

SCHEDULE A: Applications with Recommendation

16/1095

Item No: 01

Date of Committee: 17/03/2017

Appn Ref No:
16/1095

Applicant:
Riverside Group

Parish:
Carlisle

Agent:

Ward:
Morton

Location: Land between Seatoller Close, Highfield Avenue and Ashness Drive, (Isobel's Green), Carlisle

Proposal: Installation Of Sustainable Urban Drainage System (SUDS Pond)

Date of Receipt:
04/01/2017

Statutory Expiry Date
01/03/2017

26 Week Determination

REPORT

Case Officer: Stephen Daniel

ADDENDUM

This application was deferred by Members at the Development Control Committee on the 10th February 2017 so that the applicant could submit some additional information on how the SUDS system would work and function. The applicant has submitted an 8 page Memorandum Report which provides further information on the SUDS system and this report is reproduced in full in the Schedule. Paragraph 3.10 summarises the main points contained within the Memorandum Report and Paragraphs 6.4 and 6.5 have also been amended following its receipt.

1. Recommendation

- 1.1 It is recommended that this application is approved with conditions.

2. Main Issues

- 2.1 Whether The Proposed Surface Water Drainage System Would Be Acceptable
2.2 Impact Of The Proposal On Biodiversity
2.3 Other Matters

3. Application Details

The Site

- 3.1 Isobel's Green has a site area of 1.26 hectares and is registered as an urban green. The site contains grass areas, a number of which suffer from poor drainage and are often water logged, an area that has been planted with trees and a wild flower area.
- 3.2 There are currently flooding issues in the area with the runoff from Isobel's Green being a contributing factor. During periods of heavy rain, water discharges from the site onto Westrigg Road, which sits at a lower level than the site. This has led to the flooding of properties on this road from surface water.
- 3.3 A French drain has been installed at the northern end of the site in an attempt to reduce flooding in the gardens of the properties on Westrigg Road that back onto the site. Whilst this has reduced flooding in the gardens it has not prevented surface water from the site discharging onto Westrigg Road.
- 3.4 The site is owned by Riverside, who are keen to improve the quality of the green space for use by local residents and to improve biodiversity. In April 2016, planning permission was granted for the provision of new 3m bitmac foot/ cycle paths that would link Ashness Drive, Seatoller Close and Westrigg Road. A new 2m wide shingle footpath would also be installed along the western side of the green and this would link into the 3m wide bitmac paths. The paths would improve access across the green, large sections of which are prone to water logging, and lead to the creation of a circular walk. The wider paths would be built to an adoptable standard and would be slightly elevated to avoid flooding issues. Bollards would be installed at the start of the paths to prevent vehicular access. Three dog bins would be installed within the green at the northern, southern and eastern ends and this would help to ensure that the area, which is well used by dog walkers, remains free from dog waste. The permission also included a visitor parking area with five spaces, including one disabled space, which would be sited on the eastern side of the green, adjacent to Seatoller Close.
- 3.5 The 2016 permission showed the northern end of the footpath adjacent to Westrigg Road being constructed of permeable paving, with attenuation tanks being installed below ground to absorb water runoff. The Lead Local Flood Authority (LLFA) were consulted on this application and had no objections subject to conditions. Whilst it supported the use of a cellular soakaway system at the Westrigg Road entrance, calculations would need to be provided to ensure that no inappropriate water runoff occurs and a condition was added to the permission to cover this issue.
- 3.6 Following further work that was undertaken in order to discharge the surface water drainage condition, it has become apparent that the previously approved drainage scheme would not alleviate the flooding problems in the area, in part due to the ground conditions which would not be suitable for soakaways. Following further discussions with the LLFA, it has been agreed that a SUDS system would be the best solution for surface drainage on this site.

The Proposal

- 3.7 The proposal is seeking planning permission for the creation of a SUDS pond at the northern end of the site. This would slow surface water discharge rates from the site and reduce the risk of flooding to properties on Westrigg Road. A series of swales would be created within the site and these would direct water to the ponds. The surface water from the proposed car park would also be directed to the SUDS pond.
- 3.8 The SUDS pond would include a permanent pond and areas that would only store water at times of heavy rainfall. The permanent pond would have a maximum depth of 1.2m, with shallow gradients being created to the sides. It is proposed to plant marginal plants to stabilise the banks and oxygenate the water to improve biodiversity. It has been designed to have a capacity when full to hold a 1 in 100 year storm incident plus a 40% allowance for climate change. A hydrobrake would limit the maximum discharge rate from the pond to 3 litres per second. This figure has been agreed with the LLFA and United Utilities and this would reduce the risk of surcharging the highway drains and public surface water sewer that the surface water from the pond would discharge into.
- 3.9 The pond would be fenced off for public safety and the submitted plans show a 1.3m high timber rail fence, with pig netting attached to the bottom 0.6m. A bund would be created along the northern and western sides of the pond. This would measure 0.25m to 0.3m in height with 1:3 slopes which would be seeded with a wild flower mix to boost diversity and amenity value to the area.
- 3.10 Following the deferral of the application at the previous committee, the applicant has submitted a Memorandum Report which provides further information on the proposed SUDS system. The main points from this report are summarised below:

- Government is supportive of SUDS. It recognises the importance of parks and green spaces in tackling issues such as flooding and climate change;
- the Isobel's Green site has clay soils and relatively steep topography. As a result, flooding due to green field runoff impacts properties downstream. In an effort to alleviate flood risk a connection was made to a combined sewer however this merely transferred flood risk elsewhere;

The Proposed SUDS System

- surface water should be disposed of in accordance with the SUDS hierarchy. Preference is given to infiltration over discharge to a watercourse. If a watercourse is not available then discharge to a surface water sewer may be used and as a last resort discharge to a combined sewer if no other options are available;
- for the Isobel's Green site the soil is highly impermeable and unsuitable

for infiltration drainage and there are no watercourses or surface water sewers available. Discharge to the combined sewer is therefore proposed as the last resort;

- United Utilities has stipulated a maximum discharge rate to the sewer of 3l/s to protect their assets and ensure that flooding does not occur downstream;
- the excess runoff must be stored and drained over an extended period of time. This attenuation is crucial to protect the downstream catchment from flooding;
- trees have been planted within the site which over time are expected to result in a benefit in terms of runoff reduction;
- many methods of attenuation are available in SUDS design. Selection of an attenuation method is based on the amount of storage required, site levels, sustainability, treatment, biodiversity / amenity value and cost. Drainage design was undertaken considering all of the above;
- established and current drainage guidance states that wherever possible runoff should be managed on the surface to enable the performance of the system to be more easily inspected and managed;
- underground storage would increase the risk of blockages which would increase the probability of flood risk to properties downslope, would be more expensive to construct and maintain and would provide no amenity or biodiversity benefits;
- underground conveyance of flow in pipes would be at increased blockage risk and require multiple intake structures. Exceedance flows resulting from any blockage would be more difficult to intercept and result in increased flood risk;
- swales are a robust form of flow conveyance. Blockage is less likely and the overland flow from any blockage can be easily intercepted by the next swale downslope;
- R G Parkins have compiled a SUDS operations and maintenance manual for this scheme detailing maintenance works and who will be carrying out these works;

Benefits to Amenity

- SUDS is expected to reduce waterlogging on the site and therefore increase accessibility;
- the SUDS system has also been designed to be planted with a wide variety of native plant species which in turn will attract a range of wildlife. This will create an extremely attractive space that local people will enjoy visiting;

- there are numerous papers detailing the benefits of green and blue space within the urban environment;

