

PRIVATE BASIN MAINTENANCE PLAN

Hoyland Common



NK020040
HOYLA-RPS-SI-D-RP-DS03
Private Basin
Maintenance Plan
P02
January 2022

Quality Management

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Prepared by:

Prepared for:

RPS

Newlands Development

Scott McLean
Principal Engineering Coordinator

Ben Taylor
Planning Director

Sherwood House
Sherwood Avenue
Nottinghamshire
NG24 1QQ

Lumonics House, Valley Drive
Swift Valley Industrial Estate
Rugby, Warwickshire
CV21 1TQ

T +44 1636 605 700
E scott.mclean@rpsgroup.com

T 01788 422197
E Ben.Taylor@newlandsuk.com

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1 INTRODUCTION

1.1 Objectives

- 1.1.1 The aim of this document is to set out the maintenance requirements for the upkeep of the Private sections of the Attenuation Basin area in line with the MANCO included within the surface water drainage network for Hoyland Common. The main basin forms part of the S104 adoption agreement with Yorkshire Water and is managed and maintained by them but the smaller basin and surrounding infrastructure is maintained privately.

1.2 Site Location

- 1.2.1 The proposed development site is located approximately 6.5km to the south of Barnsley city centre in Yorkshire, at National Grid reference 436060, 398760. The proposed development site comprises of an area of approximately 50 hectares. The existing site currently has several points of access, primarily via Tankersley Lane, Black Lane or Sheffield Road (A6135) which all pass-through different segments of the developable land.

Refer to Drawing HOYLA-RPS-SI-XX-DR-D-0396 in Appendix A

1.3 Proposed Surface Water Drainage Network

- 1.3.1 The strategic drainage for the proposed development site has been designed to convey surface water by the use of an adopted gravity drainage system which eventually outfalls to the Harley Dyke, an existing Environment Agency (EA) managed watercourse to the south of the site. The network discharges via a Yorkshire water adopted attenuation basin with a managed flow control system, then onto the outfall via a final adopted swale before entering the EA managed watercourse. In addition to the adopted attenuation basin system a second private overflow basin has been proposed to provide the additional attenuation for extreme storm events to meet local planning conditions

Refer to drawings HOYLA-RPS-SI-XX-DR-D-515 and HOYLA-RPS-SI-XX-DR-D-376 for General arrangement details in Appendix B and Appendix C

1.4 Proposed Access Plan

- 1.4.1 The Basin area will be accessed by the use of an existing right of way via Black Lane which runs past the existing entrance to the field. Direct access to all the drainage elements from Black Lane has been included within the design proposals which consist of a 4m wide maintenance track, maintenance strip and turning heads.

Refer to drawings HOYLA-RPS-SI-XX-DR-D-396 in Appendix A for further details

1.5 Maintainable Drainage Components

The maintenance for the drainage infrastructure in this area is managed by two companies.

- 1.5.1 Yorkshire water for the adopted elements within the main basin 1 fencing area and the below ground outfall network and swale including all flow controls. This will be managed under a separate YWS maintenance plan
- 1.5.2 Newlands for the private elements outside the Basin 1 fenced area and the above ground infrastructure not related to the outfall network. As part of this maintenance plan the following elements are to be maintained in accordance with the proposed specification in the following chapters.
 - Main Access tracks and turning heads to the YWS compound and to access the Swale and outfall
 - Basin 2 area including the basin 2 pond area
 - Basin 2 perimeter Fencing and gate
 - Basin 2 Headwall, signage and Life Buoy
 - Perimeter Land drain to the North of Basin 1
 - Deflection bund above basin 1
 - Flank and perimeter Vegetation Maintenance

2 MAINTENANCE

Regular inspection and maintenance is important for the effective operation of drainage basins as designed. Maintenance responsibility for a basin and its surrounding area should always be placed with a responsible organisation. This network has two distinct operators with an adopted and private section to the network. The adopted basin 1 and the Swale and all main below ground network elements and flow controls are all to be managed and maintained by Yorkshire Water. With the remaining above ground areas outside the Bains 1 fence, managed and maintained by Newlands

2.1 Main Access tracks and turning heads

The main access to maintain the site is from the private Black Lane track, travelling down from Church Lane. This track has a vehicle restriction due to the track width and a height restriction due to the M1 underpass.

The clearance heights for the underpass are as follows:

East Side 4.30m (north channel), 4.34m (centre), 4.33m (south channel)

Middle 4.28m (north channel), 4.37m (centre), 4.29m (south channel)

West Side 4.20m (north channel), 4.15m (centre), 4.12m (south channel)

As can be seen from these figures, the minimum clearance is 4.12m. It is advised that the maximum height of any vehicle traversing this route is 3.82m but this should be monitored to make sure this clearance does not reduce with sediment build-ups or seasonal heave on the unbound surface. If the underpass is struck it will need to be reported to the police using the 999 system in line with best practice.

The main onsite access track from Black Lane to the Adopted fence for the Yorkshire water adopted area is all a 4m wide, 300mm deep compacted Type 1 Track. The track is to be initially monitored for settlement and maintained as a level track with no potholes or undulations. Any undulations or potholes should be filled with suitable type 1 material and compacted. Any vegetation growth within the track is to be removed and perimeter vegetation is to be managed to ensure the full 4m minimum track width is not compromised on both sides.

The access track to the Swale is to be a 4m wide compacted earth track with a mown grass surface to allow for regular 4x4 vehicular access by the adopting water authority. It is anticipated that the track will be cut monthly in line with the basin maintenance schedule. Any undulations or potholes that develop will need to be filled with suitable soil and reseeded. Any loss of vegetation or bare patches will require remedial action and be reseeded. Any invasive vegetation will need to be removed to allow for a constant vehicular pathway and perimeter vegetation is to be managed to ensure the full 4m minimum track width is not compromised on both sides.

2.2 Basin 2 Area

2.2.1 Basin bowl

Basin 2 is an overflow basin for storms exceeding the 1:30 year anticipated storm event. As such daily flow from the main site network is not anticipated to flow through this basin. However, it will collect surface water from the vegetated flanks so will have a regular through flow of water.

Regular maintenance tasks needed for the basin bowl area will be:

1. The major maintenance requirement for a basin will usually be mowing, regular mowing in and around detention basins is only required along maintenance access routes, amenity areas, across any embankments and across the main storage area. The remaining areas can be managed as 'meadow'. Mowing will ideally retain grass lengths between 75-150mm across the main treatment surface (base of the basin) to assist in filtering pollutants and retaining sediments and reduce the risk of flattening.
2. Litter and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
3. Any invasive maintenance work such as silt or vegetation removal is only required intermittently, but it should be planned to be sympathetic to the requirements of wildlife in a basin. Care should be taken to avoid disturbance to nesting birds during the breeding season and habitats of target species (e.g. great crested newts) at critical times. The window for carrying out maintenance to achieve this is usually towards the end of the growing season (typically September/October), although this will vary with species). Invasive silt and vegetation removal should only be carried out to limited areas at any one time (25–30% of the basin area on one occasion each year to minimise the impact on biodiversity).
4. Site vegetation should be trimmed as necessary to keep the basins free of leaves and to maintain the aesthetic appearance of the site. Slope areas that have become bare should be re-vegetated and any eroded areas should be regraded before replanting. All cut vegetation and grass clippings should be removed from site, or outside the basin area
5. Sediments will need to be excavated from basins once deposits exceed 25mm depth and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification and appropriate disposal methods. In the majority of cases as this basin is a low risk site with source control and a Management Train, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.
6. New Basins may become rapidly dominated by invasive native plants, particularly common bulrush (*Typha latifolia*). As it is not desirable for all new basins to be bulrush dominated, it should be ensured that in the first five years, while vegetation is establishing, certain plant growth is controlled. After this time, basins can usually be allowed to develop naturally recognising that, unless the margins are occasionally managed, they are likely to become dominated by trees and shrubs.

Refer to the below table 22.1 (from the C753 CIRIA SUDS Manual) for the minimum requirement schedule for the timescale that each maintenance activity must be completed by.

TABLE 22.1 Operation and maintenance requirements for detention basins

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly
	Cut grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool – where provided	Annually (as set out in Chapter 23)
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseeding or re-turfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

2.2.1.1 Basin 2 Pond

The main bowl area also includes for a permanently wet pond habitat that will require additional maintenance above the basin requirements. Refer to drawing HOYLA-RPS-SI-XX-DR-CR-515

Regular inspection and maintenance is important for the effective operation

1. Litter and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
2. Any invasive maintenance work such as silt or vegetation removal is only required intermittently, but it should be planned to be sympathetic to the requirements of wildlife in a pond. Care should be taken to avoid disturbance to nesting birds during the breeding season and habitats of target species (e.g. great crested newts) at critical times. The window for carrying out maintenance to achieve this is usually towards the end of the growing season (typically September/October), although this will vary with species). Invasive silt and vegetation removal should only be carried out to limited areas at any one time (25–30% of the pond area on one occasion each year to minimise the impact on biodiversity).
3. Site vegetation should be trimmed as necessary to keep the pond free of leaves and to maintain the aesthetic appearance of the site. Slope areas that have become bare should be re-vegetated and any eroded areas should be regraded before replanting. All cut vegetation and grass clippings should be removed from site, or outside the basin area. Sediments will need to be excavated from the pond once depth in the pond has been reduced to less than 0.6m and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification and appropriate disposal methods. In the majority of cases as this pond and basin is a low risk site with source control and a Management Train, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.
4. New ponds may become rapidly dominated by invasive native plants, particularly common bulrush (*Typha latifolia*). As it is not desirable for all new ponds to be bulrush dominated, it should be ensured that in the first five years, while vegetation is establishing, certain plant growth is controlled. After this time, ponds can usually be allowed to develop naturally recognising that, unless the margins are occasionally managed, they are likely to become dominated by trees and shrubs.

Refer to the below table 23.1 (from the C753 CIRIA SUDS Manual) for the minimum requirement schedule for the timescale that each maintenance activity must be completed by.

