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Whealdream Holiday and Leisure

SURFACE WATER MAINTENANCE AND MANAGEMENT PLAN

April 2025

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1.0 INTRODUCTION

1.1 Brief

1.1.1 Cora IHT have been instructed to prepare a Surface Water Maintenance Plan to support proposals support proposals for a new Proposed New Driving Range together with additional course remodelling at Whealdream Holiday and Leisure. **Figure 1.1** illustrates the site location.

Figure 1.1: Site Location

1.1.2 The requirement for a Surface Water Maintenance Plan is based on the duty to ensure that surface water quality and quantity is managed and maintained throughout the construction and operational stages to mitigate impacts off site.

1.2 Surface Water Drainage Strategy

1.2.1 in accordance with the SUDS hierarchy, it is proposed that all surface water flows arising from the proposed driving range structure and remodelling of the wider golf course are to be stored onsite prior to discharge via the existing drainage asset.

1.2.2 The site application boundary extends to approximately 6.94 hectares of greenfield land currently occupied by the existing golf course.

1.2.3 To establish an approximate greenfield flow rates from the proposed development, a greenfield discharge rate have been established based on the development area.

1.2.4 Water generated by the new Tees, Greens and Fairways will be collected by a network of filter drains set at spacings ranging from 10 through to 20m as defined within the document "A guide to Sports turf Drainage Techniques for Golf Courses" published by Shelton.

1.2.5 The filter drainage will discharge into a mixture of swales and waterfalls prior to out falling into the proposed attenuation pond prior to outfall.

1.2.6 As the proposed site is currently identified as 100% permeable and the proposals will not materially alter the level of permeable surfacing, attenuation within the proposed pond will be provided to ensure that the volume of flow generated by the increase in climate change allowance above the calculated greenfield run off rates can be accommodated within the proposed network.

1.2.7 The current greenfield discharge rate established for the site is 12.9 l/s for the 1 in 100 year critical storm, which would generate an additional flow once the climate change allowance has been applied of 6.4 l/s (50% of current flow).

1.2.8 The increase in flow of 6.4 l/s equates to a storage volume requirement over a 360 minute (6 hour) storm duration of 138m^3.

1.2.9 The proposed attenuation pond must provide a minimum storage requirement of 138m^3.

1.2.10 Taking into consideration the existing topography together with the anticipated invert levels of the existing watercourses, it is proposed that the surface water flows from the proposed site are to be stored onsite with an overflow provided via the existing drainage asset to communicate with the existing watercourse.

1.2.11 Using Sustainable drainage techniques, it has been possible to avoid any exceedance occurring at the site for all storms up to and significantly beyond the 1 n 100-year storm plus 50% climate change allowance. An indicative drainage strategy is shown in **Appendix A.**

2.0 CONSTRUCTION SURFACE WATER MANAGEMENT PLAN

2.1 Site Activity Where Water Will Be Used

2.1.1 The table below identifies the key activities where water is required during the construction phase of the scheme.

2.1.2 Potable Sources – Where possible existing water connection to the site will be used. If this is not possible water will be supplied to the construction site by tanker.

2.1.3 The lists below are not exhaustive and should be added too as necessary by the nominated contractor.

Activity	Water Use (Obligatory to maintain operations)	Source: Potable or Non-Potable
Site Cabin Related Activities	Drinking, kitchen, canteen.	Potable
	Toilets and urinals, showers and hand washing.	Non-potable
Drainage	Flushing.	Both
General Cleaning	Tool rinsing, boot washing, plant and equipment washing.	Non-potable
Site Dust Suppression	Dampening (bowsers) and Misting	Non-potable
Drilling	Lubricant.	Potable (if pressure required)

2.2 Methods of Sustainable Management of Water sources

2.2.1 Efforts to reduce the use of water during construction could be achieved through the use of efficient technologies and practises for each key construction activity. Options to reduce the potable water demand would be considered and the most appropriate options to satisfy the requirements of the scheme.

Activity	Options to Reduce Potable Water Demand on Key Sources
Site Cabin Related Activities	Efficient showers, taps, toilets and urinal controls. Trigger control on catering taps and use of vessels for washing rather than under running taps. Rainwater capture for toilet flushing. Waterless urinals.
Drainage	Reuse water collected from activities, e.g. dewatering. Use water from attenuation tanks or rainwater harvest tanks, as outlined in the Initial CEMP (DCO Document Reference 7.3) and Energy Reduction Plan.
General Cleaning	Fill containers rather than use running taps or open hoses. Trigger operated spray guns. Use of a closed water recycling system.

Activity	Options to Reduce Potable Water Demand on Key Sources
Site Dust Suppression in relation to Soil Stripping	Use of control systems to allow damping activities to be altered for different applications and weather conditions. Use of water efficient road sweepers and dust suppression vehicles which recirculate water and/or have efficient spraying mechanisms such as a hydraulic spinning system. Use water collected elsewhere on site, such as from Sustainable Drainage Systems (SuDS), for dust suppression activities (may require on-site treatment).
Drilling	Inspect water hose lines for leakage and repair or replace as required. Watertight circulation tanks, rather than pits. Use of meters on supply lines/consumption monitoring for high demand activities.

