

In collaboration with;

THORCROSS

BUILDERS LTD

Residential Development at Oakleigh Capel Road, Bentley, Suffolk

CONSTRUCTION PHASE SURFACE WATER MANAGEMENT PLAN

Date:

February 2021

GHB Reference:

236/2020/CSWMP

Revision: Status:

P2

Draft

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CONFIRMATORY STATEMENT

This Construction Phase Surface Water Management Plan has been prepared by G H Bullard & Associates LLP on behalf of **Thorcross Builders Ltd.** who are nominated as Principal Contractor (under The Construction (Design and Management) Regulations 2015) for the construction of the aforementioned development at **Oakleigh, Capel Road, Bentley, Suffolk.**

This plan must be adopted into the working management practices of the Principal Contractor **Thorcross Builders Ltd.**

DECLARATION:

I confirm on behalf of **Thorcross Builders Ltd.**, as Principal Contractor, that this Construction Phase Surface Water Management Plan has been reviewed and understood.

This declaration confirms that **Thorcross Builders Ltd.** intend to implement this plan and the mitigation measures outlined within it.

Signed:



on behalf of Thorcross Builders Ltd.

Print: A G Goodwin

Date: February 2021



1. AIMS AND PHILOSOPHY

- 1.1. This is a live document, initially prepared by G.H Bullard & Associates LLP but to be adopted and taken forward by Thorcross Builders Ltd as the Scheme Principal Contractor.
- 1.2. The aim of the CSWMP is to demonstrate how the surface water will be managed for quantity and quality during the construction phase so as not to cause increased flood risk or pollution of watercourses or have a significant impact on the groundwater or neighbouring sites.
- 1.3. The philosophy is to effectively use the existing site features and incorporate the final construction into a surface water management scheme that minimises the impact on cost, programme, water quality and flooding on and off site.
- 1.4. The final drainage system is designed for a 1% AEP plus 40% climate change (CC) critical event. When utilised as designed during the construction phase, there should be no off-site flooding for the 1% AEP event. Temporary features have been designed to accommodate the 3.33% AEP event as their period of utilisation is short.
- 1.5. The Principal Contractor for this development is Thorcross Builders Ltd, referred to as Principal Contractor within this plan. This plan is subject to review and further development as part of the wider development of the Construction Procedures associated with Health, Safety and Environmental Management.

2. THE DEVELOPMENT

- 2.1. The proposed development comprises the erection of 16 no. dwellings (5 no. bungalows and 11 no. houses), including associated garages, related infrastructure, landscaping and a new access road off Station Road. The site is located off Station Road, Bentley, Suffolk at postcode IP9 2DW (TM 108638). Refer to figure 2.1 for the site location.
- 2.2. The site is currently a domestic rear garden and an open field comprising grassland. The site slopes up from an elevation of 40.45m AOD at the site entrance off Station Road, to 41m AOD within the central, wider, south part of the site, with a slight slope down to the south boundary to 40.8m AOD.
- 2.3. The site currently drains by infiltration; there are no mapped surface watercourses within 650m of the site. Environment Agency mapping classifies the site as being located over an area of Medium to High groundwater vulnerability. The site is not subject to fluvial or pluvial flooding or infrastructure failure.
- 2.4. The final development drainage system discharges to the ground; the roof areas will discharge via trench soakaways within the plot areas and the access roads and driveways will discharge via permeable paving.
- 2.4. The development works involve:
 - Site clearance and compound set up including site access creation
 - Earthworks; shaping and reprofiling the ground
 - Installation of drainage and utilities
 - Laying foundations.
 - Dwelling and garage construction
 - External paved area installation (roads and driveways)
 - Building fit out
 - Landscaping