TABLE 23.1 Operation and maintenance requirements for ponds and wetlands

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices eg penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1 m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1 m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay.	Every 1–5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, eg every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows.	As required

2.2.2 Perimeter Fencing and gate

Basin 1 has a 1.8m high, Water authority Palisade fence and locked gate that is the Property of Yorkshire water and marks the edge of their responsibility and will be locked by them.

Basin 2 has a 1.1m high Post and rail fence around its perimeter, this is to prevent accidental access to the basin area but also to provide traversable access for wildlife. Maintenance access into the basin will be through a 4m wide farm gate on the southern perimeter, to the west of the outlet headwall. All fencing and the gate need to be inspected regularly to make sure it retains its stability and purpose.

2.2.3 Erosion control, Headwall and Life Buoy

Maintenance and inspection of the Erosion control from the overflow weir, outfall headwall and buoy should be undertaken at similar times to the maintenance of the basin in accordance with tables 22.1 of the C753 CIRIA SUDS Manual.

2.2.3.1 Erosion Control

Any damage to the erosion control blanket is to be repaired with suitable stone to maintain the erosion blanket. Any erosion detected on its perimeter will need to be repaired and backfilled with suitable material and replanted to suit.

1. Litter and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
2. Excess Siltation of the erosion blanket and any invasive vegetation will need to be removed. Sediments will need to be excavated once deposits exceed 25mm depth and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification and appropriate disposal methods. In the majority of cases as this basin is a low risk site with source control and a Management Train, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.

2.2.3.2 Headwall

Any damage to the Althon H10CA Outfall headwall will require repair in line with the manufacturer's specification. See appendix for manufacturers specification

1. Litter and debris removal from the headwall screen, should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
2. The hinged grating will require to be greased yearly to ensure it does not seize and remains free to move. The locking mechanism needs to be serviced to ensure it remains functional and is locked to prevent access.
3. The Headwall key-clamp fencing will need to be inspected regularly to make sure it retains its stability and purpose. Any rusting will need to be suitably addressed to prevent damage to the safety fence
4. Siltation of the headwall will need to be removed and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification

and appropriate disposal methods. In the majority of cases, as this basin is a low risk site with source control and a Management train, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.

2.2.3.3 Life Buoy

A safety buoy and housing is placed by the entrance gate to basin 2. Refer to the appendix for manufacturers specifications.

The buoy and housing is to be maintained in line with the manufactures specification and the safety line is to be monitored as part of general maintenance for the site to ensure it remains in place, untangled and maintained in line with the manufacturer's specification.

A life buoy and line has a limited exposed life span and should be replaced in line with the manufacturers specifications as required for safety equipment.

Warning signs placed around the basin indicating possible deep water and under currents will require replacing if they become damaged or faded.

2.3 Perimeter Land drain to the North of Basin 1

To the North of the basin 1 flank and running clockwise around the Basin is a Perimeter Land drain to reduce overland flow from entering the basin network.

Inline with the requirements set out in C753, Filter drains will require regular maintenance to ensure continuing operation.

1. Regular inspection of the filter drain surface should be undertaken as part of general landscape maintenance for the site, to ensure it is not silted up and is still percolating into the Filter media.
2. Litter and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
3. Excess Siltation of the catchpits and surface and any invasive vegetation will need to be removed. Sediments will need to be excavated once deposits exceed 25mm depth and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification and appropriate disposal methods. In the majority of cases as this filter drain is collecting from a low risk site, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.

Refer to the below table 16.1 (from the C753 CIRIA SUDS Manual) for the minimum requirement schedule for the timescale that each maintenance activity must be completed by.

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly, or as required
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforated pipework of blockages	As required

2.4 Deflection bund above basin 1

At the base of the Basin 1 flank a deflection bund has been placed to divert water running down the flank to be intercepted and diverted directly into Basin 2.

The bund will require similar inspections in line with the Filter drain maintenance in the chapter above

1. Regular inspection of the bund surface should be undertaken as part of general landscape maintenance for the site, to ensure it is not silted up and is still free flowing and diverting the flank water into Basin 2.
2. Litter and debris removal should be undertaken as part of general landscape maintenance for the site and before any other SuDS management task. All litter and debris should be removed from site.
3. Excess Siltation of the bund and any invasive vegetation on the bunds upslope face, will need to be removed. Sediments will need to be excavated once deposits exceed 25mm depth and should be safely disposed of in accordance with current waste management legislation. However, consultation should take place with the environmental regulator to confirm appropriate protocols. Chemical testing of the sediment may be required, before sediment excavation, to determine its classification and appropriate disposal methods. In the majority of cases as this filter drain is collecting from a low risk site, it will be acceptable to distribute the sediment on site, if there is an appropriate safe and acceptable location to do so.

2.5 Flank and Perimeter Vegetation Maintenance

All Perimeter vegetation should be managed in line with the Barry Chinn Associates 'Soft Landscape works, Maintenance and Management proposals document'.

2.6 Safety and the Environment

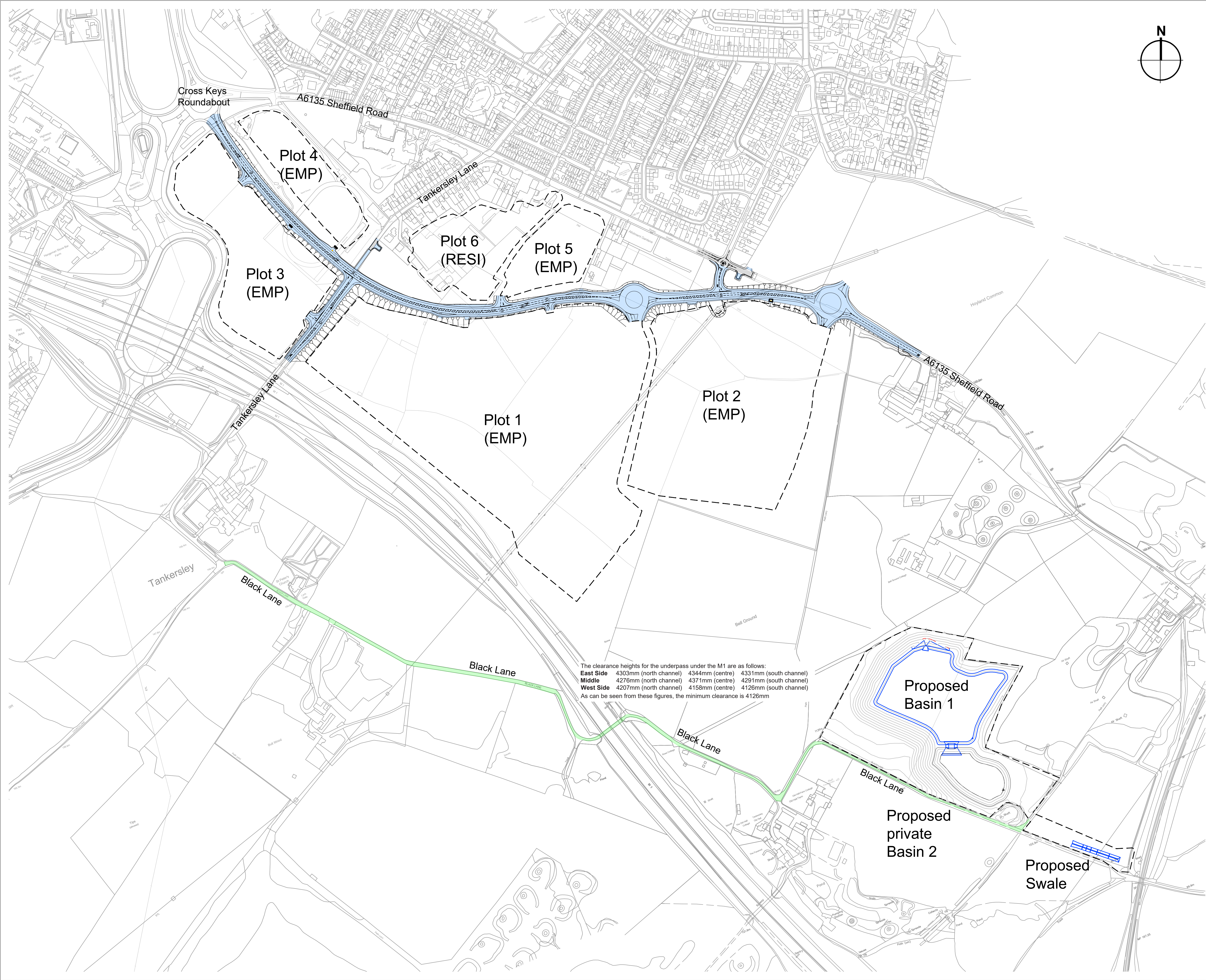
Before any maintenance works can be conducted on site any contractor will need to submit a Risk assessment and method statement (RAMS) to suit their staff, plant and working practices.

Any RAMS, as a minimum, will need to address:

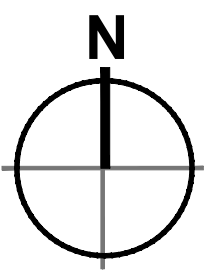
1. The Access down the Black Lane track (AKA Pennine Way) is a shared public right of way with limited overtaking and site lines. It also has vehicle restrictions through the M1 underpass that will need to be confirmed as suitable and an emergency plan drawn up to indicate what to do if struck.
2. The maintenance activities to be done
3. Working on 1:3 slopes, manoeuvring vehicles on slopes
4. Working in a weather variable environment that will fill up with water during and after rainfall
5. Working around water in the pond area
6. Existing buried and overhead services around the site
7. Environmental issues with Flora and Fauna and working seasons
8. Possible downstream contamination during maintenance works
9. Transporting waste materials after maintenance
10. Working at height when lifting manhole covers

APPENDICES

Appendix A
Site Location Plan



The clearance heights for the underpass under the M1 are as follows:
East Side 4303mm (north channel) 4344mm (centre) 4331mm (south channel)
Middle 4276mm (north channel) 4371mm (centre) 4291mm (south channel)
West Side 4207mm (north channel) 4158mm (centre) 4126mm (south channel)
As can be seen from these figures, the minimum clearance is 4126mm



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 2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.
 3. This drawing should be read in conjunction with all other relevant drawings and specifications.
 4. Masterplan taken from PHP drawing 4400-001 Rev P28, received 15/06/2020.
 5. The adopted authority, as referred to in these notes is Barnsley Metropolitan Borough Council (BMBC).
 6. All information shown on this drawing is subject to Technical Approval from BMBC.
 7. New highways to be adopted (including roads, footways and cycleways) shall be carried out under the Highways Act 1980, and shall comply with the adopting authority design standards.
 8. The contractor is to check all information provided prior to commencing works, and seek clarification from the engineer in respect to any ambiguities found.