2.3 Managing Surface Water During Construction

2.3.1 Contaminated water can arise from a number of sources including:

- direct disturbance of the riverbed or bank;
- de-watering of excavations;
- run-off from exposed ground and material stockpiles
- run-off from roads and haul routes and river crossings;
- plant washings;
- fuel and chemical storage/refuelling areas;
- leaking/vandalised equipment.

2.3.2 Flooding from surface water sources is a potential risk during short, intense rain storms or longer duration storms, when the capacity of the underlying soils and drainage systems is exceeded and rainfall runs overland to pond in natural or formed low points, it is therefore important that due consideration is given to the changes in surface water runoff.

2.3.3 The construction site would cause temporary increases in the coverage of impermeable surfaces, in particular the visitor parking spaces, material compound and site cabins. These areas have the potential to result in localised increases in the rates and volumes of runoff that are generated during storm events. If not appropriately managed this may present risks of flooding onsite or offsite in the wider catchment areas. In the absence of appropriate drainage management measures, this could also lead to an increase in flood levels across the site.

2.3.4 The following measures should be employed by the contractor to manage surface water:

- Vehicular traffic would be limited to designated routes through the site to avoid soil compaction and the associated increased likelihood of surface water runoff.
- SuDS measures within the scheme should include:

- Aggregates (permeable granular material) to reduce the areas of impermeable materials.

2.3.5 Locate areas of high risk away from watercourses and drainage paths. Areas of high risk include:

- fuel and chemical storage;
- refuelling areas;
- material stockpiles;
- vehicle and equipment washing areas;
- site compounds/parking areas.

2.3.6 Store fuel, oils and chemicals on an impervious base within a bund able to contain at least 110% of the volume stored.

2.3.7 If possible use biodegradable oil in plant and machinery. Biodegradable oil is less toxic than most synthetic oil but should still be used and stored to the same standards as other oils.

2.3.8 Divert clean surface water away from exposed soils This can significantly reduce the volume of water contaminated with sediment on site thus reducing the risk of pollution and the costs associated with treating contaminated water before discharge.

- Diversion drains. Such diversion can be implemented on the upstream perimeter of the site or immediately upstream of areas of exposed soil on the site (eg excavations, embankments and stockpiles). Line drains with a non-erodible material such as turf/geotextiles.
- Bunds. These can be placed around exposed soils such as excavations/material stockpiles. This will prevent clean water entering the area and dirty water from leaving the area. Bunds should be made of non-erodible material such as straw bales/geotextiles.

2.3.9 Leave as much existing vegetation in place as possible and protect it with fences and signs where necessary. Only clear that part of the site which will be worked on in the near future. Consider phasing site clearance for different stages of the work.

2.3.10 There are many techniques and existing guidance to assist in minimising the mobilisation and loss of sediments in waters. In most cases this will involve collecting the polluted run-off and routing it to treatment by filtration, settlement or specialist techniques. As well as treatment immediately prior to discharge, polluted water can be treated at source and en route to the discharge point – though this does not necessarily negate the need for further treatment before discharge. Widely used techniques include:

- diversion drains/ditches;
- silt fence;
- fibre roll;
- filter bund;
- silt trap;
- haul routes and site entrances; and
- surface drainage protection.

2.3.11 During construction all surface water flows will be contained onsite. Surface water will be directed to a temporary settlement pond at the location of the bioretention area to allow any silt generated by the construction process to settle prior to discharge.

2.4 Flood and Weather Alerts

Weather Alerts (Surface Water Flood Risk)