Health & Safety Matters

- Health and Safety discussions have a tendency to concentrate on accident rather than the health benefits of proposals. This may result in short term safety concerns overriding long term health benefits;
- sustainable drainage systems are proven to provide health and wellbeing benefits relating to improved quality of life and recreational and educational benefits for children and adults;
- the detention basin has been designed in accordance with the SUDS manual;
- the vast majority of water bodies are not designed with health and safety in mind and to the stringent requirements of the SUDS manual. The basin is sized so that an increase in top water level resulting from a rainfall event will be gradual;
- the proposed pond would be far less hazardous than the Rivers Eden, Caldew and Petteril or the open water feature at nearby Upperby Park;
- clear demarcation of the water's edge is proposed using planting. Plants will be selected to impede access whilst retaining a view of the water;
- embankment gradients for the usually dry detention basin have been set to an appropriate gradient of 1:3 and a bench would be provided prior to the permanent water which would prevent someone falling into the permanent pond. In addition to the above and over and above the requirements of the SUDS manual a fence is proposed;
- the gradient of the pond sides at 1:3 would prevent the possibility of someone suddenly finding themselves in deep water;
- the HSE understands and accepts that children will often be exposed to play environments which, whilst well-managed, carry a degree of risk and sometimes potential danger - this helps children to understand and deal with risk. Striking the right balance does not mean all risks must be eliminated or continually reduced;
- the incorporation of a protective fence would reduce the risk and a warning sign and a life buoy could be installed if deemed appropriate;

Biodiversity

- urban green space is valuable for people and wildlife and integrating the needs of people and wildlife is mutually beneficial;
- water within a SUDS scheme is an essential resource for the growth and development of plants and animals. The proposal would provide shelter, food, foraging and breeding opportunities for a variety of species;

- the vegetation around and in the pond as well as the tree roots would help filter and improve the water quality by removing harmful pollutants;
- the site could be further enhanced by the introduction of surface water system, allowing a new ecosystem to become established;
- the pond with shallow, gently sloping, uneven margins with scrub planting would provide a range of micro habitats;
- the Welsh Government commissioned an external assessment of costs and benefits of SUDS and concluded not enough vegetated ponds were being created which can deliver multiple benefits and are easier and cheaper to maintain than underground systems.

4. Summary of Representations

4.1 This application has been advertised by means of a site notice and notification letters sent to 73 neighbouring properties. At the time of writing the report one letter of comment had received which makes the following points:

- using village greens to sort out flooding problems is not using such greens for the purpose for which they were intended, but given the flooding that all the extra building in the area has created and the failure of the drainage measures taken to alleviate those problems, no doubt something has to be done;
- since the ponds attract children and can be dangerous and given that they attract waste and can be unsightly and unhealthy all ponds should be well fenced off;
- if the ponds are built their predicted success should be well researched, their success or failure should be well monitored, their size should be kept a minimum and if they don't work they should be removed.

4.2 A letter of objection has been received from Cllrs Bell and Stothard. Whilst they support in principle the need for a drainage scheme in this area, they strongly object to there being open ponds. These create dangers and risks to residents of all ages particularly children in this area. As this is an engineering matter, there is always more than one solution to be found. The water collection ponds must be covered at all times to protect users from risk.

5. Summary of Consultation Responses

Cumbria County Council - (Highways & Lead Local Flood Authority): - no objections, subject to conditions;

Green Spaces: - are aware of Riverside's intentions to improve the site for public recreation and welcome the progress made - have no specific comments on the SUDS proposal;

Cumbria Constabulary - North Area Community Safety Unit: - the development can be reasonably well overlooked from various directions (during daylight). However, the landscaping scheme shall have an effect on natural surveillance opportunities as views will be obstructed as plants become established and mature. Unwelcome or nuisance activity is more likely to occur where it cannot be noticed, so a strict pruning and maintenance schedule is necessary to keep the landscaping scheme in check. It is noted that the main SUDS pond will be fenced off for safety purposes. The expected depth shall not exceed 1.2m, so in the event of an emergency, an adult would be confident to wade in and not have to consider swimming to effect a rescue. The Neighbourhood Policing Team's view is that the development will inevitably attract older youngsters as a gathering place, as it forms a 'unique' feature in the public realm. The NPT is anxious to ensure that the location does not generate calls for police service due to anti-social activity – so good management and 'ownership' of the facility is required;

Cumbria County Council - Commons Registration: - no comments received;

Northern Gas Networks: - no objections.

6. Officer's Report

Assessment

- 6.1 The relevant planning policies against which the application is required to be assessed are Policies GI4, SP8 and CC5 of the Carlisle District Local Plan 2015-2030.
- 6.2 The proposal raises the following planning issues:
 1. Whether The Proposed Surface Water Drainage System Would Be Acceptable
- 6.3 The LLFA has been aware of the flood risk of up to 18 properties for several years from Isobel's Green and has worked in partnership with several organisations including United Utilities and Riverside to investigate possible solutions to reduce the risk of flooding. The LLFA supports this scheme as it reduces the surface water runoff from Isobel's Green and reduces the risk of flooding to the properties that have previously been flooded.
- 6.4 The supporting text to Policy CC4 (Flood Risk and Development) of the recently adopted Local Plan states that the City Council will encourage Sustainable Drainage Systems (SUDS) as a means of reducing the overall flood risk, controlling pollution from urban run-off and, where possible, creating new wildlife habitats and amenity space. Policy CC5 (Surface Water Management and Sustainable Drainage Systems) states that development proposals should prioritise the use of sustainable drainage systems. The supporting text to the policy states the Council's SFRA advocates that SUDS should be considered and given priority for every new development in line with the NPPF and PPG. It also notes that SUDS can

help to create enjoyable and high quality environments which encourage biodiversity and amenity, benefit water resources, reduce pressure on the sewer network and help to mitigate the negative impacts of climate change. The use of SUDS to reduce flood risk and create new wildlife habitats, which is what this proposal is seeking to achieve, accords with these policies.

- 6.5 The design of the SUDS pond has been carried out following the guidelines proposed in The SUDS Manual which details best practice guidelines and is a CIRIA and Defra publication. The embankments would have gradients of 1:3 and a bench would be provided prior to the permanent water which would prevent someone falling into the permanent pond. Planting around the edge of the pond would impede access to the water whilst retaining a view of the water. A fence would also be erected around the pond. The SUDS Manual recommends where there is a risk that unsupervised young children could gain access to the water then a toddler-proof fence 600-750mm high should be provided to prevent toddlers getting to the water but allow adult entry to step across when necessary. The fence should be vertical pale type rather than horizontal rail construction as shown in the application. A condition has, therefore, been added to require the details of the proposed fence to be submitted for approval in writing by the Local Planning Authority prior to the SUDS pond being brought into use.

2. Impact Of The Proposal On Biodiversity

- 6.6 The proposal would lead to the creation of a pond which would improve the biodiversity of the site. It is proposed to plant marginal plants to stabilise the banks and oxygenate the water to improve biodiversity. A low bund would be created along the northern and western sides of the pond and this would be seeded with a wild flower mix to further boost diversity. In light of the above, the proposal would have a positive impact on biodiversity in the area.

3. Other Matters

- 6.7 Cllr Bell and Cllr Stothard strongly object to there being open ponds within the proposal as these create dangers and risks to residents of all ages, particularly children in this area. They consider that as this is an engineering matter there is always more than one solution to be found and that in this case the water collection ponds must be covered at all times to protect users from risk.
- 6.8 The above concerns are noted. However, the provision of a SUDS drainage solution is consistent with current guidance and has a positive impact on biodiversity. The depth of the permanent pond would be limited to 1.2m and large sections of the pond would only contain water during periods of very heavy rain. A fence would be erected around the pond, the design of which has to be agreed with the Local Planning Authority, and this would reduce risk to users of the green. Furthermore, a path is being created near to the pond which will increase footfall through this area and will improve natural surveillance and neighbouring properties would overlook this area. Whilst there might be options to create a covered storage area, this would increase costs and would not provide any benefits to biodiversity. In light of the

above, the proposal would not create an acceptable risk to users of the green and is considered to acceptable.

- 6.9 The Crime Prevention Officer has raised concerns about the proposal which will inevitably attract older youngsters as a gathering place, as it forms a 'unique' feature in the public realm. The Police are anxious to ensure that the location does not generate calls for police service due to anti-social activity so good management and 'ownership' of the facility is required. The increased use of the green should reduce the risk of anti-social behaviour. Riverside has confirmed that it operates a grounds maintenance partnership contract and all of its green spaces, including this site, are well maintained and regularly inspected.

Conclusion

- 6.10 The proposed surface water drainage scheme would be acceptable and would accord with Planning Policy. The proposal would have a positive impact on biodiversity in the area. In all aspects, the proposal is compliant with the objectives of the relevant adopted Local Plan policies.