- Key
- Plot boundaries
 - Proposed highways scheme
 - Proposed Maintenance Access

P03	Access Road added	SMC	AE	12.01.22
P02	Basin Design Amended	AB	SMC	15.03.21
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Rev	Description	By	Ckd	Date



Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T.01636 605 700 E. rpsnewark@rpsgroup.com



Client
Hoyland Common

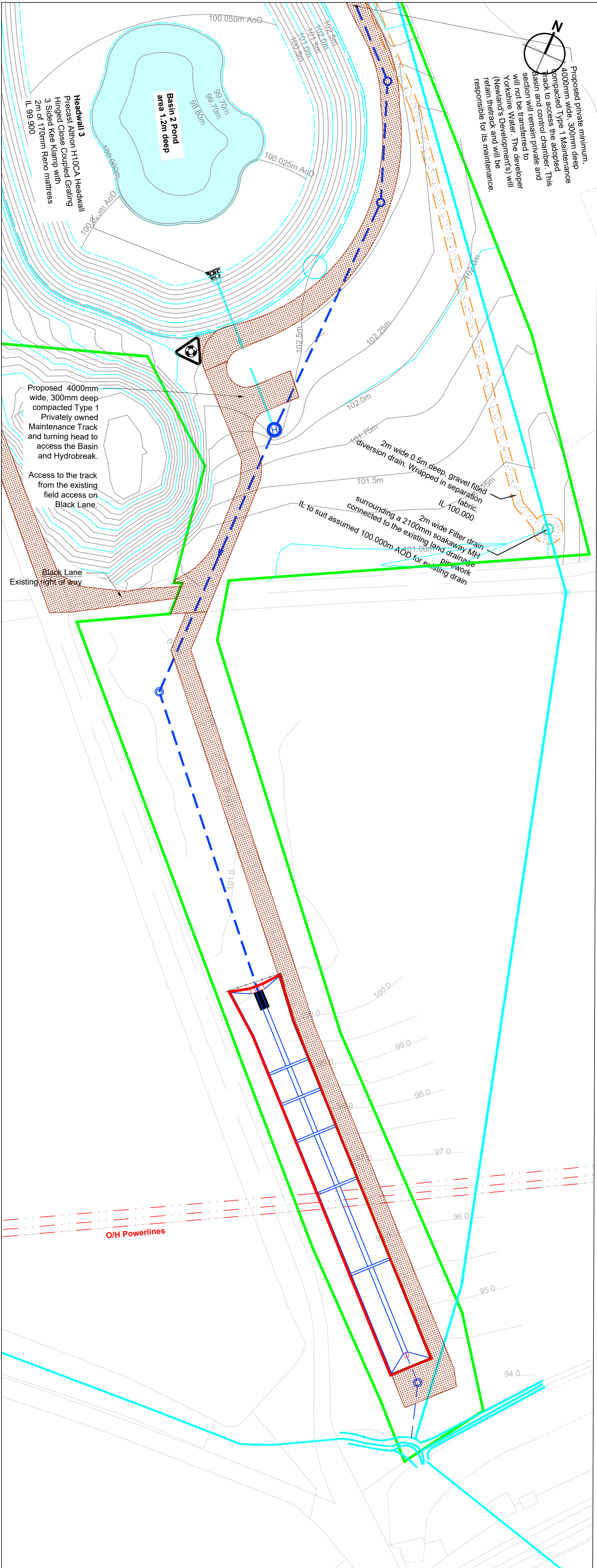
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Appendix B
General Arrangement Plan



Viewpoint I
Scale 1:500



Viewpoint J
Scale 1:500

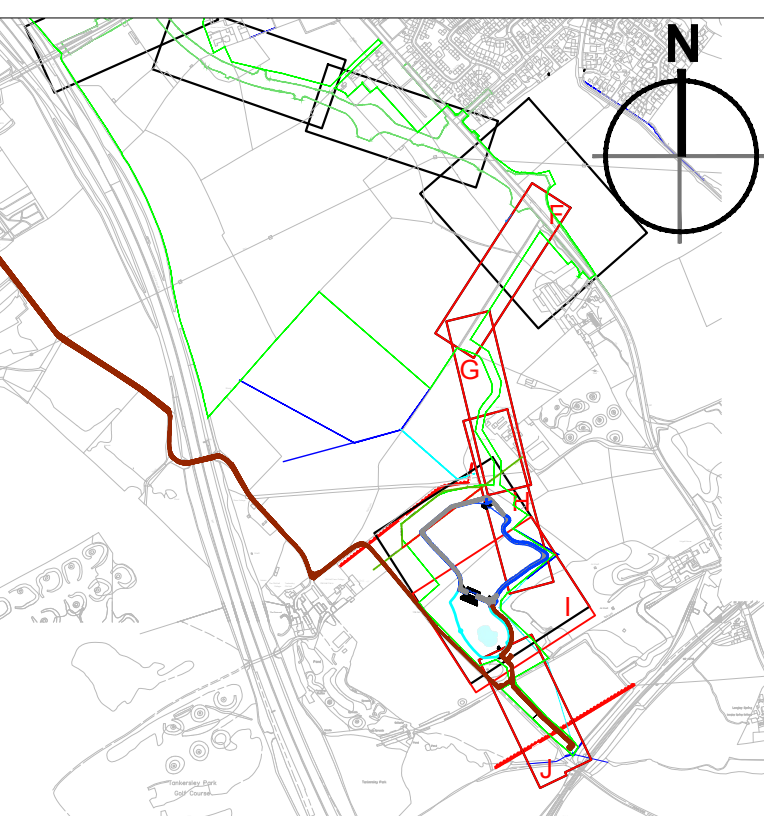
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- If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.
- This drawing should be used in conjunction with all other relevant drawings and specifications.
- Masterplan taken from PHP drawing 4400-001 Rev P25, received 15/09/2020.
- All works to be carried out in accordance with the Specification for Highway Works, the South Yorkshire Residential Design Guide and the requirements of Barnsley Metropolitan Borough Council.
- Foul water designed in line with Sewer Sector Guidance. Flows from:
 - Industrial plots based on 0.6litre/sec
 - Residential plots based on 4000litre/day peak flow.
- Adopted Surface water designed in line with Sewer Sector Guidance.
- Highway drains designed to SMD and SDC specifications.
- Kerb drainage based on detailed design by Marshalls PLC.
- Enbankment toe drains are connected to existing drainage outfalls to both provide a base flow to those habitats and to maintain ground water drains. Calculations for all drain connections are greatly reduced vs the original site.

Key

- Planning Boundary
- Proposed Highway Gully
- Proposed Kerb Drainage
- Proposed Surface Water Sewer
- Proposed Highway Surface Water Sewer
- Proposed Private Surface Water Sewer
- Proposed Foul Water Sewer
- Proposed Foul Water Rising Main
- Proposed French/Outfall Drain
- Yorkshire water adopted area



Key Plan
Not to Scale

C03	Details amended	SMC ANT	12.01.22
C02	Basin design revised to suit YWS requirements	SMC ANT	07.12.21
C01	Construction Issue	KA ANT	13.01.21
P03	BIMC comments received 26.11.20 incorporated	AB ANT	02.12.20
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rps MAKING COMPLEX EASY

Sherwood House, Sherwood Avenue,
Newark, Nottinghamshire, NG24 1QQ
T: 01636 666 700 E: rpsnewark@rpsgroup.com

Client

newlands
developments

Project

Hoyland

Title

Highway Drainage
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(Sheet 5 of 5)

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Information

Task Information

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SMC

Series

AS (Approved for Construction)

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C03

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Appendix C
Basin Detail Drawings

Appendix D

Headwall Maintenance and Installation Guide

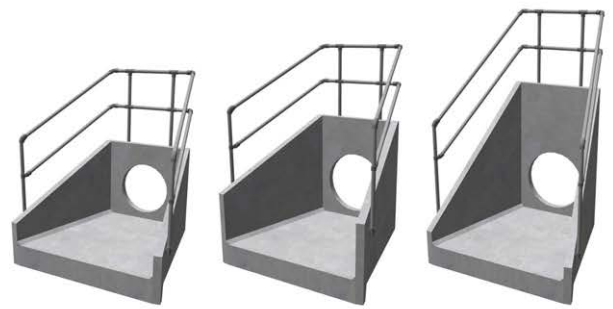
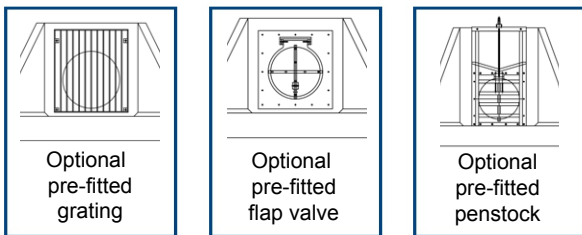
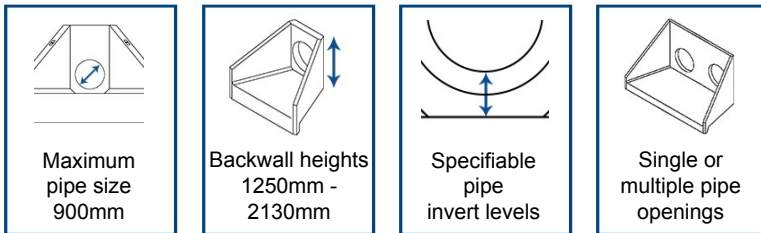
H10C Headwall Range

Up to 900mm Pipework
1250mm - 2130mm Backwall Height

H10C Headwalls are precast concrete headwalls to suit plastic or clay pipes up to 900mm and concrete pipes up to 900mm. H10C Headwalls are available with three standard backwall heights of 1250mm, 1650mm and 2130mm. Stainless steel sockets can be cast into the headwall for the attachment of gratings and other factory fitted accessories.