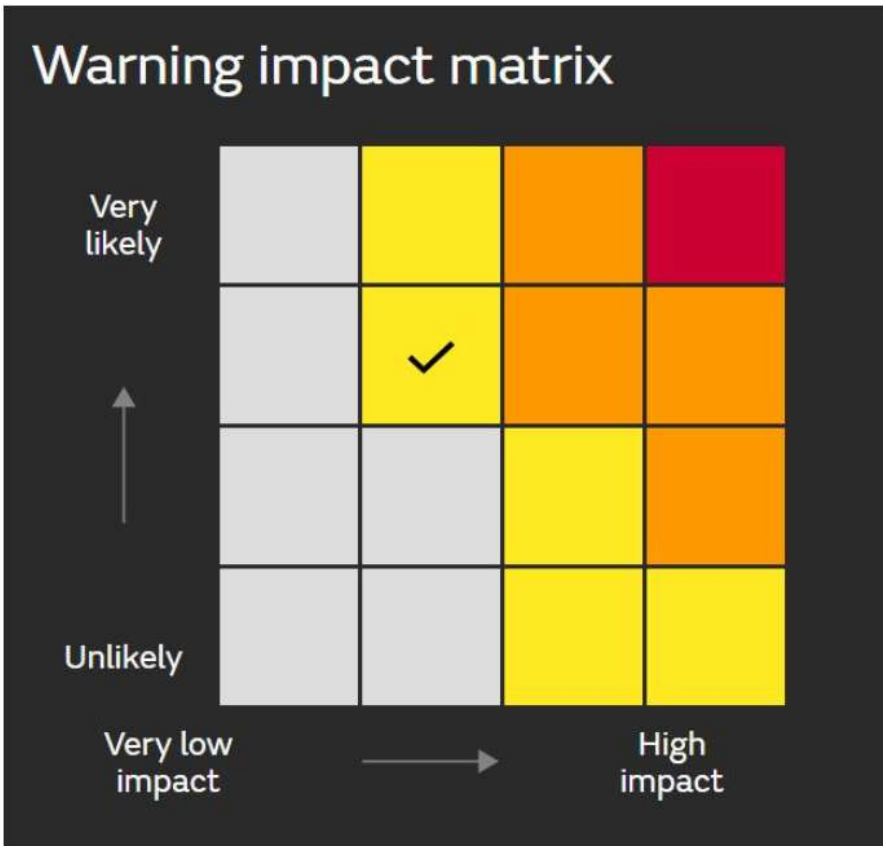
2.4.1 Project Manager and Works Manager should sign up to the Met Office weather warning system https://www.metoffice.gov.uk/public/weather/warnings.

2.4.2 The Met Office issues weather warnings, through the National Severe Weather Warning Service, when severe weather has the potential to bring impacts to the UK. These warnings are given a colour (yellow, amber or red) depending on a combination of both the impact the weather may have and the likelihood of those impacts occurring.

2.4.3 Yellow and Amber warnings represent a range of impact levels and likelihoods. This means it is important to read each warning to know what level of impact you can expect for your chosen warning area – and how likely those impacts are to occur.

2.4.4 These impacts can include damage to property, travel delays and cancellations, loss of water supplies, power cuts and, in the most severe cases, bring a danger to life.

2.4.5 The combination of impact and likelihood are shown in the matrix below



Yellow Warning:

2.4.6 Yellow warnings can be issued for a range of weather situations. Many are issued when it is likely that the weather will cause some low-level impacts, including some disruption to travel in a few places. Many people may be able to continue with their daily routine, but there will be some that will be directly impacted and so it is important to assess if you could be affected. Other yellow warnings are issued when the weather could bring much more severe impacts to the majority of people but the certainty of those impacts occurring is much lower. It is important to read the content of yellow warnings to determine which weather situation is being covered by the yellow warning.

Amber Warning:

2.4.7 There is an increased likelihood of impacts from severe weather, which could potentially disrupt your plans. This means there is the possibility of travel delays, road and rail closures, power cuts and the potential risk to life and property. You should think about changing your plans and taking action to protect yourself and your property. You may want to consider the impact of the weather on your family and your community and whether there is anything you need to do ahead of the severe weather to minimise the impact.

Red Warning:

2.4.8 Dangerous weather is expected and, if you haven't already done so, you should take action now to keep yourself and others safe from the impact of the severe weather. It is very likely that there will be a risk to life, with substantial disruption to travel, energy supplies and possibly widespread damage to property and infrastructure. You should avoid travelling, where possible, and follow the advice of the emergency services and local authorities.

2.4.9 The precise impacts of a warning issued will depend on the nature of the predicted weather systems and, as the rating are derived based on both probability and level of impact, may be notably different in nature on different occasion (i.e. an amber warning for rainfall may be issued in response to very different types of events). As a result, care should be taken to read the details of the warnings issued.

2.4.10 Met Office weather warnings are available from a number of different sources including on their website (https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings).

Flood Alert

2.4.11 The site manager's details is to be confirmed.

2.4.12 Upon the issue of either of the following;

- A Flood Alert from the Environment Agency.
- An Amber severe weather warning for rainfall or thunderstorms within the vicinity of the site.

2.4.13 Working staff will be informed of the Flood Alert or weather warning status and the appropriate response to this.

2.4.14 Working staff will be reminded to immediately report any observed flooding on or near the Site to the site Manager'.

2.4.15 The site manager (if not already present) will be informed of elevated risk status.

2.4.16 The site manager will review available meteorological forecasts and if more wet weather ls forecast locally they will seek advice from the Environment Agency concerning whether actions should proceed as if a flood warning had been issued.

2.4.17 Non-essential staff and /or contractors should be encouraged to vacate the Site.

2.4.18 Incoming delivery schedule should be checked and any deliveries for the period of alert or weather warning will be postponed and rescheduled.

2.4.19 Signage and barriers will be erected to discourage people visiting the site.

2.4.20 Review of the local flood situation as communicated by the emergency services and Council's emergency planning team will be monitored.