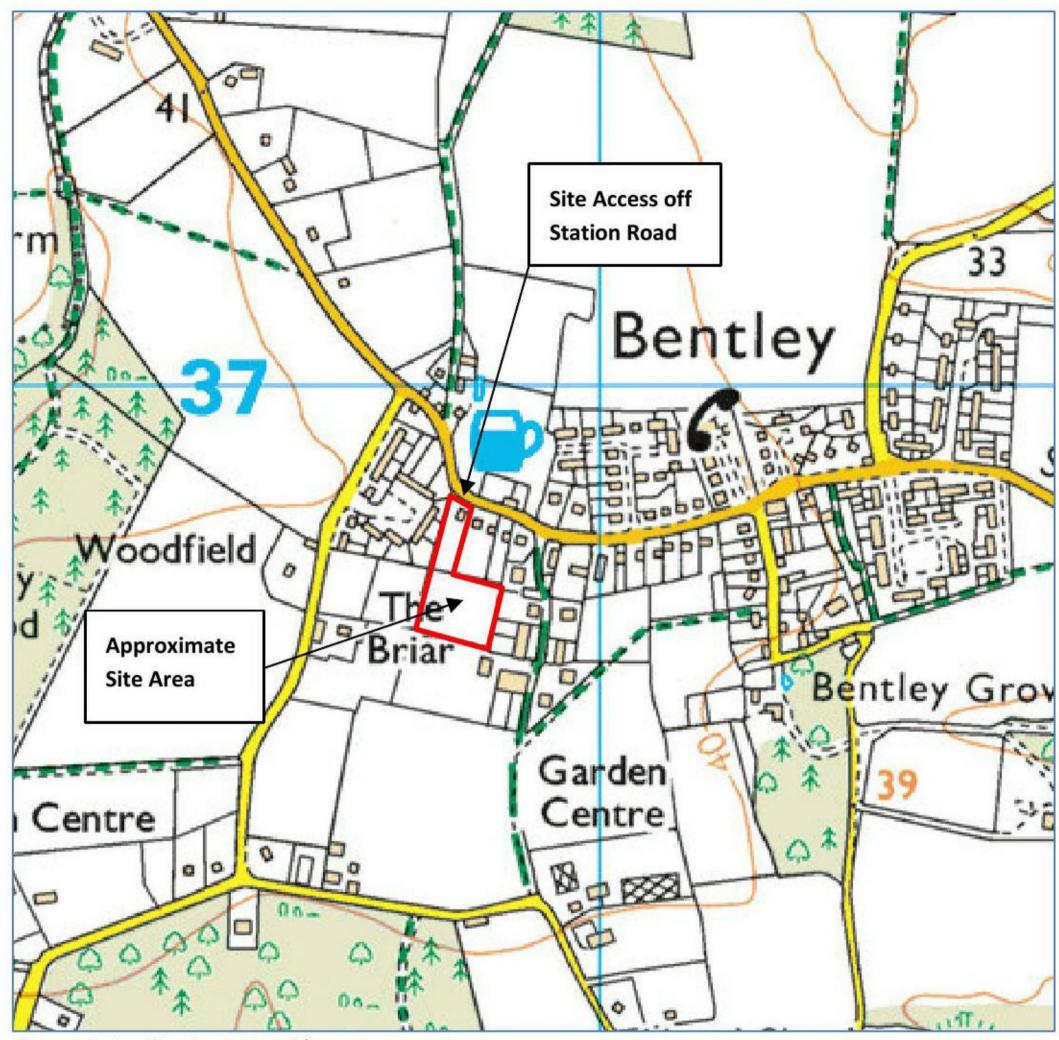


Figure 2.1 - Site Location Plan

3. POTENTIAL IMPACTS

- 3.1. The construction of the development will alter the geomorphology of the site which could, without mitigation measures in place, have an impact on the groundwater quality and the surface water runoff in terms of increase in water pollution and sediment laden runoff at various stages of the construction process. A number of land-based activities associated with the enabling works and construction stages could potentially impact on surface and ground waters in and around the site, including:
 - Site Setup/Clearance.
 - Drainage works.
 - Construction materials handling, including the storage and use of fuels and oils and other potentially construction material.
 - Handling of potentially polluting silt-laden runoff and excavation dewatering from construction activities and site compounds.
 - Spillage or uncontrolled release of potentially polluting material such as cement, concrete, diesel, hydraulic fluid or paint.



- 3.2. Silty water can arise from earthworks, exposed ground, water collecting in excavations, stockpiled materials, plant and wheel washing facilities and site roads. As such there is potential for polluted drainage from the construction activities to enter any localised watercourses or adjacent sites, particularly during the initial earthwork stages of the scheme.
- 3.3. Other pollutants, such as construction chemicals or fuels, may be carried in the drainage system.
 Unless managed appropriately, the pollutants, including sediment, could be washed into foul water sewers or into the below ground strata resulting in groundwater contamination.
- 3.4. Sediment deposited in the sewer system can result in (either downstream or within the site);
 - i) a restriction within the sewer pipes, reducing the capacity flow and causing blockages
 - ii) the potential for discharge of pollution.