H10C Headwalls are available with three different wingwall profiles, sloped, horizontal and chamfered.

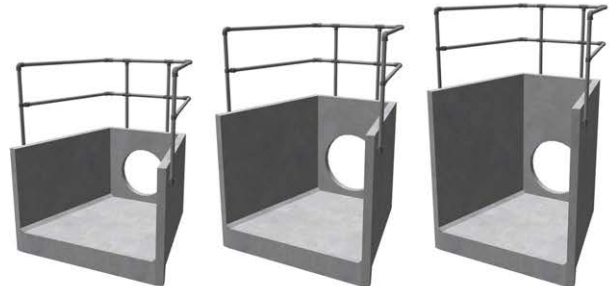
We cast the opening in the back wall of our precast concrete headwalls to suit the pipe diameter and material of the pipe being used. We can cast multiple pipe openings, elliptical, square or rectangular culvert openings into any of our headwalls. We can also cast pipe openings into the wing walls of our headwalls.



H10CA

H10CB

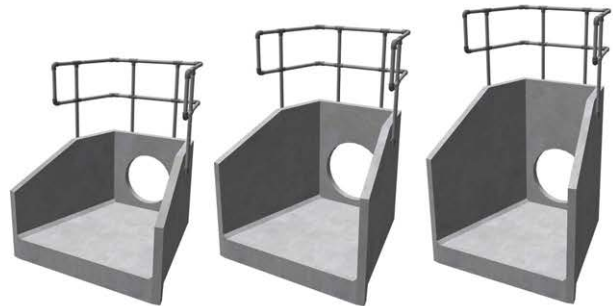
H10CC



H10CD

H10CE

H10CF



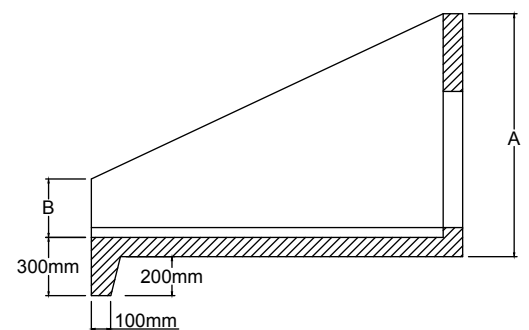
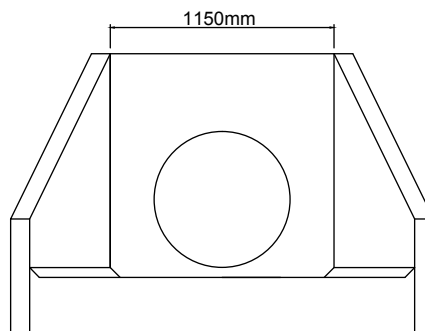
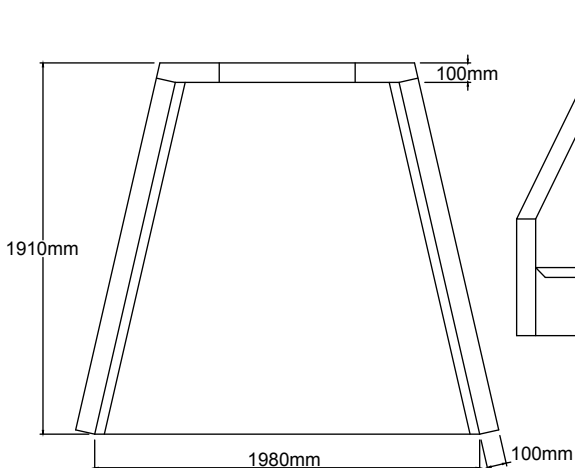
H10CG

H10CH

H10CI

Optional Kee Klamp handrail

Headwall	Max Pipe Opening Plastic/C'ware	Max Pipe Opening PCC	A	B	Approx Weight kg
H10CA	750	750	1250	300	1947
H10CB	900	900	1650	700	2430
H10CC	900	900	2130	200	2575
H10CD	750	750	1250	1150	2315
H10CE	900	900	1650	1550	2800
H10CF	900	900	2130	2030	3375
H10CG	750	750	1250	652	2190
H10CH	900	900	1650	1052	2670
H10CI	900	900	2130	1532	3330





Installation Guide

Once installed correctly the ground pressure of a headwall is low (approximately 7kn/m²) Althon suggest a minimum sub base of 100mm dry mix concrete to give a foundation to sit the headwall onto

1. Ensure that the pipe is fully fitted leaving either the first (or last) section of pipe free from backfill in order to attach to the headwall

2. Dig out the bank of the watercourse to take the size of the headwall making sure that the headwall will not protrude into the path of the water flow

3. Dig out sufficient size trench to take the toe along the front of foundation allowing for sufficient room to manoeuvre the headwall over the end of the pipe

- If an extended toe is to be fitted then increase the depth of the excavation as required

- If very large pipes are being used, it is recommended that a 500mm wide x 500mm deep trench filled with mass concrete is constructed under the back edge of the headwall to cover the possibility of the heavy pipe resting upon the opening within the back wall of the headwall.

4. Lay a minimum (varies with ground conditions) of 100mm thick bed of dry mix concrete as a foundation to rest the headwall on. Althon recommend creating a slight fall of 1:50 from pipe to spill mouth

5. Prior to lifting and positioning the headwall all attachments such as gratings and water control gear should be removed

- If there is a bolt on extended toe fully thread the M16 stainless steel studding into the fixing sockets of the toe and lift this into position first. Once the headwall is installed on top of the toe use washers and nuts to fix the headwall and toe together. Once the nuts have been sufficiently tightened fill the holes with mortar

- Do not exceed a torque setting of 40Nmm² when tightening bolts.

6. Lift the headwall into position using 3no RD20 threaded lifting eyes, long adjustable chains and suitable machinery. Before carrying out the lifting operation all relevant personnel involved should read the installation and lifting guide in this document and a detailed lift plan and risk assessment should be completed by a competent person

- The 3no RD20 threaded lifting sockets are all located in the base of the headwall

- Placing a shim at the bottom of the pipe will assist with centring it in position

- If attachments such as water control gear or gratings are to be fitted to the headwall – the pipe must be fitted flush with the inside of the back wall

- If there are no attachments to be fitted Althon recommend fitting the headwall so that the pipe protrudes 50mm through the back wall

7. When satisfied with positioning backfill in front and under the headwall toe with mass concrete

8. Backfill around the pipe with either mass concrete or well-compacted impervious clay. If concrete has been used around the pipe then proceed with soil backfilling to the top level of the structure ensuring good compaction as you go

9. Depending on soil conditions and specific site requirements Althon recommend backfilling around wing walls with well compacted impervious clay

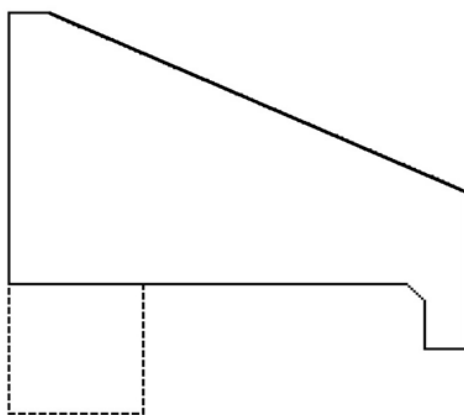
10. Using an appropriate mortar or resin fill in the gap between the pipe and headwall around the opening in the back wall of the headwall

11. For fitting gratings and other fabricated metal components

- Position the grating using appropriate lifting equipment
- Use the correct size and length of stainless steel bolts with washers to fix
- Gratings to the threaded fixing sockets cast into headwalls
- To prevent bolts binding in threaded fixing sockets copper slip must be applied to the thread of all bolts
- Do not exceed a torque setting of 40Nmm² when tightening bolts.