2.4.21 Flood Warning or Severe Flood Warning

Severe Weather Warning

2.4.22 Upon the issue of either of the following;

- A Flood Warning or Severe Flood Warning issued by the Environment Agency in the vicinity of the proposed site.
- A Red severe weather warning for rainfall or thunderstorms within the Southeast England' area.

2.4.23 The site manager (if not already present) will be informed of elevated risk status.

2.4.24 Working staff will be informed of the Flood Warning or weather warning status and the intention to close the store and evacuate all customers and staff.

2.4.25 Non-essential staff should be asked to vacate the Site.

2.4.26 Any non-essential staff who are due to arrive on site/start a shift will be contacted and advised not to come in until advised otherwise.

2.4.27 Ensure that staff are tasked with guiding visitors out of the site and will advise as to the areas at risk and the safest routes away from the local area.

2.4.28 Erection of signage at the entrance to the Site indicating that the site is closed.

2.4.29 Incoming store delivery schedule should be checked and any deliveries for the period of warning will be postponed and rescheduled.

2.4.30 Once all visitors have vacated, the site will be checked for any remaining personnel.

2.4.31 Services to the site (electricity/gas/water) will be isolated where appropriate.

2.4.32 Inform local police that the site has been closed and evacuated.

3.0 SURFACE WATER MAINTENANCE PLAN

3.1 Responsibility

3.1.1 The maintenance responsibility is with Whealdream Holiday and Leisure.

3.2 Maintenance Strategy

3.2.1 SuDS components require good maintenance including inspections to identify performance issues and plan appropriate maintenance needs, checks on the operation and maintenance of the drainage system and landscape management. Therefore, it is intended that those responsible for the drainage within a development will be provided with an Operation and Maintenance Manual as part of the documentation provided under the Construction (Design and Management) regulations 2015 at the end of the construction works. Maintenance requirements that would be appropriate for this development, to be included in the document are outlined below.

3.2.2 All maintenance necessary will be undertaken, appointed and/or suitably managed by Whealdream Holiday and Leisure.

3.2.3 The Drainage network and inherent SuDS have been designed with minimal maintenance in mind. The maintenance is generally of a 'common sense' approach and is to comprise:

- Regular day to day care: - litter collection, grass cutting and checking the inlets and outlets where water enters or leaves a drainage feature.
- Occasional tasks: - managing vegetation in wet areas (ponds, swales, etc.) and removing any silt that builds up in the drainage features.
- Remedial work: -repairing damage when, and where, necessary.

Specific recommendations for each feature are provided in the following sections, and should be referred to in the first instance if there are any issues

Permeable Surfacing

3.2.4 The drainage scheme utilises permeable construction for the parking bays as in line storage structures, at the base of the stone build-up is a perforated pipe, which slowly collects the water and conveys it to the proposed outfall, via a network of catchpit PPIC's and manholes.

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter and debris removal from permeable surface and access	Monthly (or as required).
	Remove weeds within joints of any permeable paving.	Monthly (at start, then as required).
	Trimming of any roots that may be causing blockages.	Annual (6monthly for the first year).
Occasional maintenance	Removal of sediment from catchpit.	Six monthly (or following significant rainfall event).
	Inspect inlets, outlets and inspection points for blockages,	Monthly.

Remedial actions	Clear perforated pipework of blockages.	As required.
	Replace geotextiles and clean and replace filter media, if clogging occurs.	As required.
Monitoring	Inspect inlets, surfaces and perforated pipework for silt. accumulation. Establish appropriate silt removal frequencies.	6 monthly.

Manholes and PPICs

3.2.5 Manholes are typically sized in accordance with Sewers for Adoption, which relates to the incoming and outgoing pipe diameters. However, as the system is not Adopted, PPICs have been used where manufacturer's limitations permit. Typically, PPICs can be used for depths up to 3m and for pipe diameters up to 150mm.

Personnel access into PPIC chambers is not possible, and therefore rodding/jetting should be carried out from ground level. This is generally accepted as good practice and in accordance with good health and safety procedures. Where larger manholes, which could accommodate man access, have been included maintenance should also take place from ground level. Man, access should be resisted and only used as a last resort.

Maintenance schedule	Required action	Frequency
Occasional Maintenance and Monitoring	Covers should be lifted and inspected for litter and debris to ensure that the runs are free flowing.	3 Monthly (or as required).

Rain Garden/ Bio retention Areas

3.2.6 Dependent on the final planting methodology to be adopted, the ongoing maintenance will need to be adjusted based on the details obtained from the landscape architect, although eh final maintenance e regime is to be agreed below is a summary of potential general maintenance.

Maintenance schedule	Required action	Frequency
During Establishment Period Year 1 & 2	Watering	Weekly during dry periods
During Establishment Period Year 1 & 2	Weeding	3 Monthly (or as required).