7. Planning History

- 7.1 In April 2016, planning permission was granted for the provision of 3 metre wide bitmac surfaced dual use pathways; visitor car park with 5no. spaces inclusive of 1no. disabled space; associated drainage systems; erection of 2no. bollards and 3no. dog fouling waste bins (16/0081).
- 7.2 In November 2005, planning permission was refused for the demolition of properties at Seatoller Close, and adjoining public open space. New build residential development of 41 houses for open market sale, and 8 bungalows for CHA and new P.O.S. (05/0818).

8. Recommendation: Grant Permission

1. The development shall be begun not later than the expiration of 3 years beginning with the date of the grant of this permission.

Reason: In accordance with the provisions of Section 91 of the Town and Country Planning Act 1990 (as amended by Section 51 of the Planning and Compulsory Purchase Act 2004).

2. The approved documents for this Planning Permission comprise:

1. the submitted planning application form received 22nd December 2016;
2. the Red Line Boundary Plan (drawing no. K33457/A3/10A) received 3rd January 2017;
3. the Layout Plan (drawing no. K33457/A1/11) received 4th January 2017;
4. the Surface Water Drainage Details (drawing no. K33457/A1/02)

- received 22nd December 2016;
5. the Drainage Layout (drawing no. K33457/A3/01B) received 22nd December 2016;
 6. the Topographical Survey (drawing no. 16F198/001) received 22nd December 2016;
 7. the Sustainable Drainage Scheme Feasibility Study received 22nd December 2016;
 8. the Design and Access Statement received 22nd December 2016;
 9. the Eden Rivers Trust - Sustainable Drainage System received 22nd December 2016;
 10. the Notice of Decision; and
 11. any such variation as may subsequently be approved in writing by the Local Planning Authority.

Reason: To define the permission.

3. Before any development takes place, a plan shall be submitted for the prior approval of the Local Planning Authority reserving adequate land for the parking of vehicles engaged in construction operations associated with the development hereby approved, and that land, including vehicular access thereto, shall be used for or be kept available for these purposes at all times until completion of the construction works. The plan shall demonstrate the provision within the site for the parking, turning and loading and unloading of vehicles and for vehicles to enter and leave the site in a forward direction. The plan shall also include details of the anticipated number and type of vehicles to visit the site and measures the applicant intends to take to ensure the footway and carriageway remain safe at all times.

Reason: The carrying out of this development without the provision of these facilities during the construction work is likely to lead to inconvenience and danger to road users and to support Local Transport Policy LD8.

4. The access and parking/turning requirements shall be substantially met before any building work commences on site so that constructional traffic can park and turn clear of the highway.

Reason: The carrying out of this development without the provision of these facilities during the construction work is likely to lead to inconvenience and danger to road users and to support Local Transport Policy LD8.

5. The pond shall not be brought into use until full details of the proposed boundary treatment to be installed around the pond have been submitted to and approved in writing by the Local Planning Authority. The boundary treatment shall then be installed in accordance with these details.

Reason: In the interests of the safety of young children.



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NOTES:

141095
-3 JAN 2017

Scale amended as requested, red line thicker as requested	03/01/17	OS	A
Revisions	Date	Initial	Suffix

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Client:

RIVERSIDE CUMBRIA

Project:
**SURFACE WATER DRAINAGE
ISOBELS GREEN
CARLISLE**

Drawing Title:

RED LINE BOUNDARY PLAN

Drawn by: OS

Checked by: -

Scale: 1:1250


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Drawing Number:

K33457/A3/10A

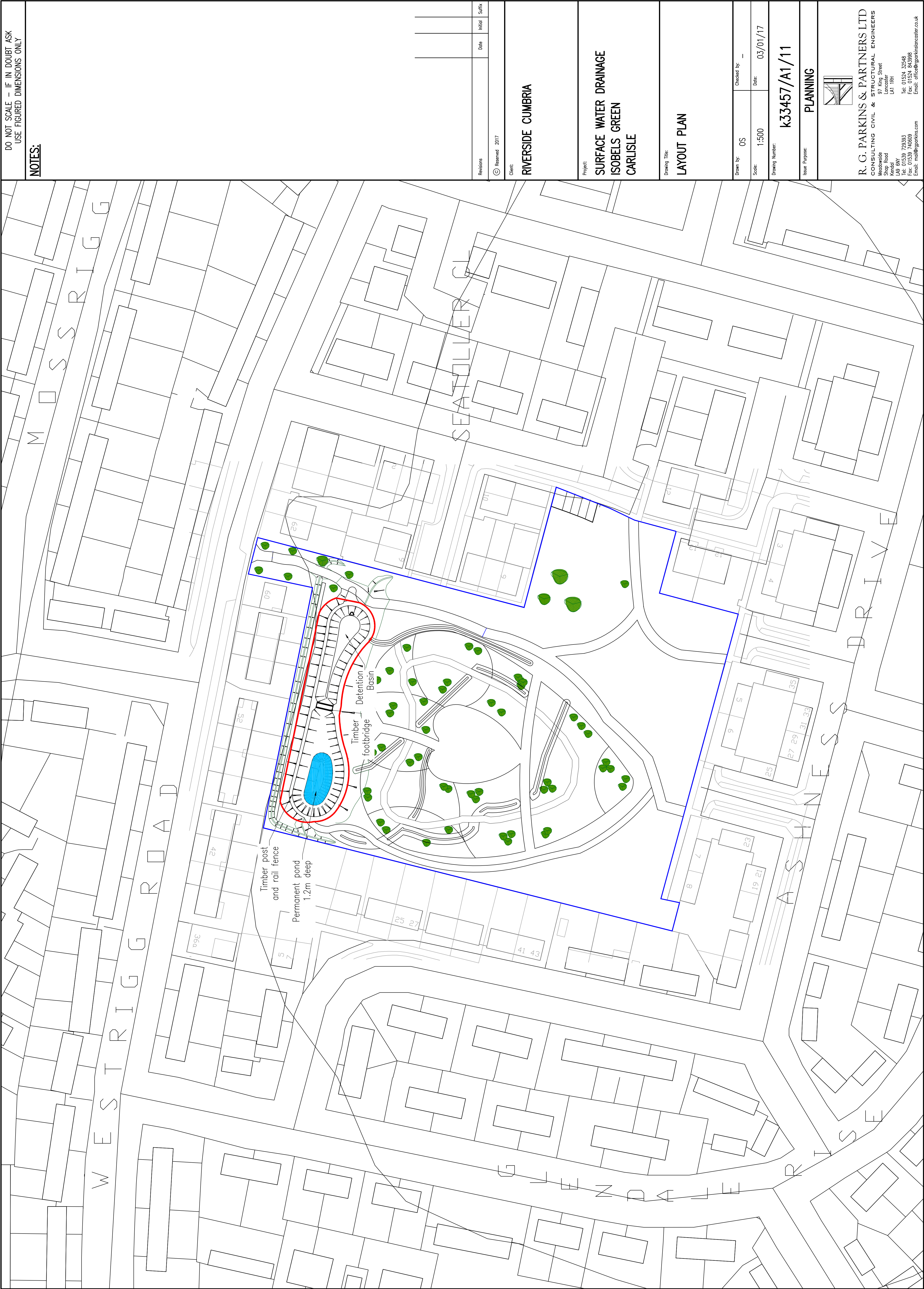
Issue Purpose:

PLANNING



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NOTES:

Revisions	Date	Initial	Suffix
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Client:

RIVERSIDE CUMBRIA

Project:

SURFACE WATER DRAINAGE
ISOBELS GREEN
CARLISLE

Drawing Title:

LAYOUT PLAN

Drawn by:

OS

Checked by:

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Scale:

1:500

Date:

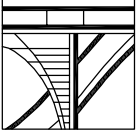
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k33457/A1/11