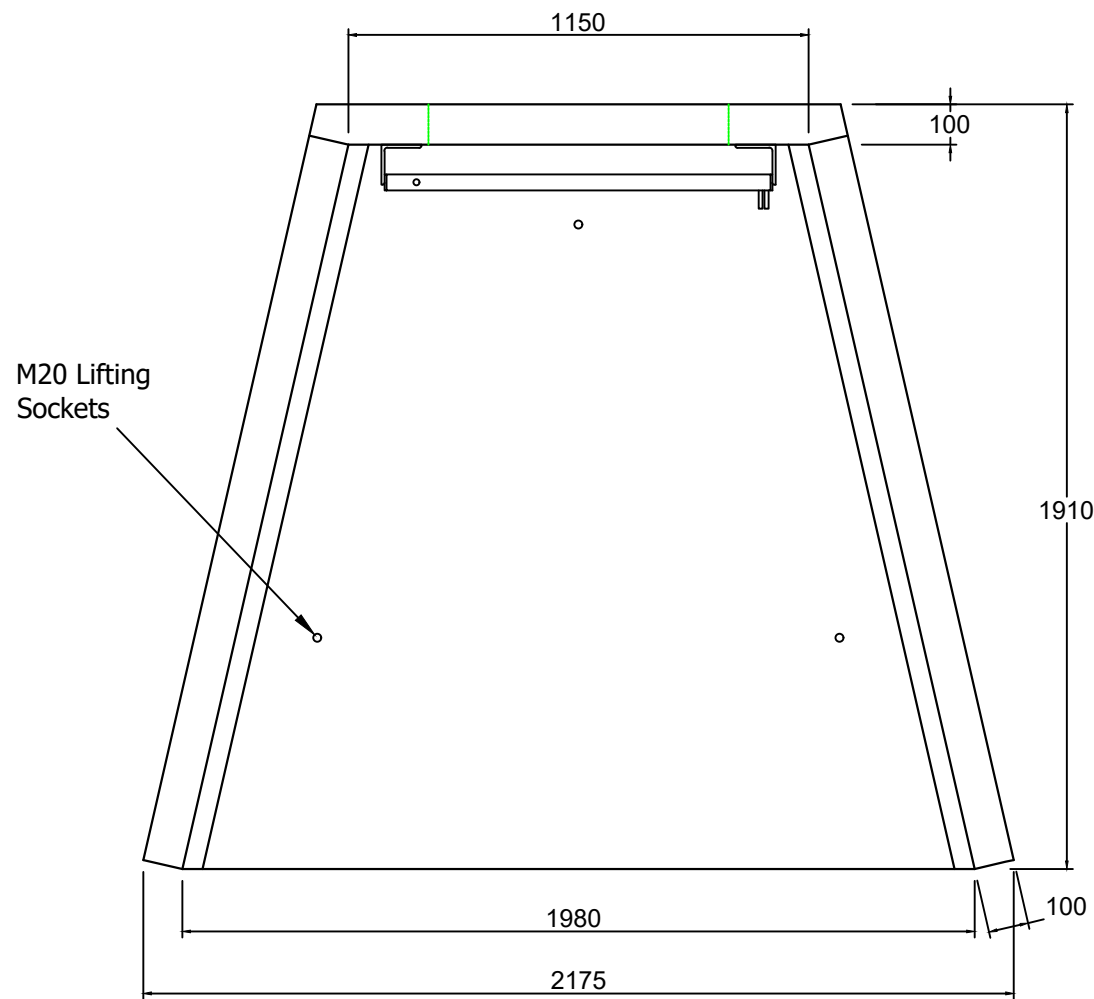
12. For fitting water control gear (i.e. Flap Vales & Penstocks)

- Apply foam seal or mastic sealant to the back plate of the water control gear to ensure a watertight seal between the headwall
- Position the water control gear using appropriate lifting equipment
- Use the correct size and length of stainless steel bolts with washers to fix control gear to the threaded fixing sockets cast into headwalls
- To prevent bolts binding in threaded fixing sockets copper slip must be applied to the thread of all bolts. Do not exceed a torque setting of 40Nmm² when tightening bolts. Overtightening bolts may distort the back-plate thus preventing the valve from sealing correctly

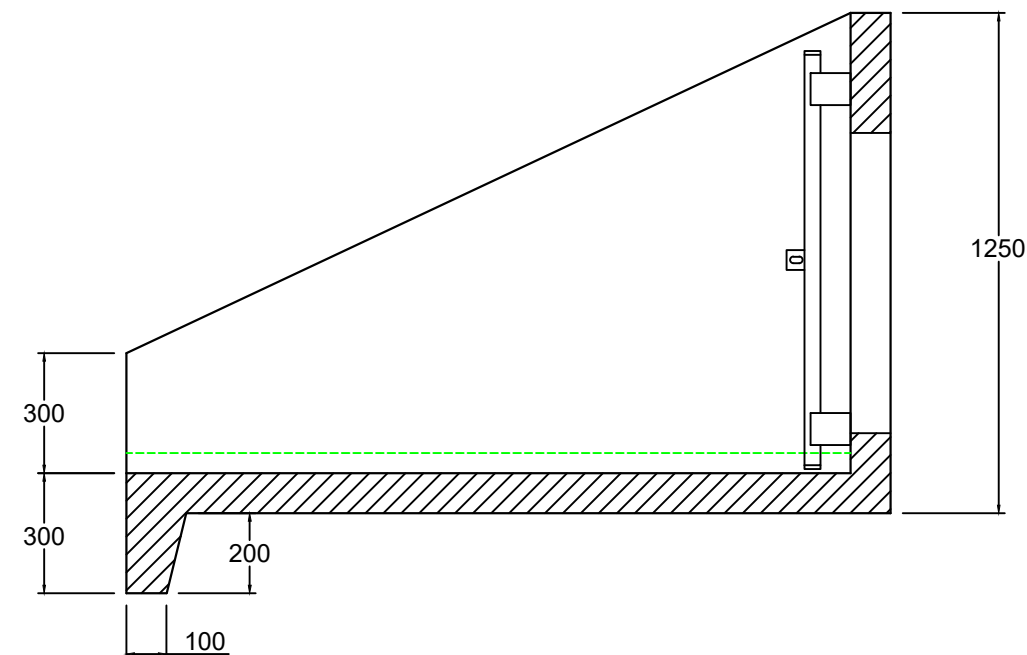
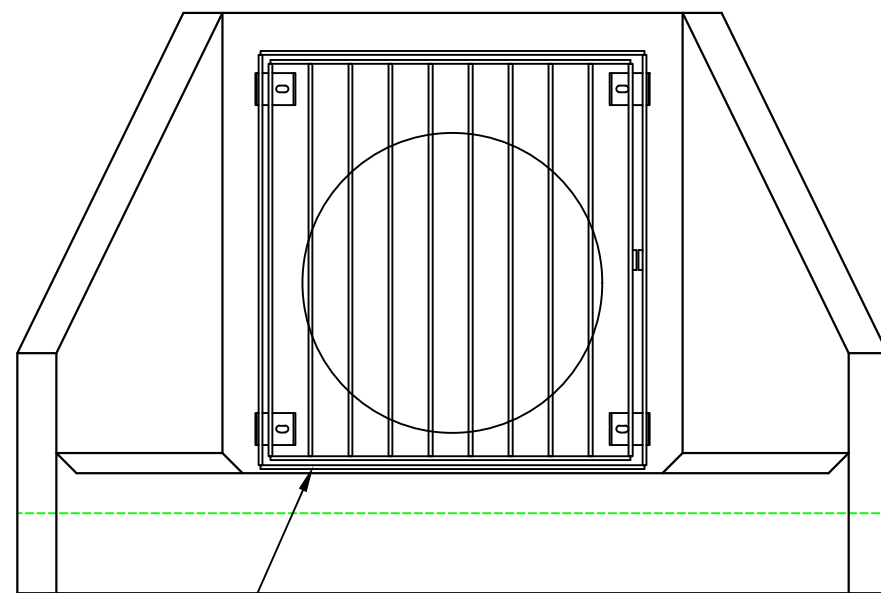
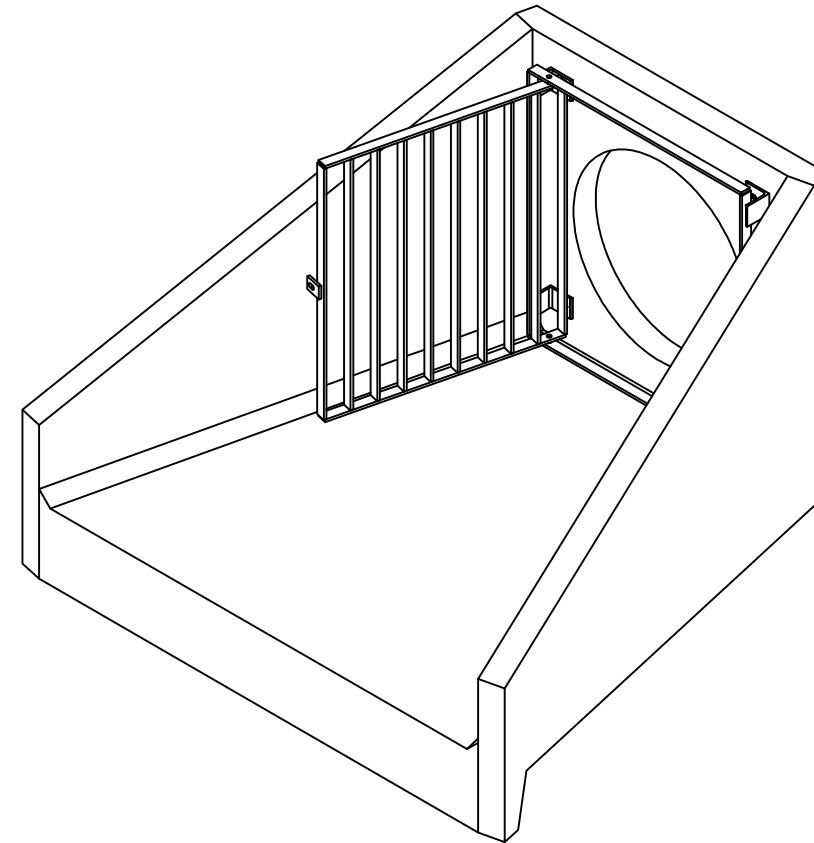


500 x 500 trench filled
with mass concrete to
support any pipe loading.

Due to the wide variety of site conditions this is only intended to be a guide, it is inappropriate to give specific information regarding details such as the depth of foundations to support the headwall or a detailed lift plan & risk assessment.



Note: Isometric drawing is for reference only, details may not accurately represent actual design - please see detailed views for technical information



- Close Coupled Grating Specification Information**
- Grating manufactured from 40 x 10 flat at 100mm centres
 - Unit fully welded then hot dip galvanised

DO NOT SCALE DRAWING

NOTES:

- All dimensions in mm
- All measurements ± 1 mm

Specification Information

- Opening in back wall cast to suit outside diameter of the pipework
- Invert level of pipe can be set to your specification

Headwall Installation

Units should be bedded on minimum 150mm of semi-dry concrete.
Sit the headwall level or with a slight fall 1:50 from pipe to spill mouth.