4. PROGRAMME OF WORKS AND TEMPORARY DRAINAGE

REFER TO GHB DRAWING NO. 236/2020/16-P2 (APPENDIX A)

Phasing

- 4.1. During the construction, a well planned programme of works will ensure that at anytime during the works the impact of rainfall is minimised so that those on and off site are protected from flood water and the surface water system is protected from potential pollution.
- 4.2. The proposed construction programme will be to set up the site compound, materials storage and car park area (and associated interception channels) followed by the installation of trench soakaways and the construction of interception channels and filtration bunds to direct runoff to the soakaways as the plot build progresses. A temporary infiltration basin will be excavated within the centre of the roundabout followed by the road construction, which will temporarily discharge runoff to the basin.
- 4.3. Build out will commence with the roads then Plots 14 to 17, followed by Plots 11 to 13, followed by Plots 2 to 6 and then finally Plots 7 to 10.
- 4.4. Refer to the drawing in Appendix A for the detailed phasing of the construction works.

Site Clearance and Compound Setup

The proposal is to clear the vegetation and establish site welfare facilities and compound. To mitigate the potential pollution of runoff, an interception channel will be established to the east and south perimeters of the area, which will then discharge to a trench soakaway via an infiltration bund. A typical detail of this interception channel and trench soakaway is shown on the drawing attached in **Appendix A**.

Earthworks

- 4.5. The topsoil will be stripped and the subsoil shaped to the general profile of the development. The arisings will be redistributed for profiling or stockpiled for later use.
- 4.6. A temporary infiltration basin will be excavated within the proposed roundabout, 0.6m deep and surrounded by a filtration bund, to receive the runoff from the temporarily impermeable access road and driveway surfaces during the construction phase. This basin will have a minimum storage volume of 50m³ which will store the runoff associated with a 1 in 30 year rainfall event.



Filtration Bunds

4.7. Filtration bunds will attenuate and slow the flow to allow sedimentation and filter suspended solids. The geotextile and straw will also filter any oils. At the channel inlets to the soakaways, filtration bunds will be established to cleanse the water and to maintain the volume within the channels to allow infiltration.

Boundary Interception Channels

4.8. Temporary channels will be installed to capture and prevent flows naturally conveyed by the site topography from leaving the development site. As works progress, the natural hydrological behaviour of the site will be affected introducing the potential for greater volumes of runoff occurring prior to the permanent drainage infrastructure being installed. These channels direct any runoff towards the soakaways and also permit low levels of infiltration/ treatment of runoff to occur along their length. The benefit of this proposed system is that the water is subject to treatment within the channels through sedimentation as opposed to solely relying on the filtration bunds.

Installation of new drainage system and road

- 4.9. The drainage scheme will be constructed as per the proposed scheme, in phases. The trench soakaways will be filled with granular material to the surface and the pipework capped off at the inlet points to stop debris entering the system until connection to the dwelling pipework is complete. The construction phase surface water runoff will be intercepted and directed to the soakaways via filtration bunds. Upon removal of the temporary surface water discharge, the top layer of the soakaways will be completed as per the drainage design.
- 4.10. The permeable paving will be constructed to base level and the runoff directed to the temporary infiltration basin via filtration bunds. The permanent drainage strategy utilises the open voids within the sub-base. To avoid siltation during construction, the base asphalt surface layer will not be cored to protect the underlying sub-base. When construction traffic is no longer passing over the area, the base level will be punctured in accordance with the pavement design, and the permeable paving surfacing construction completed in accordance with the drainage scheme.
- 4.11. Prior to completion of the road around the roundabout, the temporary infiltration basin will be backfilled and landscaped.

Plot Build

4.12. As the site develops, localised interception channels will be introduced between the plots, directing the water away from the build and towards an interception channel or filtration bund discharging to the permanent drainage systems. On completion of the plot roof, the downpipes will be connected to the associated soakaway.

Flood Risk

- 4.13. The proposed drainage scheme is designed to convey and discharge the runoff associated with up to the 1 in 100 year rainfall event plus climate change. Any exceedance flow will flow away from the dwellings to the roads or to the south and east site boundaries as currently occurs.
- 4.14. The temporary infiltration basin will store up to the 1 in 30 year rainfall event during the construction phase.



4.15. In order to predict inclement weather, the Principal Contractor will monitor the weather via the Environment Agency flood alert or the met office website (refer to **Appendix B**).