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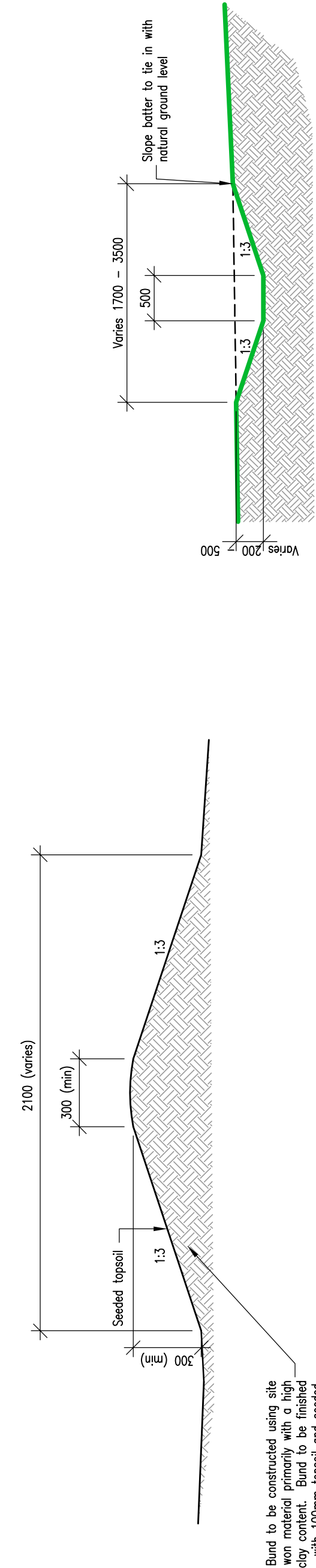
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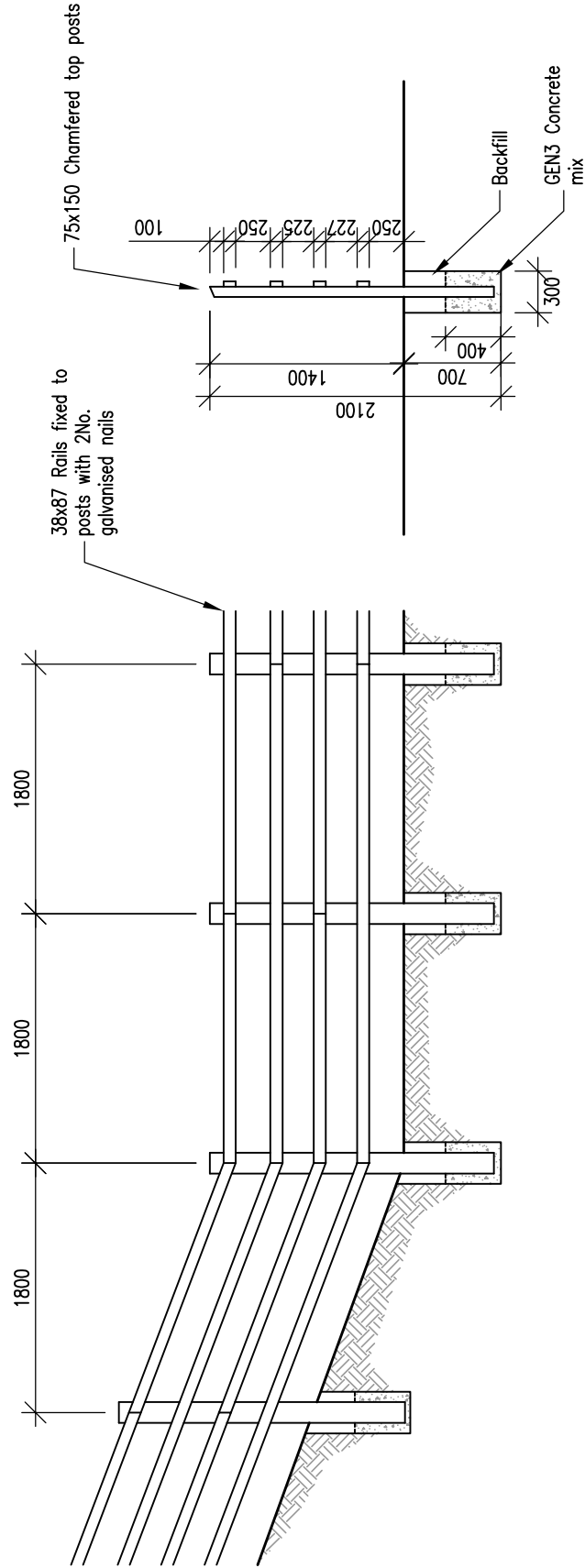
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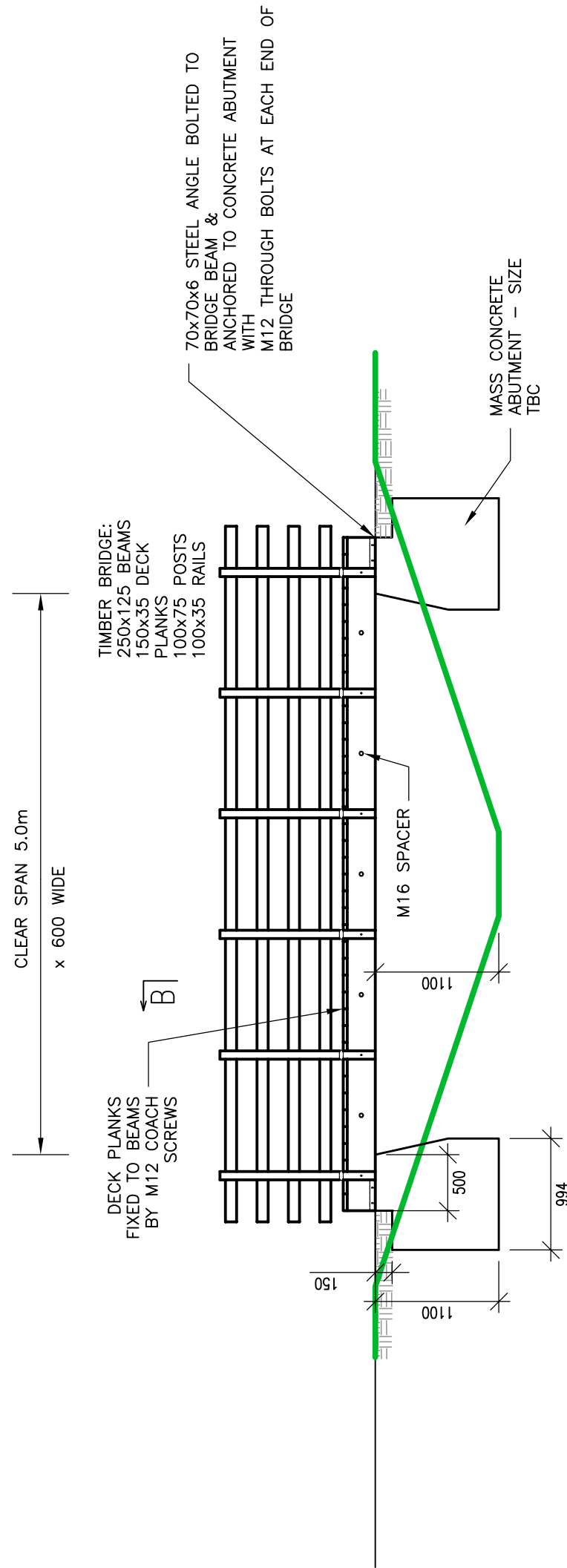