Handling

- Weight of concrete is based on 2.4 tonne/m³+5% is recommended for sizing lifting equipment.
- All lifting points shall be used as specified below - Anchor points & loops - Total Qty: 3
- Unit to be lifted as per lifting diagram

Concrete

- Mix ref: Self-compacting DC4/DS4 Mix
- Lifting strength based on 2 cubes = 20N/mm²
- Characteristic 28 day cube strength = 50N/mm²
- Concrete provides Design Chemical Class 4 (DC4) to special Digest 1, Table F2.

Reinforcement

- Reinforcement to BS EN 13369
- Scheduling, dimensioning, bending & cutting to BS8666
- Cage to be machine tied with steel wire

Manufacture

- Manufacture to BS EN 15258:2008 precast concrete products - Retaining wall elements, Factory Production Control certificate number: 0086-CPR-650448 & BS EN 13369
- Tolerances to BS EN 13369 clause 4.3.1.1
- Finishing:

	Top	Sides	Base	Rear of back wall
Class	A	A	A	Self - Levelled
- Marking: Units shall be indelibly marked to show:
 - Mould reference code
 - De-mould date
 - Job reference number & unique product number
 - Unit weight (kg)

Design

- Concrete design to EC2
- Althon have designed the concrete units only, the site conditions should be assessed for suitability by the scheme designer
- Units are designed to withstand a vertical live load surcharge of 10kN/m²
- Weight of soil = 18kN/m³
- Angle of internal friction = 30 Deg.
- Design Life: >50 years

Min Cover	Cover Block Size (mm)	Min Cover Size (mm)	Max Cover Size (mm)
All Faces	33	28	38

Exposure Classification	Exposure induced by Carbonation	Corrosion induced by Chloride	Freeze/thaw attack	Chemical attack
All Faces	XC3/4	XD2	XF3	XA2

Fabrication Specification

- Manufacture IAW EN 1090-2 EXC CLASS 1
- Material grade is to be: BS EN 10025 S275
- Welding carried out IAW EN 1090-2 PARA 7.5.4 - 7.5.18
- All fillet and butt welds to have a minimum throat thickness of 6mm & joints to be fully welded where possible.
- Ensure vertical flats are fully welded both sides where possible.
- All sharp edges and burrs are to be removed.
- Remove all weld splatter.
- Holes by punching are permitted with reaming.
- Galvanising is carried out after fabrication to BS EN:ISO 1461

Handrail Specification

- Kee Klamp® Galvanised Size 8 Fittings
- Size 8 48.3mm OD 3.2mm Wall Thickness Galvanised Medium Duty Tube to BS EN 10255
- 360N/m Design Load at stated in BS 8118, BS 6180, BS 6399 & BS 7818, Civil Engineering Specification for the Water Industry (CESWI) 7th Edition Clause 2.60 Handrails & Balusters & The Engineering Equipment and Materials Users' Association (EEMUA) Publication 105 7th Edition Factory Stairways, Ladders and Handrails
- Other design loads available on request
- GRP/FRP Handrails also available

REV NO	DATE	DESCRIPTION
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ADDRESS: ALTHON LIMITED
VULCAN ROAD SOUTH
NORWICH
NR6 6AF

TEL: 01603 488700
FAX: 01603 488558
EMAIL: sales@althon.co.uk
WEBSITE: www.althon.co.uk

PROPRIETARY & CONFIDENTIAL

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DRAWING TITLE / PROJECT:

H10CA Headwall
Hinged Close Coupled Grating

CLIENT:

SCALE:	PAPER:	SHEET NO:	DATE:
NTS	A3	01 OF 02	01 - 06 - 18

HEADWALL WEIGHT:	TOE WEIGHT:
2000kg	N/A

PRODUCT NAME:
H10CA

DRAWING No:



Appendix E

Buoy Maintenance and Installation Guide

Guardian™ Lifebuoy Housings

Installation Instructions

NOTE: Ensure that all relevant personnel read the points listed below and that a copy is passed on to staff involved with the installation. Please also refer to the 'Manual Handling Operations Regulations 1992' during the handling of the product and materials used for installation. Glasdon recommends that a full Health and Safety analysis is carried out prior to installation.

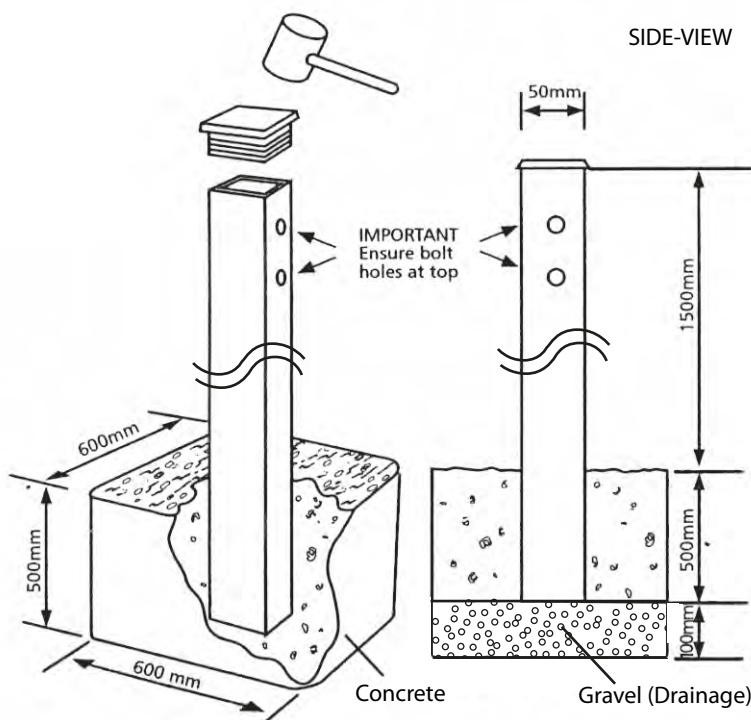
SITING

The siting of the Lifebuoy Housings is dependent upon local conditions. There are no standards specifying the spacing of the Lifebuoy Housings other than for working docks, where spacing of no greater than 100 metres is recommended.

Glasdon recommend that the Housings are sited so as to be accessible and clearly visible to a rescuer, wherever the rescuer is standing, taking into account terrain, foliage, adverse weather and low visibility. Siting should be undertaken after a local risk assessment, including walking the site.

INSTALLING THE POLE

OPTION 1 - EXTENDED POLE FOR SETTING BELOW GROUND INTO CONCRETE



WARNING: Check for buried services before installation.

WARNING: It is recommended that two people install the pole (weight 12kg) .

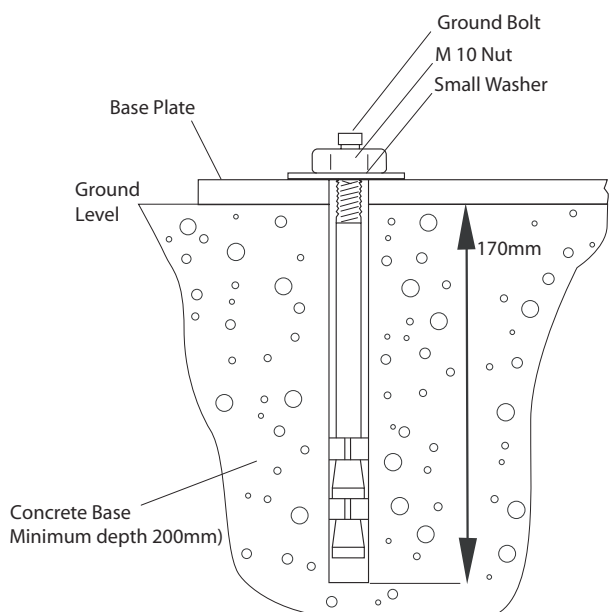
1 Dig a hole to form a concrete block 600(L) x 600(W) x 500(D)mm with an additional 100mm depth of gravel at the base for drainage.

2 Insert the black end cap into the pole and tap in with a mallet.

Important: Ensure that the bolt holes are at the top of the post and that the post is positioned in the correct orientation for the housing.

3 Place the pole in the hole and support whilst pouring in the concrete. Further support may be required until the concrete sets.

OPTION 2 - POLE WITH BASE PLATE FOR SURFACE FIXING TO CONCRETE



WARNING: It is recommended that two people install the pole (weight 12kg) .

1 Place the pole in the desired position onto the concrete foundation. NOTE: ENSURE THE FIXINGS ARE A MINIMUM OF 110MM AWAY FROM THE EDGE OF THE CONCRETE BASE. Mark all four hole positions through base plate with drill tip.

2 Remove the pole and drill holes to depth of 170mm using a 10mm diameter masonry drill.

3 Ensure holes are free from any obstructions caused by drilling.

4 Ensure that washers and nuts are screwed into position at the top of the bolts supplied.

5 Re-align the base plate with the drilled holes and tap down all four fixings.

6 Tighten up the nuts with 17mm socket until tight - (maximum recommended torque setting is 20lbs/ft/27Nm).

MOUNTING THE HOUSING

All methods - Pole, Rail or Wall Mounting

- 1 Remove Lifebuoy and Rope.
- 2 Mount the Housing as instructed below.
- 3 Ensure throwing rope is securely tied to the Lifebuoy.
- 4 Replace Lifebuoy and Rope.
- 5 Set indicator plate.
- 6 Attach the security seal.