5. CONSTRUCTION OF SPECIFIC SURFACE WATER CONTROL MEASURES

- 5.1. Waste materials shall be removed from site at earliest opportunity and not stored unnecessarily on site.
- 5.2. Any storage areas are to be bunded to accommodate 110% (minimum) of the stored volumes for containment purposes in the event of a spillage.
- 5.3. The Foul effluent from the welfare facilities shall be removed from site and no discharge will be permitted. The removal shall be carried out by an approved waste disposal company.
- 5.4. Spill kits will be positioned on site in areas appropriate to the risks. This is likely to be adjacent to any diesel/oil storage and furthermore at a close distance to any concrete wash out/wheel wash areas.
- 5.5. Operatives having access to the kits will have received training on the use of the spill kits to contain any type of potentially environmentally harmful spill.
- 5.6. Flow paths through the site will be identified and kept clear.
- 5.7. The toolbox talk will include surface water management awareness and any current weather warnings highlighted in the appropriate way.

6. RESPONSIBILITIES & MONITORING

- 6.1. During the construction phase, the Principal Contractor will be responsible for setting the control systems in place, with regular monitoring and a 24hr on call emergency contact.
- 6.2. A method statement schedule has been prepared to identify construction activities that affect the surface water during construction and their associated method statement. Also included is an outline programme, listing the schedule of works and the estimated time to construct. The schedule will be revised and updated as the works progress. The schedule is shown in **Appendix C**
- 6.3. The Principal Contractor will sign up to the Met Office weather warning system to allow for advanced warning and preparation for inclement weather. They will also raise awareness of surface water management, particularly during inclement weather. Guidance is provided within **Appendix B**.
- 6.4. Monitoring of the system during construction will continue and silt/pollutants removed as appropriate to ensure a clean flow of water is maintained.
- 6.5. The layout of key interim drainage components, details and monitoring points have been shown on plan 236/2020/16P2 (Appendix A) and an example Monitoring & Maintenance Record Sheet is attached in Appendix D. The exact position and number of treatment components and monitoring points will constantly change as the build progresses and transforms from the temporary to permanent state.

7. COMPLETION

- 7.1. Before final completion, the new drainage system inlets will be inspected and CCTV surveyed to ensure all debris has been removed so the drainage system can function as designed.
- 7.2. All temporary measures will be deconstructed. Any sediment build-up within the permanent system removed and flushed as necessary. Any sediment build-up within the permanent system



- removed and flushed as necessary prior to filtration bunds being removed. The base asphalt layer of the permeable paving will be cored to permit surface water to percolate into the open graded sub-base.
- 7.3. Any remedial works will need to be carried out in line with the maintenance period of the buildings, unless they pose a flood risk and will need to be resolved immediately.
- 7.4. All information regarding the drainage system, maintenance and proprietary systems will need to be included within the site-specific Operations and Maintenance (O&M) file.