During Establishment Period Year 1 & 2	Litter Picking	3 Monthly (or as required).
During Establishment Period Year 1 & 2	Pruning and Trimming	3 Monthly (or as required).
During Establishment Period Year 1 & 2	Check/Clean Inlets/Outlets	3 Monthly (or as required).
During Establishment Period Year 1 & 2	Mulching	Annually as required based on nutrient content of the soil

Weir Wall

3.2.7 The weir wall itself should be extremely low maintenance however the structure should be inspected annually to confirm current condition with any silt build up over the year removed.

Headwalls

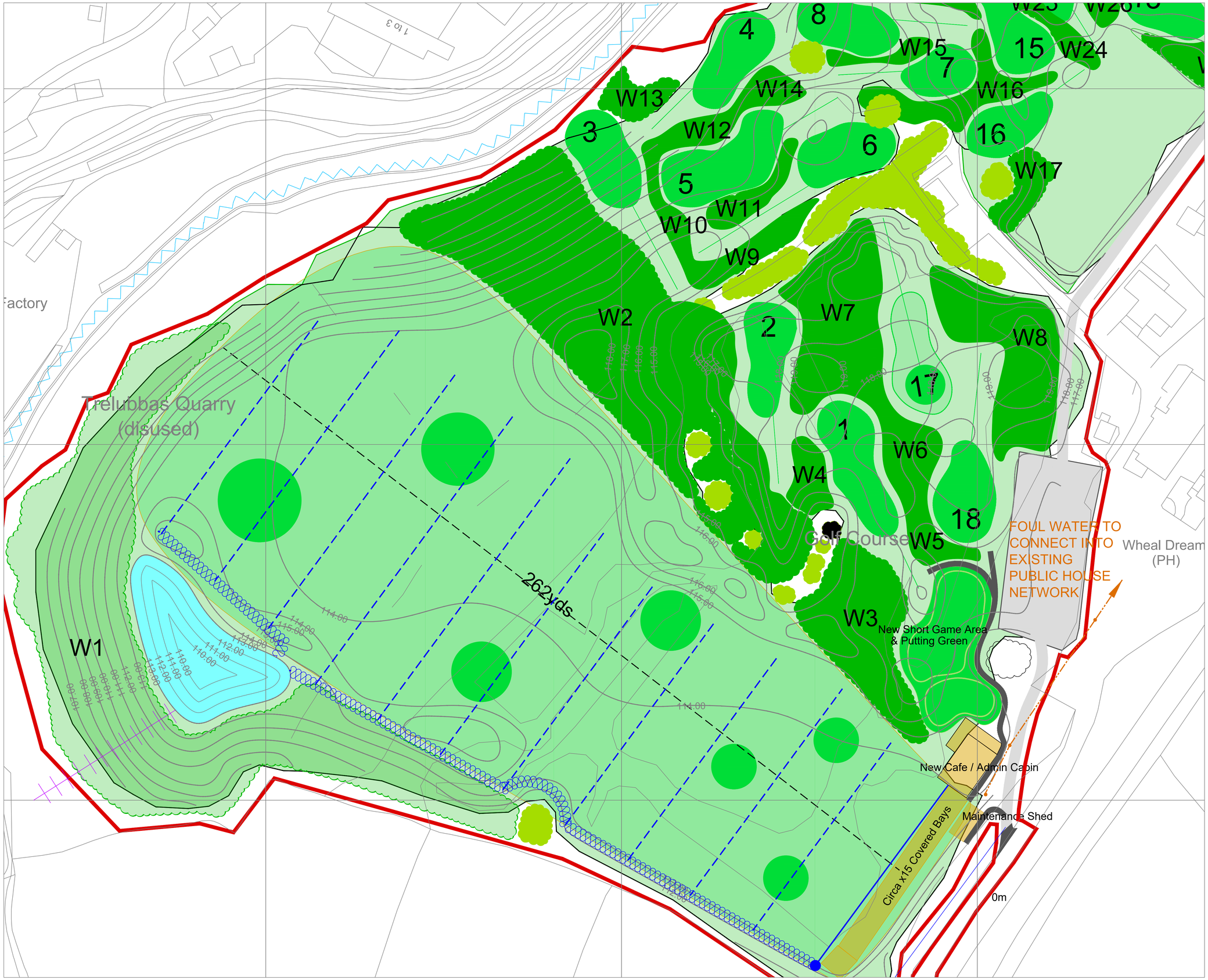
3.2.8 Maintenance of any exposed surfaces of concrete components, will require only routine cleaning on an annual basis, environmental impacts of cleaning should be taken into account.

3.2.9 Concrete units are often expected to "weather" and some coverage will help them to blend into their environment.

3.2.10 If damage to the structure of any pre-cast concrete components occurs, we recommend their replacement not repair. If there is minor damage to corners during their normal life by grass cutting equipment etc. then repair with an epoxy compound such as 'Mason Mate 0868PR380 Polyester Resin'.

