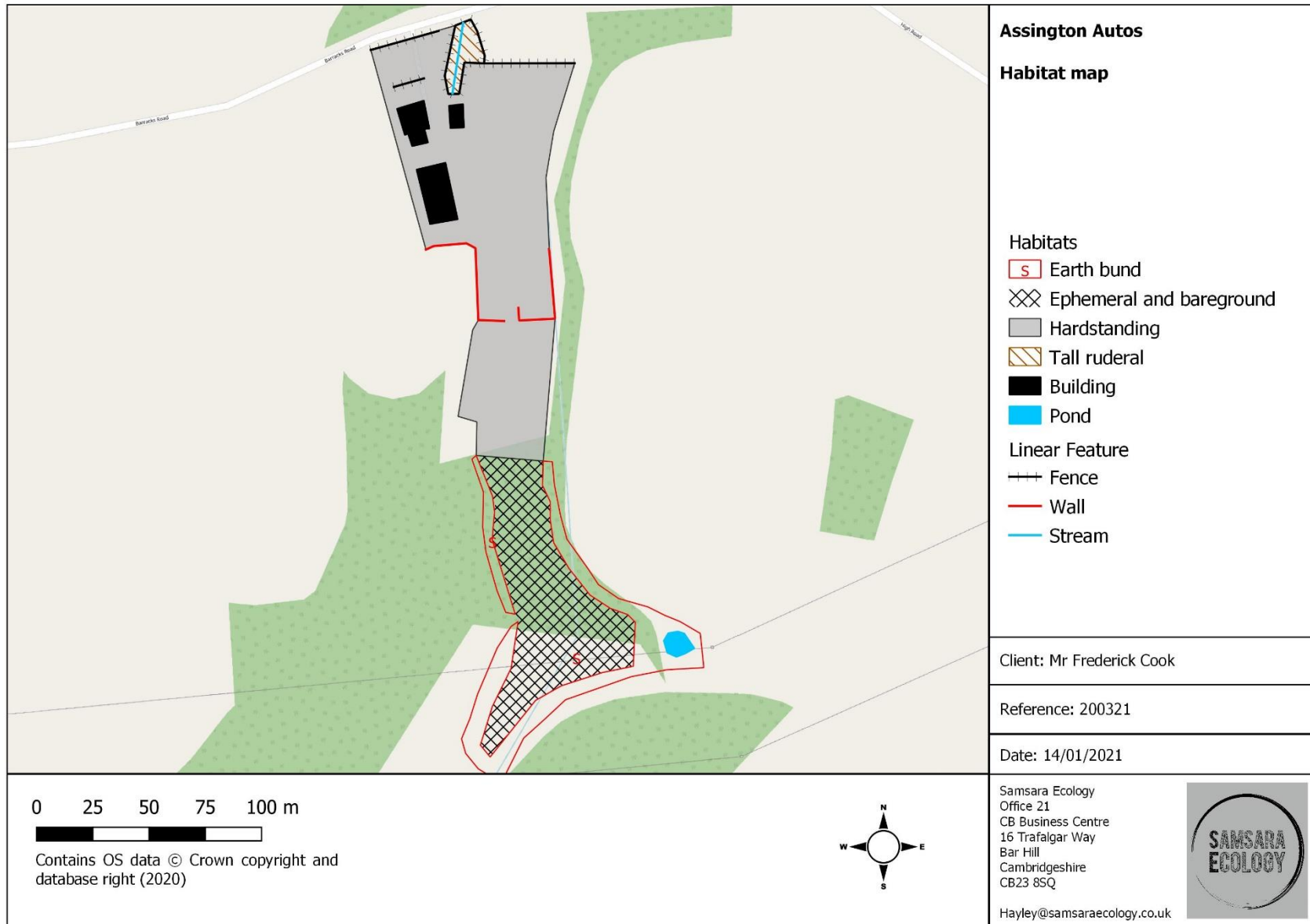
HM Government – 25-Year Environment Plan

The 25-year plan to improve the environment sets out what the government intends to do to increase biodiversity, reduce climate change and secure ecosystem services. It aims to deliver cleaner air and water, protect threatened species, and provide richer wildlife habitats.

Appendix 2 Habitat Map



Appendices



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