TYPICAL SWALE
SCALE 1:50

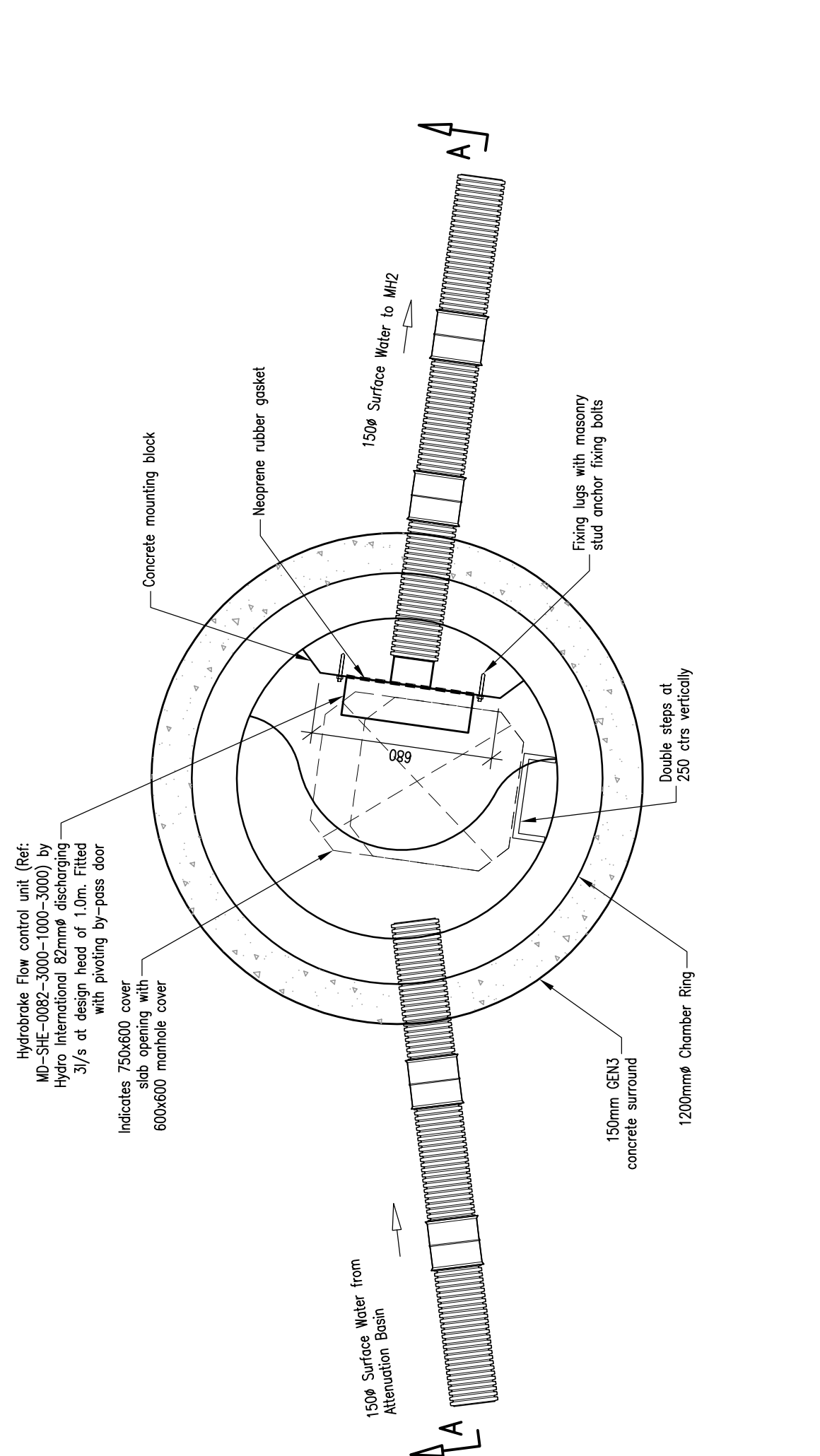
BUND CONSTRUCTION DETAIL
SCALE 1:20



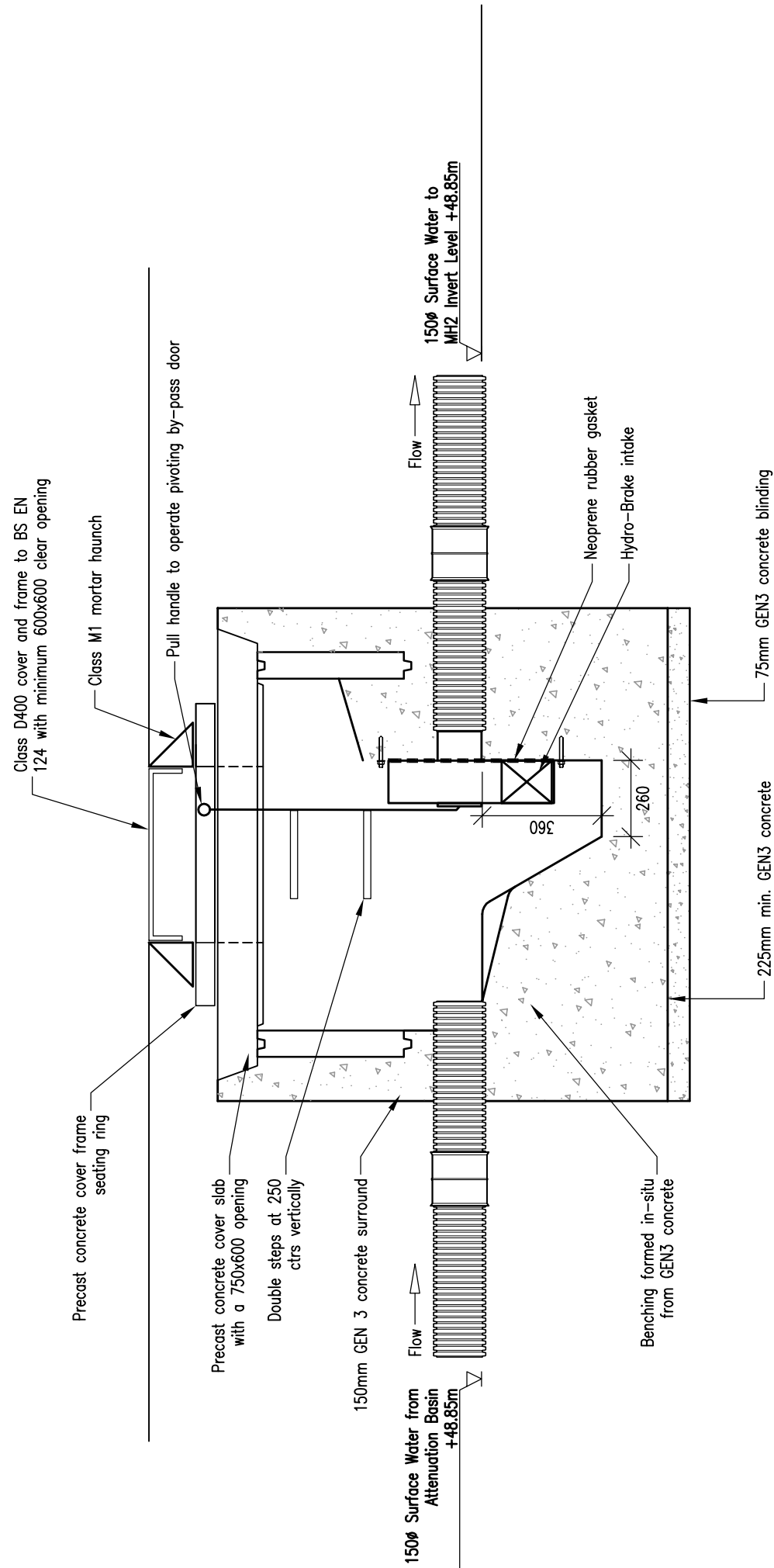
POST AND RAIL FENCE
SCALE 1:20



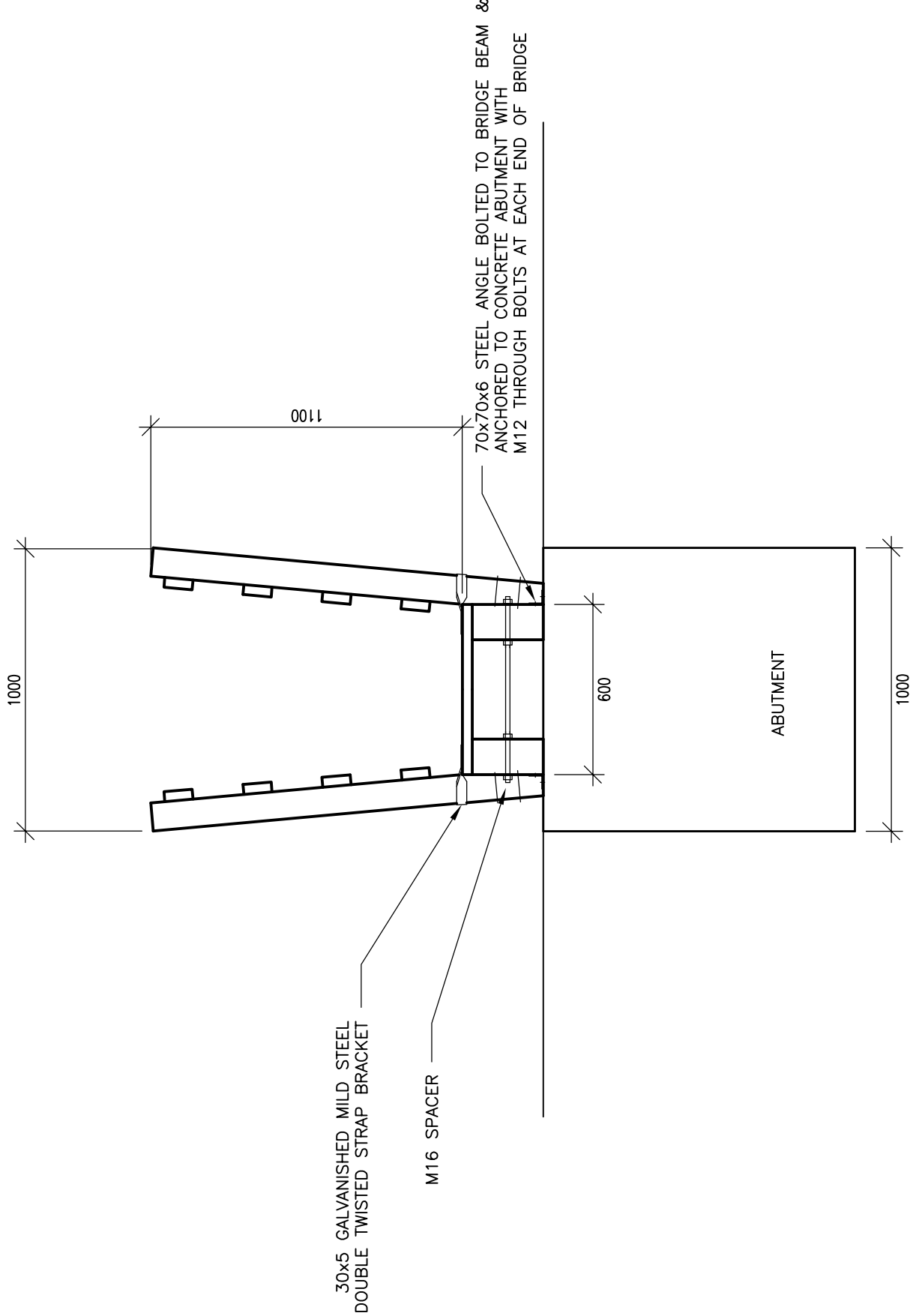
PROPOSED CROSS SECTION
SCALE 1:50



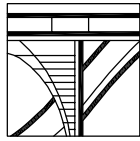
PLAN ON MH1
HYDROBRAKE CHAMBER
SCALE 1:20



SECTION A-A THROUGH MH1
HYDROBRAKE CHAMBER
SCALE 1:20



DECK CROSS-SECTION & ABUTMENT
ELEVATION B-B
SCALE 1:20



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NOTES:

- 1. All headwalls to be formed of stone pitching unless shown otherwise.