APPENDIX A – DRAINAGE DRAWINGS

Do not scale this drawing



KEY

- EXISTING WATERCOURSE
- PROPOSED SWALE
- PROPOSED 150mmØ PERFORATED PIPES WRAPPED IN PERMEABLE SEPARATION LAYER
- PROPOSED SURFACE WATER WATERFALL TO ATTENUATION POND AND WATERCOURSE
- PROPOSED 150mmØ foul water system to discharge into the existing network. indicative alignment shown
- NEW FOUL WATER INSPECTION CHAMBER 450mm DIAMETER

Rev	Date	Revision Details	By	Chkd	Appd
P2	APR 25	LAYERS ISOLATED	GRE		
P1	MAR 24	FIRST ISSUE	GRE		

Cora iHt

Client: WHEALDREAM HOLIDAY AND LEISURE

Project: DRIVING RANGE

Title: DRAINAGE ARRANGEMENT
SHEET 1 OF 2

Drawing No.	Revision
16-2240-001	P2

Scale	1:500 @ A1	Date	MARCH 24
Drawn	GRE	Chk	App

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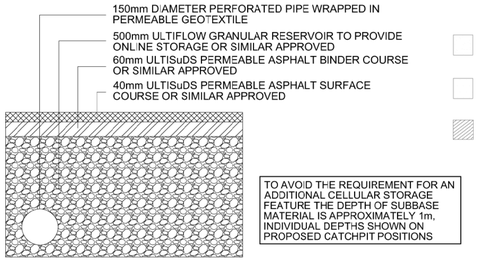
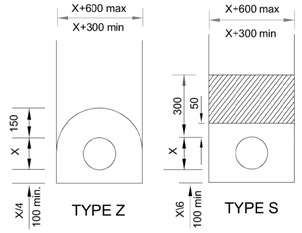
WATER COMPATIBLE PLANT SPECIES

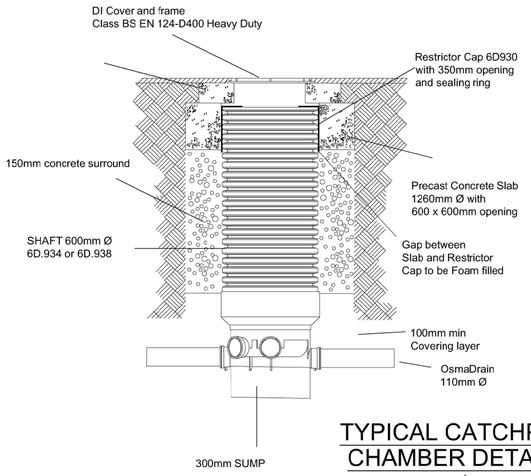
Common name	Scientific name	Habit	Sunlight and Aspect	Origin
Guelder rose	Viburnum opulus	Perennial shrub	Any	Native. Flowers attract insects and berries are eaten by birds.
Dogwood	Cornus sanguinea	Perennial shrub	Any	Native. Leaves are larval food for vase bearer moth and berries eaten by birds. Often planted for attractive winter stems.
Culvers root	Veronicastrum virginicum	Herbaceous perennial	Full sun or partial shade	Non-native. Tall with long terminal blue flower spikes. On the RHS 'plants for pollinators' list.
Aster	Aster spp.	Herbaceous perennial	Full sun or partial shade	Non-native. Often late flowering. Clump forming. Several species on the RHS 'plants for pollinators' list.
Black eyed susan	Rudbeckia birta	Herbaceous anrual or biennial	Full sun or partial shade	Non-native. Spectacular yellow and black flowers. On RHS 'plants for pollinators' list.
Stinking hellebore	Helleborus foetidus	Herbaceous perennial	Full sun or partial shade	Native. Winter flowers.
Montbretia	Crocosmia spp.	Deciduous rhizomatous perennial	Partial shade	Naturalised. Red flowers. Thrives in most conditions.
Bugle	Ajuga reptans	Rhizomatous perennial	Partial shade	Native. Low growing and will form a mat.
Columbine	Aquilegia spp.	Herbaceous perennial	Full sun or partial shade	Non-native. Clump forming with tall flower spikes. On RHS 'plants for pollinators' list.
Inula	Inula hookeri	Herbaceous perennial	Partial shade	Tall clump forming with yellow flowers. On RHS 'plants for pollinators' list.
Hemp agrimony	Eupatorium cannabinum	Herbaceous perennial	Full sun or partial shade	Native. Sub-shrubs with pink flowers.
Bellflower	Camparula glomerata	Herbaceous perennial	Full sun or partial shade	Native. Clumps bearing violet-blue bell shaped flowers.
Sneezeweed	Helenium sp.	Herbaceous perennial	Full sun	Non-native. Clump forming with red flowers. On RHS 'plants for pollinators' list.
Lesser periwinkle	Vinca minor	Perennial sub-shrub	Any	Non-native. Ground cover with blue flowers.
Elephants ear	Bergenia sp.	Rhizomatous perennial	Full sun or partial shade	Non-native. Large leaves and pink flowers.
Plantain lilies	Hosta spp.	Herbaceous perennial	Part shade	Non-native. Attractive light coloured flowers.
Yellow flag	Iris pseudocorus	Rhizomatous perennial	Full sun or partial shade	Native. Likely to prefer wetter areas near inlet.
Siberian flag	Iris sibirica	Rhizomatous perennial	Full sun or partial shade	Non-native. Blue flowers. Prefers moist but well drained soil.
Garlic and onions	Allium spp.	Bulbous perennials	Full sun	Non-native. On RHS 'plants for pollinators' list.
Soft rush	Juncus effusus	Evergreen perennial	Full sun or partial shade	Native. Form tussocks – likely to prefer wetter areas.
Pendulous sedge	Carex pendula	Rhizomatous perennial	Full sun or partial shade	Native. Nodding flower spikes. Likely to prefer wetter areas near inlet.
Zebra grass	Miscanthis sinensis	Perennial, deciduous grass	Full sun	Non-native. Tussock forming ornamental grass with silky flowers.
Switch grass	Panicum virgatum	Deciduous perennial grass	Full sun	Non-native. Tussock forming ornamental grass.
Royal fern	Osmunda regalis	Deciduous fern	Any	Native. Large clump-forming plants.
Male fern	Dryopteris felix-mas	Deciduous or evergreen fern	Partial shade or full shade	Native. Large shuttlecock-like form.
	Broad buckler fern	Dryopteris dilatata	Deciduous or evergreen fern	Partial shade or full shade Native. Large shuttlecock-like form.