POLE MOUNTING

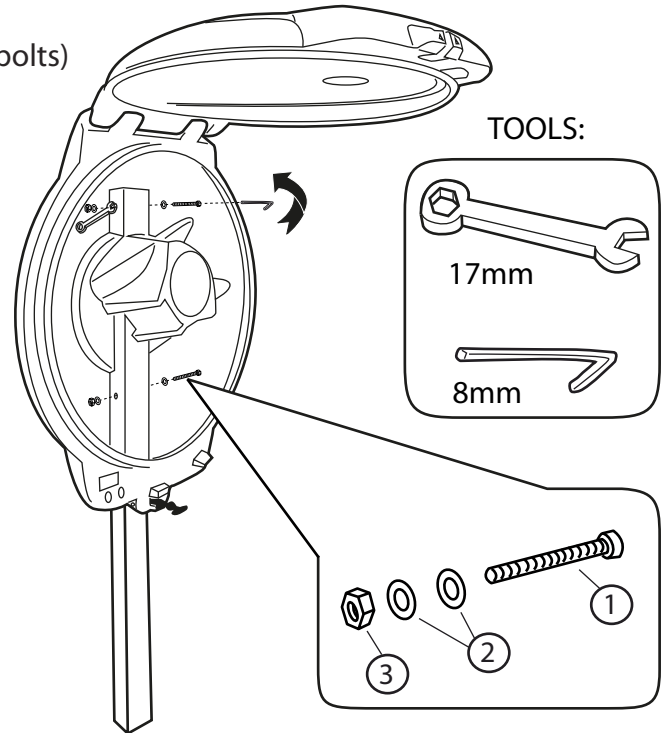
Attaching Housing to 100 x 50mm pole (with internal bolts)

- 1 Place the Lifebuoy Housing onto the pole, open the lid. *See Note
- 2 Place washer onto M10 x 130mm bolt and insert through the pre-drilled holes in the Housing and the pole.
- 3 Place 2nd washer onto the bolt protruding through the housing and attach the nut.
- 4 Repeat with the second bolt, then tighten using an 8mm Allen key and a 17mm socket.

*Note: If using this fixing method for a 100 x 60mm pole, place the Housing on the pole and mark holes on both sides of the pole, using the Housing as a template. Drill four x 12mm holes in the pole.

KIT CONTENTS:

ITEM 1. M10 Socket Screw x 130mm	x 2
ITEM 2. M10 x 35mm Washer	x 4
ITEM 3. M10 Nylock Nut	x 2



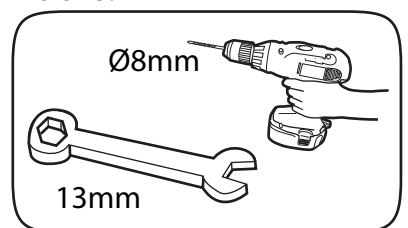
RAIL MOUNTING

- 1 Position and clamp brackets to rail, using the longer bolts, marking hole positions on back of the Housing.
Note: The Housing should not be mounted on a single horizontal or vertical rail unless there is additional support to prevent it rotating.
- 2 Drill the back of the Housing using an 8mm drill.
- 3 Offer the case up to the brackets and fix with the shorter bolts, ensuring the washers and nuts are on the inside. Tighten using a 13mm socket.

KIT CONTENTS:

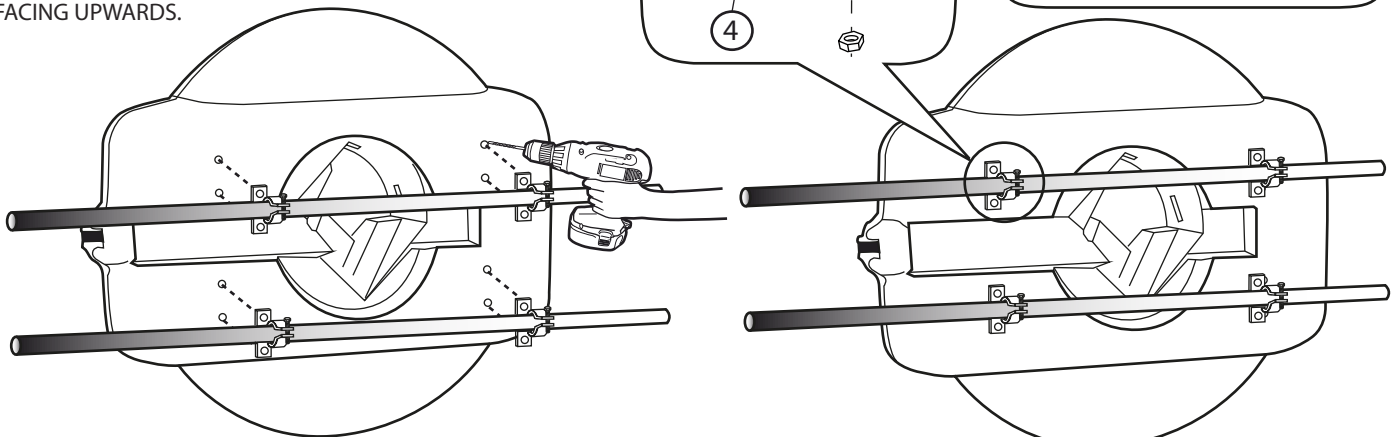
ITEM 1. M8 x 40mm Set Screw	x 8
ITEM 2. Rail Mounting Bracket	x 8
ITEM 3. M8 Nylock Nut	x 16
ITEM 4. M8 x 30mm Washer	x 8
ITEM 5. M8 x 25mm Set Screw	x 8

TOOLS:



IMPORTANT

Guardian **MUST** BE MOUNTED IN THIS ORIENTATION WITH THE HINGE TO THE LEFT AND THE ROPEMASTER RETENTION TABS FACING UPWARDS.



WALL MOUNTING

- 1 Drill four outer holes in the back of the Housing using a 6mm drill.
- 2 Offer the Housing up to the wall and mark the position of the holes.
- 3 Drill the wall using a 7mm masonry drill and plug wall.
- 4 Offer the Housing up to the wall and secure with the washers and screws provided, using a flat bladed screwdriver.

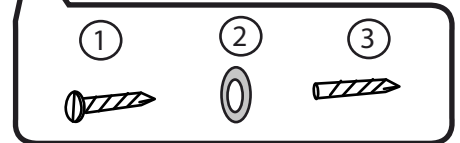
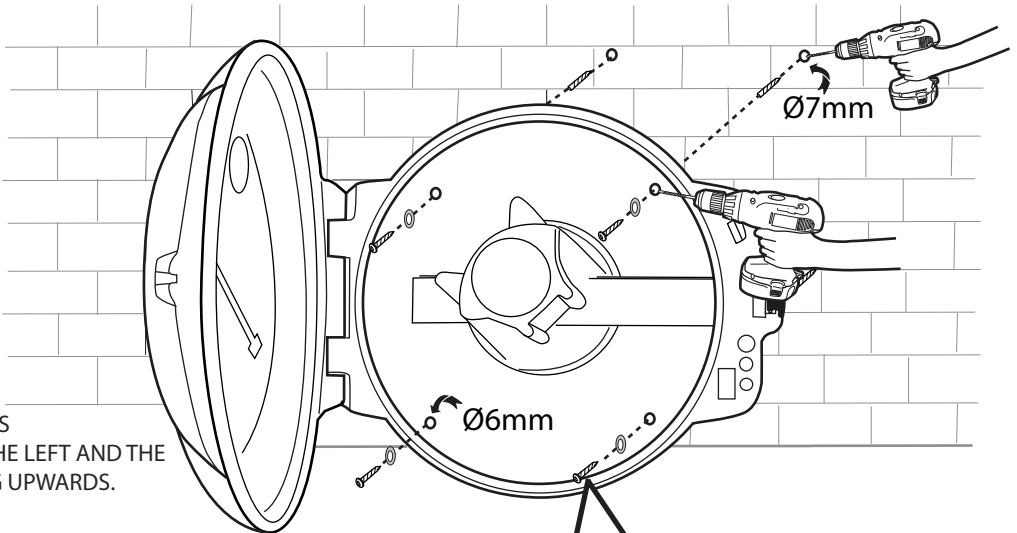
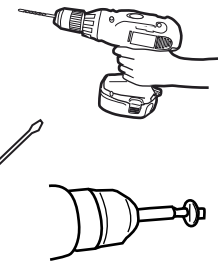
IMPORTANT

Guardian **MUST** BE MOUNTED IN THIS ORIENTATION WITH THE HINGE TO THE LEFT AND THE ROPEMASTER RETENTION TABS FACING UPWARDS.

TOOLS:

Ø6mm & Ø7mm

Flat Bladed Screwdriver
or Screwdriver bit

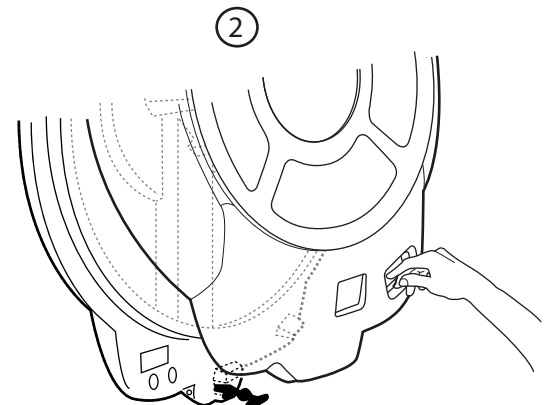
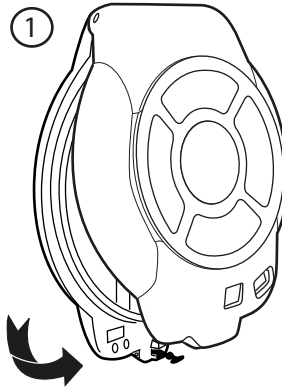


KIT CONTENTS:

ITEM 1. 5mm x 40mm Screw	x 4
ITEM 2. M6 x 30mm Washer	x 4
ITEM 3. No.12 Wall Plug	x 4

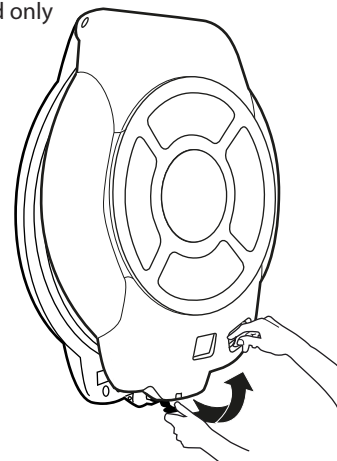
SETTING THE INDICATOR PLATE

- 1 Partially open the lid.
- 2 From the front of the lid, use your fingers to push and rotate the white indicator plate fully inside the lid.
- 3 Close the lid with the indicator plate in this position, ensuring the the plate engages under the upstand on the body of the housing.
- 4 Pull up the rubber toggle to secure the lid.