Connection of parking area	21/12/16	OS	B
Revised pond shape following cut / fill exercise	19/12/16	OS	A
Revisions	Date	Initial	Suffix

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Client:

RIVERSIDE CUMBRIA

Project:

SURFACE WATER DRAINAGE
ISOBELS GREEN
CARLISLE

Drawing Title:

DRAINAGE LAYOUT

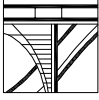
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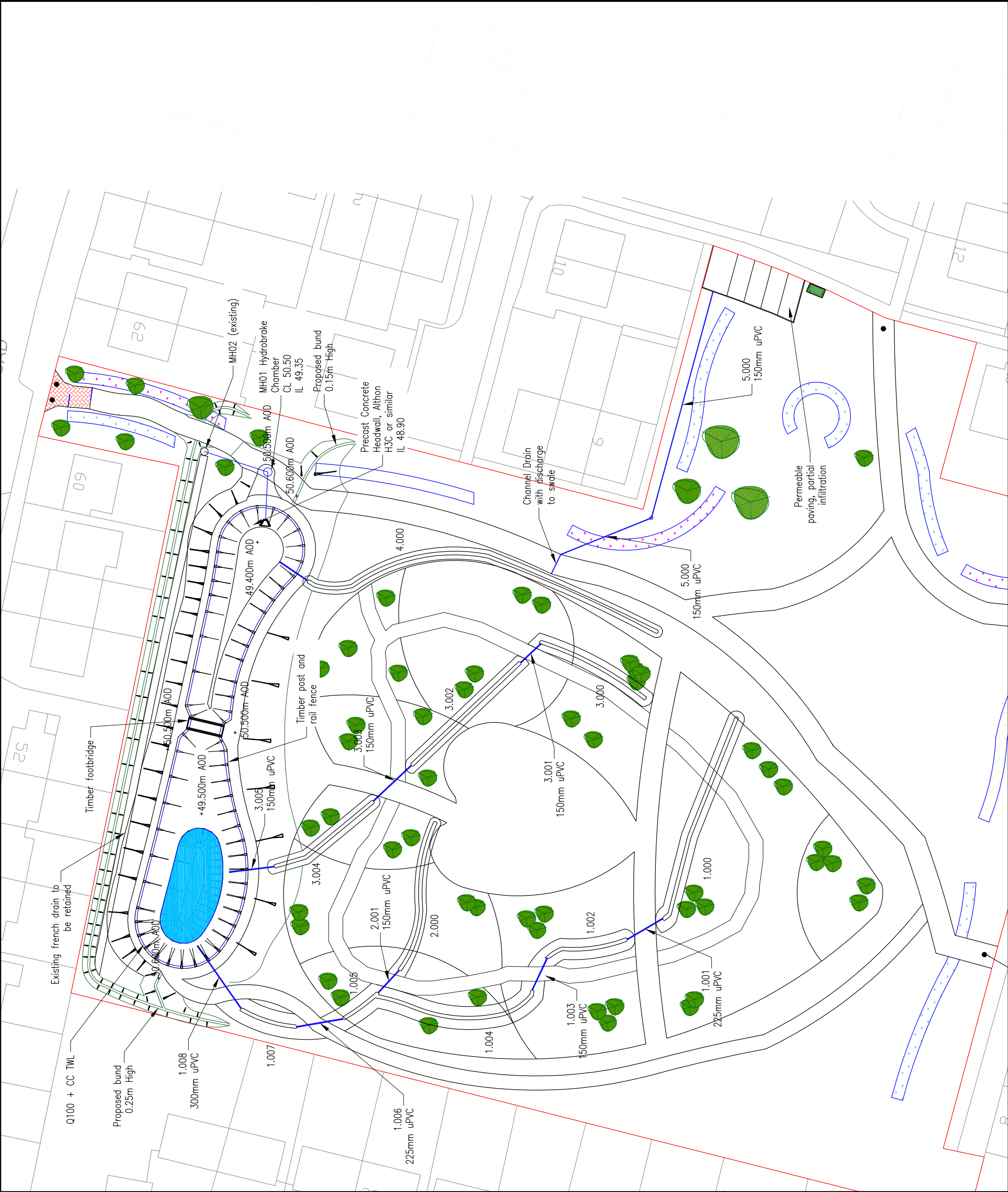
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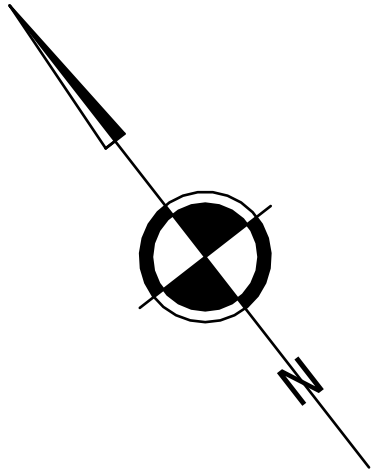
APPROVAL