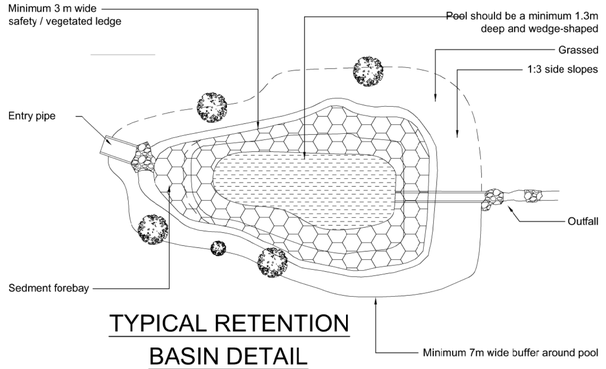
TYPICAL PERMEABLE SURFACING (PARTIAL INFILTRATION) DETAIL INCLUDING ONLINE STORAGE



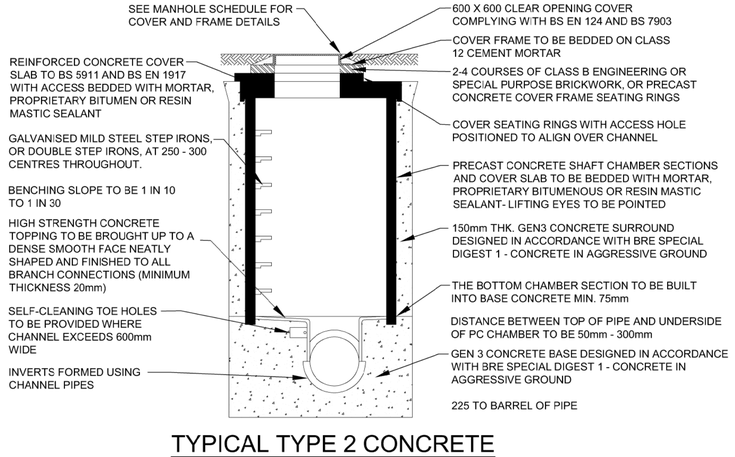
TYPICAL PIPE BED AND SURROUND DETAIL



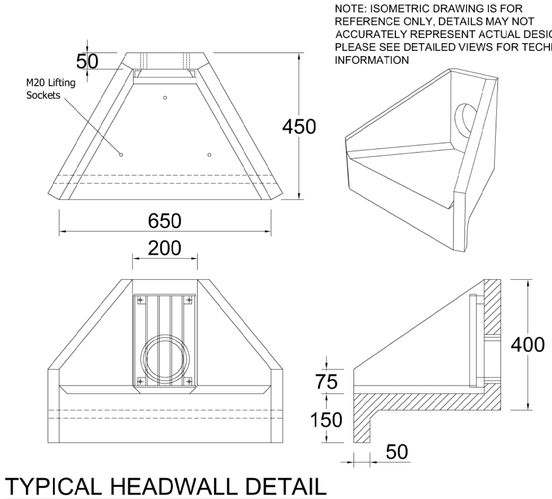
TYPICAL CATCHPIT CHAMBER DETAIL
non entry



TYPICAL RETENTION BASIN DETAIL



TYPICAL TYPE 2 CONCRETE MANHOLE (PCC) DETAIL
MAX DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 0m - 3m