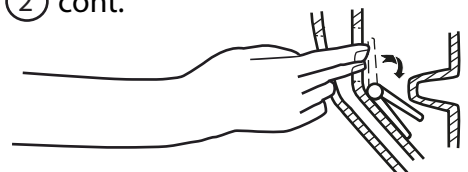


Note: The aperture should now appear dark. Unless reset or inoperative, the indicator plate should only show white through the aperture when the lid is subsequently opened.

3 4



2 cont.



INSPECTION

Glasdon recommend that the rope and buoy are fully inspected at least twice a year.

If there is any doubt regarding the serviceable condition then replace.

Spare kits are available.

IMPORTANT

The Lifebuoy Housing Indicator Plate and Security Seal are secondary devices to help indicate that the Housing has been opened. They must never replace full regular inspection, as they cannot guarantee that the equipment is in place or in a serviceable condition.

- A planned maintenance schedule of regular inspection at least twice a year (dependent on location) is recommended, replacing components as necessary.
- Replacement components are available direct from GLASDON.
- Glasdon cannot be held responsible for claims arising from incorrect installation, unauthorised modification or misuse of the product.

Should you require any further assistance please contact us on
tel: 01253 600410, fax: 01253 792558 or email: sales@glasdon-uk.co.uk.



In accordance with our policy of continuous development and improvement, we reserve the right to make changes in design and specification without notice.

Glasdon UK Ltd products are manufactured under license worldwide and various components of the models are patented and design registered.



Glasdon®

Glasdon U.K. Limited

Preston New Road
BLACKPOOL
Lancashire
FY4 4UL

Tel: (01253) 600410
Fax: (01253) 792558
e-mail: sales@glasdon-uk.co.uk
web: www.glasdon.com

Stock No. C000/0201 - DWG No. 03B-031-38 Issue 2 - Janu 2020

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Buyers Guide:

Guardian™

Lifebuoy Housing



Thank you for your interest in **Guardian™** **Lifebuoy Housing**

Designed to keep water safety equipment safe and ready for action in the event of an emergency.



Guardian Lifebuoy Housing at **Staithes, North Yorkshire.**

Talk to us about your requirements or request a quote today.

Call us on **01253 600410**

Email:

enquiries@glasdon-uk.co.uk

or



In this step-by-step guide...

- The key considerations when specifying a lifebuoy housing.
- Links to Glasdon lifebuoy housings, installation and instruction leaflets and demonstration videos.

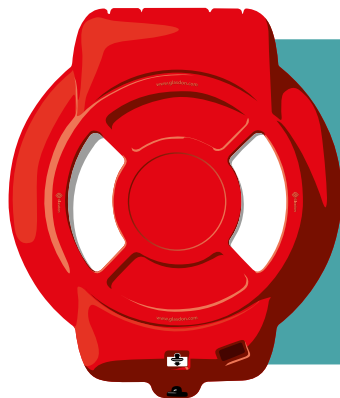
STEP 1 :

What size housing do you need?

Need a lifebuoy? [Go to Step 2](#)

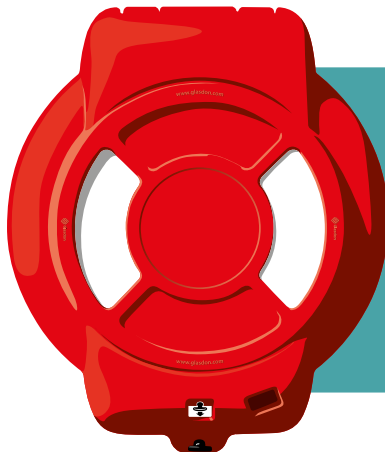
Guardian™ Lifebuoy Housings are available in two sizes to store life rings up to 30 inches in diameter or alternative throwable lifesaving devices such as the B-Line™ throwing Buoy.

Both models are designed with a universal fit to house lifebuoys and throwing buoys made by different manufacturers.



Guardian Lifebuoy Housing 600

- Ideal for 24" (600mm) lifebuoys with up to 164' (50m) of rope or two B-Line Throwing Buoys
- Available in red and white
- Height: 925mm | Width: 768mm
Depth: 250mm
- Weight: 9kg

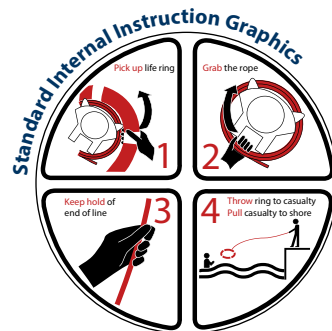


Guardian Lifebuoy Housing 750

- Ideal for 24" (600mm) or 30" (up to 750mm) lifebuoys with up to 164' (50m) of rope or two B-Line Throwing Buoys
- Available in red and white
- Height: 1065mm | Width: 898mm
Depth: 250mm
- Weight: 10.5kg

Built-in Safety and Inspection Features

- Manufactured from tough, vandal and weather resistant Durapol® polymer
- Environmentally friendly - the housing cabinet is recyclable after its service life
- Ropemaster™ Quick Release Rope Management System - accepts various diameters of rope up to 50m (164')
- Clear instruction sticker on the inside
- Strong housing cabinet door with knuckle hinge and hinge rod
- Toggle latch
- Inspection indicator
- Water seal



[Read our FAQ >](#)

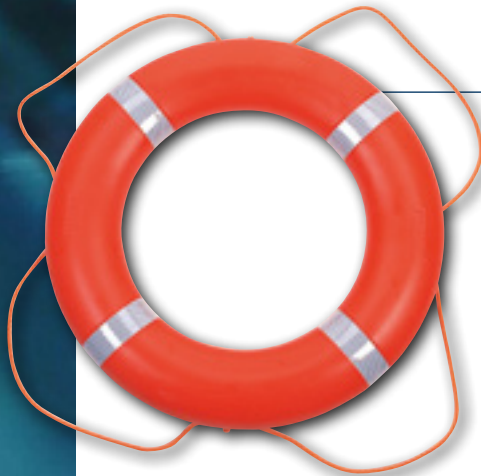
[Learn more about the Ropemaster Quick Release Rope Management System.](#)

STEP 2:

Do you require a lifebuoy or throwable personal floatation device?

We can provide 24" and 30" lifebuoys with 30m (100') or 50m (164') of throwing rope attached. Glasdon lifebuoys are fully compliant with Chapter III standards for life-saving devices, as per the Life-saving Appliance (LSA) code (SOLAS, 1974).

Not sure what size lifebuoy you need? Check out our handy [FAQ here](#) for guidance.



Glasdon Lifebuoy 600

24" lifebuoy weighs 2.7kg.

Can cover large throwing distance of up to 10 – 15 metres. Support for a single rescuee in the water. Ideal for throwing to the rescuee in rivers, lakes and shelving beaches.



Glasdon Lifebuoy 750

30" lifebuoy weighs 2.5kg.

Support for multiple rescuees at one time. Ideal for where there is a drop to water from piers, marinas or from on board a boat.



B-Line™ Throwing / Rescue Buoy

Lightweight, torpedo style floatation device weighs 1.3kg.

Length 685mm. Can be thrown to up to 30m and provides the rescuee with enough buoyancy to be carefully reeled back to shore using the 31m rope.

[Read our FAQ >](#)

[Find out more about Glasdon lifebuoys or the B-Line Throwing Buoy here.](#)

Glasdon lifebuoys meet SOLAS 74/83 regulations.

STEP 3:

Where will you be locating the lifebuoy housing?

Whatever your existing or new location, Guardian™ Lifebuoy Housing is a flexible solution with rail, wall and pole mounting fixing options.

Create a lifebuoy station by attaching the housing cabinet to a pole. We also offer Armortec® coated steel poles which can be surface mounted or concreted-in below the ground.



Personalised Guardian Lifebuoy Housing at Llandudno, North Wales.



Fixings are optional and the Guardian Lifebuoy Housing can be purchased without them.

Alternatively choose to easily mount the housing to existing walls and railings with our fixing kits. **(Easy to follow fixing instructions are available to [download here.](#))**

STEP 4:

What additional options are available?

All Guardian™ Lifebuoy Housings come with essential instruction stickers inside the cabinet to assist with the quick deployment of the life ring or rescue buoy and throwing rope.

The exterior front of the housing cabinet is also designed for personalisation. This gives you the option to add extra stickers with instructions or warnings along with your authority or company branding.

We can help you compile the messages, while our in-house team will design the artwork and send an initial visualisation which is completely free of charge.



Personalised Guardian Lifebuoy Housing at **Treyarnon Bay, Padstow.**

Additional Inspection and Operation Features.

- Inspection Window - easily view the contents inside without disturbing the door and security seal.
- Lid Stay – helpful when the housing is mounted to a pole. The lid stay securely props the lid open during inspection.
- Security Seals (Pack of 50) – provides a deterrent against misuse and informs the operator that the housing has been opened.

Talk to us about your requirements or request a quote today.

Call us on **01253 600410**

Email: **enquiries@glasdon-uk.co.uk**

or





About Us

Since 1959 our mission has been to design, manufacture and supply innovative market-leading products that enable our customers to contribute towards a cleaner, safer and more sustainable environment.

If you have any enquiries please contact us.

Alternatively you can view our

[Customer Reviews here.](#)

Order your
Guardian™ Lifebuoy
Housing today.

Call us on:

01253 600410

Request a Quote:

www.glasdon.com

[/guardian-tm-lifebuoy-housing](http://www.glasdon.com/guardian-tm-lifebuoy-housing)

Watch our videos



Glasdon UK | Guardian™ Lifebuoy Housing



Glasdon UK | demonstration, optional extras & product testing | Guardian™ lifebuoy housing



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