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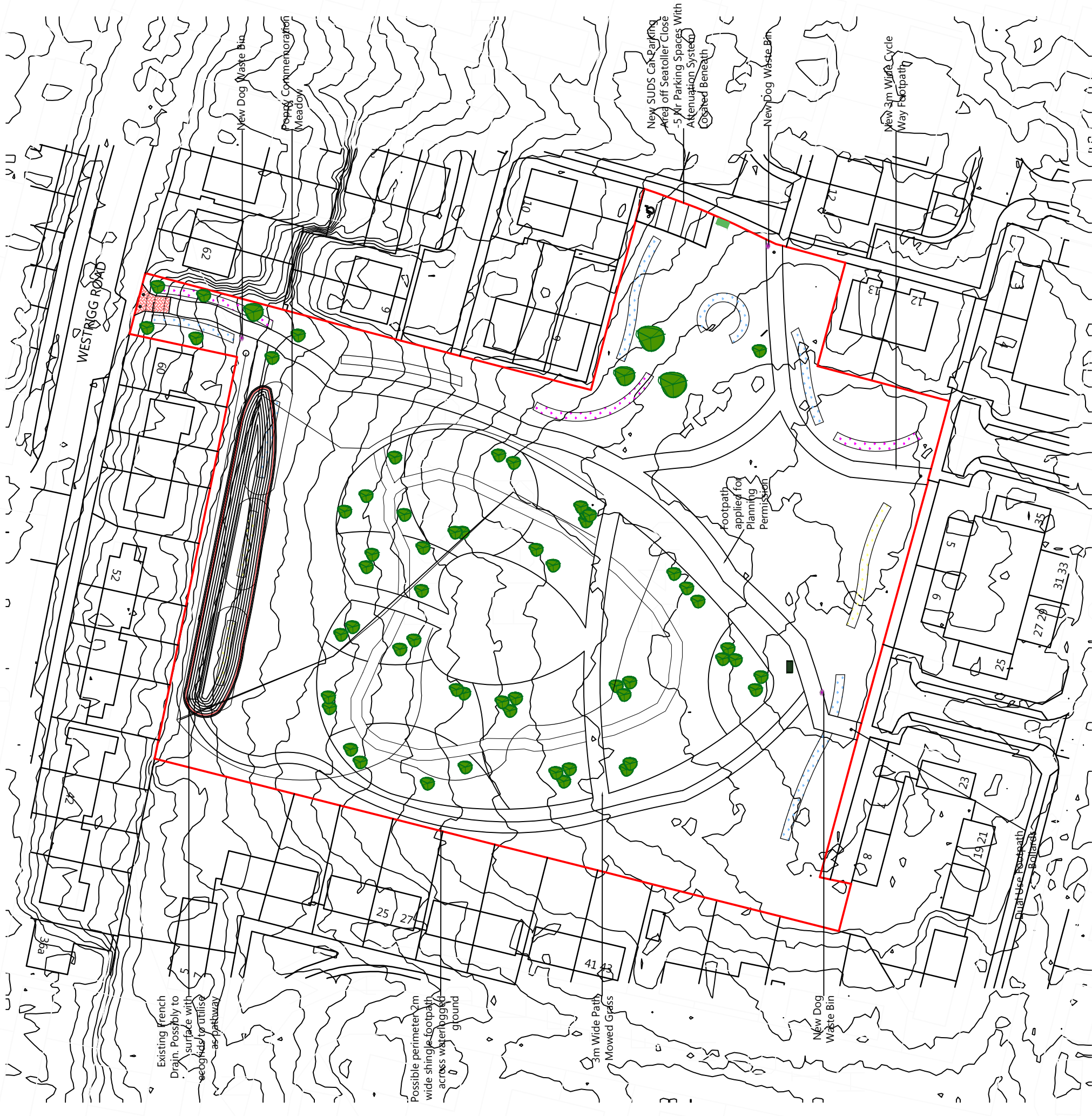
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Notes:
Orientation to existing site grid.
All levels relate to existing site datum.
Survey control markers established for
mapping purposes only and should not be
used for construction without the written
approval of Survey Operations Ltd.

SURVEY STATIONS	
STATION	LEVEL
100	55.115
101	55.115
102	55.115
103	55.115
104	55.115
105	55.115
106	55.115
107	55.115
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Memorandum Report

TO: -

FROM: Oliver Sugden

DATE: 23rd February 2017

OUR REFERENCE: K33457-02-MR-OS

SUBJECT: Surface Water Drainage and the use of SuDS

1 INTRODUCTION

The following memorandum provides further information regarding the proposed use of Sustainable Drainage Systems (SuDS) at Isobels Green in Morton, Carlisle. Despite SuDS being widely recognised as the preferred method of drainage design and in common use since 1997, planning consent was deferred 'in order to consider how the SuDS system would work and function'.

Further information on SuDS can be obtained in the freely available CIRIA SuDS Manual 2015.

Government Guidelines outlined from the Communities and Local Government Committee who recently published a report are supportive of SuDs. Their report considers the importance of parks and green spaces to national strategic issues. It recognizes the importance of parks and green spaces in tackling issues such as obesity, flooding and climate change. It raises the concern about the unequal distributions of parks and green spaces in England, and the impact on the ability of all communities from the access to quality of green space.

Our SuDs project coupled with the new proposed dual use footpaths/cycle ways and the planting of the Heartwood in 2013 are Riverside responses to each of these national issues.



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The Welsh Government commissioned an external assessment of costs and benefits of SuDs and concluded not enough vegetated ponds were being created which can deliver multiple benefits and are easier and cheaper to maintain than underground systems.

2 THE PROBLEM

The Isobel's Green site has clay soils and relatively steep topography. As a result, flooding due to green field runoff impacts properties downstream. In an effort to alleviate flood risk a connection was made to a combined sewer however this merely transferred flood risk elsewhere.

Flooding is particularly bad for the short duration high intensity summer rainfall events.

3 THE SOLUTION

Surface water should be disposed of in accordance with the SuDS hierarchy. Preference is given to infiltration over discharge to a watercourse. If a watercourse is not available then discharge to a surface water sewer may be used and as a last resort discharge to a combined sewer if no other options are available.

For the Isobel's Green site the soil is highly impermeable and unsuitable for infiltration drainage and there are no watercourses or surface water sewers available. Discharge to the combined sewer is therefore proposed as the last resort.

Extensive correspondence with United Utilities (UU) was required to achieve agreement to form a connection. UU have stipulated a maximum discharge rate to the sewer of 3l/s to protect their assets and ensure that flooding does not occur downstream. This runoff rate is far lower than the runoff generated by certain rainfall events.

The excess runoff must therefore be stored and drained over an extended period of time. This storage or attenuation is crucial to protect the downstream catchment from flooding. Attenuation



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of the runoff is fundamental in meeting the prescribed discharge rate whilst preventing overland flow impacting downstream property.

A reduction in runoff can also be achieved by using trees / vegetation to increase the wetted area and increase the storage capacity of the soil. This method can be particularly beneficial in reducing flood risk for shorter duration design storms and would seem well suited for this site. Trees have been planted within the site which over time are expected to result in a benefit in terms of runoff reduction however it will take significant time for the trees to become established on the heavy clay soils.

A Public parks inquiry report undertaken by the Communities and Local Government Committee 'recognises the importance of parks and green spaces in tackling issues such as obesity, flooding and climate change. It raises concern about the unequal distribution of parks and green spaces in England, and the impact on the ability of all communities to benefit from the advantages of access to quality green space.'

4 CHOICE OF ATTENUATION

Many methods of attenuation are available in SuDS design. Selection of attenuation method is based on the amount of storage required, site levels, sustainability, treatment, biodiversity / amenity value and cost. Drainage design was undertaken considering all of the above.

Established and current drainage guidance states that wherever possible runoff should be managed on the surface to enable the performance of the system to be more easily inspected and managed. By designing in this way potential flood risk will be visible.