NOTE: ISOMETRIC DRAWING IS FOR REFERENCE ONLY, DETAILS MAY NOT ACCURATELY REPRESENT ACTUAL DESIGN - PLEASE SEE DETAILED VIEWS FOR TECHNICAL INFORMATION

TYPICAL HEADWALL DETAIL

DRAINAGE NOTES

1. ALL NON ADOPTABLE DRAINS UP TO 150 Dia. TO BE 'POLYPIPE uPVC UNDERGROUND DRAIN' MANUFACTURED IN ACCORDANCE WITH BS EN 1401-1OR EQUAL APPROVED.
2. ALL NON ADOPTABLE DRAINS WITH A PIPE Dia of 225 or 300 TO BE EITHER A PLAIN WALLED PLASTIC PIPE TO BS 1401-1 (POLYSEWER) OR A STRUCTURED WALL PLASTIC PIPE TO WIS-04-35-01 'POLYSEWER'. OR EQUAL APPROVED
3. ALL ADOPTABLE DRAINS UP TO 300 Dia. TO BE 'POLYSEWER' BY 'POLYPIPE' AND MANUFACTURED IN ACCORDANCE WITH THE WATER INDUSTRY SPECIFICATION WIS-4-35-01.
4. DRAINAGE PIPEWORK 400mm to 600mm DIA TO BE 'RIDGIDRAIN' HDPE BY POLYPIPE OR EQUAL APPROVED.
5. ALL PIPE LENGTHS NOT TO EXCEED 3m.
6. DRAINS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. NEW INSPECTION CHAMBERS (IC) TO BE A MINIMUM OF 450MM DIA. EXCEPT FOR MINI ACCESS CHAMBERS WHICH MAY BE SMALLER, REFER TO M.H. SCHEDULE FOR ACTUAL SIZES.
8. ALL EXTERNAL RAINWATER PIPES (RWP) TO BE TERMINATED AT RODDABLE GULLIES. INTERNAL RWP's TO ARCHITECTS DETAILS BUT SHOULD ALLOW FOR RODDABLE ACCESS.
9. FOR ALL DRAINAGE ABOVE GROUND FLOOR SLAB INCLUDING SETTING OUT FOR PENETRATIONS THROUGH THE GROUND FLOOR SLAB REFER TO ARCHITECTS DRAWING & SPECIFICATIONS
10. ANY DRAINS PASSING THROUGH SUBSTRUCTURE WALLS TO HAVE A MINIMUM 50mm CLEAR SPACE, RC LINTEL SUPPORT ABOVE & CEMENT FIBRE COLLARS EITHER SIDE TO PREVENT VERMIN ENTRY
11. ANY DRAINS CAST IN & PASSING THROUGH CONCRETE GROUND BEAMS TO HAVE A FLEXIBLE JOINT NOT MORE THAN 150mm FROM THE FACE OF THE GROUND BEAM. (FLEXIBLE JOINT TO MANUFACTURERS DETAILS) AND A MAXIMUM 600mm LONG ROCKER PIPER EITHER SIDE
12. ANY ALTERATIONS TO DRAINAGE PROPOSED BY CONTRACTOR TO BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF WORK ON SITE. ANY REVISIONS ARE ALSO SUBJECT TO THE APPROVAL OF THE LOCAL BUILDING INSPECTOR.
13. ALL DRAINS RUNNING UNDER BUILDINGS TO HAVE A MINIMUM FALL OF 1:40 TOWARDS THE BUILDING EXTERIOR. PIPE TO BE ENCASED IN 100MM GRANULAR FILL.
14. COVER LEVELS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE ALTERED TO SUIT FINISHED SURFACE LEVELS.
15. THE BEDDING SPECIFICATION FOR ALL DRAINS WHERE COVER IS GREATER THAN 1200mm SHALL BE TYPE 'S'....WHERE COVER IS LESS THAN 1200mm TYPE 'Z' SHALL BE USED
16. THE DEVELOPER/CONTRACTOR MUST SELF VET AND CERTIFY THAT THE DESIGN CRITERIA, MATERIAL STANDARDS AND WORKMANSHIP SPECIFICATIONS FOR THE PROPOSED SEWERS ARE IN ACCORDANCE WITH THOSE SET OUT IN 'SEWERS FOR ADOPTION 7TH EDITION'
17. PROPOSED COVER AND INVERT LEVELS TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO ANY WORKS COMMENCING ONSITE
18. ALL PPIC'S LOCATED WITHIN VEHICLE AREAS TO RECEIVE A MINIMUM 150mm CONCRETE BED AND SURROUND

Rev	Date	Revision Details	By	Chkd	Appd

Cora iHt

Client: WHEALDREAM HOLIDAY AND LEISURE

Project: DRIVING RANGE

Title: DRAINAGE ARRANGEMENT SHEET 2 OF 2

Drawing No.	Revision
16-2240-001	P1

Scale	NTS	Date	MARCH 24
Drawn	GRE	Chk	App