4.1 Storage Structure

The Isobels Green site requires 365m³ of storage to attenuate the critical duration design storm. Utilising underground storage would require a cover of at least 600mm over the structure. The site topography would require relocation of the storage upslope thereby excluding some of the greenfield area. Additional intake structures would be required at increased blockage risk and maintenance burden. Probability of blockage and therefore flood risk to downslope property would be increased.



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To minimize the adverse effect of catchment exclusion and depth of excavation a shallow crate system (0.4m depth) would need to be designed, covering an area of 961m³. A deeper crate system or alternatives using box culverts or oversized pipes would be to the detriment of excluding even more catchment area with even greater excavation requirement.

Plastic / concrete has a carbon cost and therefore the use of such materials should be avoided if suitable alternatives exist. The detention basin and swales are to be unlined. Although the soil is highly impermeable a small volume of water will infiltrate resulting in conservative design. Plastic or concrete structures will negate this benefit.

In summary underground storage would increase flood risk, maintenance requirements and cost and reduce sustainability. The resultant design would also provide no amenity or biodiversity benefit.

4.1 Conveyance Methods

Underground conveyance of flow in pipes would be at increased blockage risk and require multiple intake structures. Exceedance flows resulting from any blockage would be more difficult to intercept and result in increased flood risk.

Swales are a robust form of flow conveyance. Blockage is less likely and the overland flow from any blockage can be easily intercepted by the next swale downslope. Design of the drainage has been undertaken with this in mind.

5 **AMENITY**

Due to the heavy clay nature of the site, it easily becomes waterlogged during wet weather. It is almost impassable for local people through many months of the year which limits its value as an amenity space. The proposed SuDS is expected to reduce waterlogging on the site and therefore increase accessibility.

The SuDS system has also been designed to be planted with a wide variety of native plant species which in turn will attract a range of wildlife. This will create an extremely attractive space that local people will enjoy being in.



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There are numerous papers detailing the benefits of green and blue space within the urban environment (Bird, 2007; Bird, 2004; Ulrich, 1984; Trellis, 2013). A pleasant and varied landscape contains more interest and stimulus, encouraging exercise and interaction with the environment which results in health benefits and education opportunities.

The House of Commons Communities and Local Government Committee state public open space is in decline. The Committee have called on councils to *'publish strategic plans, which recognise the value of parks beyond leisure and recreation and set out how they will be managed to maximise their contribution to wider local authority agendas, such as promoting healthy lifestyles, tackling social exclusion and managing flood risk.'*

The House of Commons Communities and Local Government Committee also state *'Parks make vital contributions to physical and mental health and bring significant community benefits. They also contribute to biodiversity and climate change mitigation and can assist in local economic growth.'*

The proposals for Isobels Green conform to the principles outlined above.

6 HEALTH AND SAFETY

Health and Safety debate and discussions have a tendency to concentrate on accident, i.e. safety rather than overall health. This may be explained by accidents being measurable and modifications to reduce them quantifiable. Health effects and benefits tend to be long term however are routinely overlooked due to being difficult to measure. This may result in short term safety concerns overriding long term health benefits preventing a balanced view. Sustainable drainage systems are proven to provide health and wellbeing benefits relating to improved quality of life and recreational and educational benefits for children and adults.

The detention basin has been designed in accordance with the SuDS manual. This document outlines best practice and is over and above the statutory requirements. Extensive research has been undertaken on risk of drowning with statistics for year 2011 analysed by CIRIA. There were 407 reported cases of drowning, 22 of which were in ditches / ponds. Statistics for 2012 indicate 18 children died as a risk of drowning, 9 of this number occurred at the coast or in the bath. The remaining 9 presumably can be attributed to rivers, lakes and ponds.



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These UK wide numbers are extremely low when taken in context with the number of ponds in the UK. The vast majority of water bodies are not designed with health and safety in mind and to the stringent requirements of the SuDS manual. The basin is sized so that an increase in top water level resulting from a rainfall event will be gradual.

It is very reasonable to expect ponds in parks and open spaces. The proposal therefore does not introduce an unexpected hazard. It is certainly far less hazardous than the Rivers Eden, Caldew and Petteril or the open water feature at nearby Upperby Park.

Clear demarcation of the water edge is proposed using planting. Plants will be selected to impede access whilst retaining a view of the water.

Embankment gradients for the usually dry detention basin have been set to an appropriate gradient of 1:3 and a bench is provided prior to the permanent water. In addition to the above and over and above the requirements of the SuDS manual a fence is proposed.

In the unlikely event that someone finds themselves on the wrong side of the fence and slips or falls down the gentle gradient of the basin, a horizontal ledge would prevent the fall continuing into the permanent water. Gradient of the pond sides is set at 1:3 also preventing the possibility of someone finding themselves suddenly in deep water should they decide to push through the planting and undoubtedly muddy shallow water at the pond edge.

The Health and Safety Executive (HSE) issued a guidance note entitled 'Children's play and leisure – Promoting a balanced approach' in September 2012. Key points are summarized below:

- HSE fully supports the provision of play for all children in a variety of environments. HSE understands and accepts that this means children will often be exposed to play environments which, whilst well-managed, carry a degree of risk and sometimes potential danger.
- HSE fully recognises that play brings the world to life for children. It provides for an exploration and understanding of their abilities; helps them to learn and develop; and exposes them to the realities of the world in which they will live, which is a world not free



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from risk but rather one where risk is ever present. The opportunity for play develops a child's risk awareness and prepares them for their future lives.

- Striking the right balance between protecting children from the most serious risks and allowing them to reap the benefits of play is not always easy. It is not about eliminating risk. Nor is it about complicated methods of calculating risks or benefits. In essence, play is a safe and beneficial activity. Sensible adult judgements are all that is generally required to derive the best benefits to children whilst ensuring that they are not exposed to unnecessary risk.
- Striking the right balance does not mean all risks must be eliminated or continually reduced.
- The incorporation of a protective fence can reduce the risk and we can include a warning sign and a life buoy too if deemed appropriate.

Sheltering people from any perceived form of risk is counterproductive and can lead to a false sense of security when in the real world. The author has had personal experience of this when a coach of Chinese tourists in Norway pulled up at a famous unfenced viewpoint on a cliff edge. When advised not to stand so close to the edge there was much confusion and it was stated by one member of the party that it must be safe as there was no safety fence.

7 BIODIVERSITY

Landscaped vegetated ponds verses underground measures and attenuation ponds.

Urban green space is valuable for people and wildlife. Integrating the needs of people and wildlife is mutually beneficial. This is in fact outlined in the Commons Act 2006 as two principal objectives relating to Commons and protected Village or Town Greens which this is.

Landscape features that support diverse habitats and associated ecosystems provide a healthy and stimulating environment that can add significant value to urban living. Water within a SuDS scheme is an essential resource for the growth and development of plants and animals. The proposal will provide shelter, food, foraging and breeding opportunities for a variety of species.



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The vegetation around and in the pond as well as the tree roots will help filter and improve the water quality by removing harmful pollutants.

The previous condition of the park with few trees and an exposed nature had very limited biodiversity value. Some improvements have already been realised by the planting of a small urban woodland of 1500 trees with a large woodland fringe and woodland types such coppice. The 100,000 mixed summer and spring bulbs planted around the park edges and entrances, some distinctively planted to attract insects and visitors alike. However all this could be further enhanced by the introduction of surface water system, allowing a new ecosystem to become established. The swales are in essence a type of wetland and are important for wildlife and providing additional water storage during storm events. Heavily polluted runoff can compromise water quality and wildlife but vegetation and trees can help filter out the pollutants. The pond with shallow, gently sloping, uneven margins with scrub planting provide a range of microhabitats. Marginal plants provide shelter and breeding whilst unshaded open patches provide important feeding areas. To protect open water bodies themselves a buffer strip of flower rich grassland and scrub should be present. All these features will be incorporated into our scheme.

Underground systems require more capital to create and harder to maintain and achieve none of the above. The Welsh Government commissioned an independent assessment which reported 3rd January 2017 and now want to accelerate the use of SuDs in Wales after conclusions revealed they cheaper and more beneficial due to multiple benefits.

8. SUDS SCHEME MAINTENANCE

R G Parkins have compiled a SuDS operations and maintenance manual for this scheme detailing maintenance works and who will be carrying out these works.