APPENDICES

Appendix A – Construction Phase Surface Water Drainage Plan Dwg: 236/2020/16P2

Appendix B – Method Statement and Works Schedule

Appendix C – Monitoring and Maintenance Record Sheet

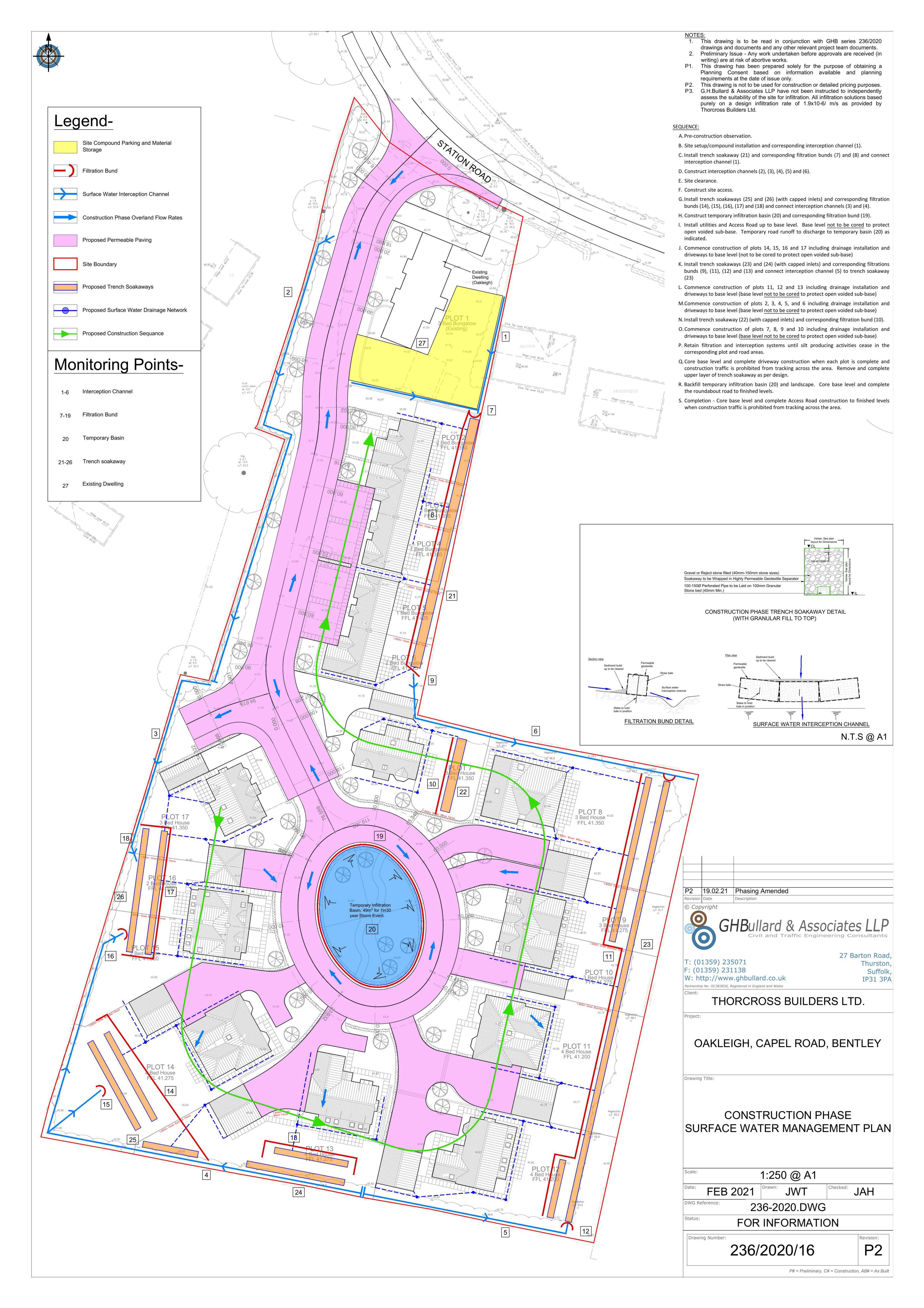
Appendix D – Flood Alerts and Weather Warning System



APPENDIX A

Proposed Construction Phase Surface Water Drainage Plan Drawing 236/2020/16P2





APPENDIX B

Method Statement and Works Schedule



Construction Phase Surface Water Management Plan Method Statement Schedule and Programme

This method schedule is to be completed by the Developer/Contractor for planning purposes only and will form part of the Construction Phase Surface Water Management Plan ref: 236/2020/CSWMP. This schedule identifies the method statements that apply to the activities associated with this development and will refer to this document. Where a contractor has not been appointed then the duty lies upon the Principal Contractor, defined in accordance with the Construction (Design and Management) Regulations 2015. It is recognised that those named within this schedule may change through the course of the construction.

Contract Title	Residential development, Oakleigh, Station Road, Bentley, Suffolk	Reference No.	1
Method Statement	MS 1 Rev.	Date produced	11/02/21
Reference and revision		Review Date	
Client	Thorcross Builders Ltd	Contact	A Goodwin
Principal Contractor	Thorcross Builders Ltd	Contact	A Goodwin
Compiled by	JAH	Site Manager	tbc

Works to be covered by this Schedule will be any task that alters the natural flow path of surface water, increases flood risk and/or deteriorates the water quality leaving the site.

The tasks affecting the natural surface water and have their own method statement, include;

Task Affecting Surface Water	Task
	Included
Site setup and welfare	~
Storage of materials	~
Deliveries	~
Earthworks/excavations	~
Drainage and Utility installation	~
Foundation construction – Highways/ Structures	~
Pavement construction	~
Superstructure Construction	~
External Works	~
Landscaping	~
Other	

These method statements will refer to the CSWMP.



Program of Works & Estimated Time Span					
A sequence of work has been demonstrated	Ref: 236/2020/CSWMP				
within the CSWMP. If this is not to be adhered to					
then attach an alternative version for approval.					
	No. weeks				
Site Set-up	1				
Pre commencement condition survey	0.5				
Locate and identify buried services	0.5				
Installation of interception channels and bunds	2				
Construct Soakaways	2				
Earthworks and temporary basin excavation	3				
Installation of highway access	1				
Installation of utilities	3				
Plot foundations	10				
Plot superstructure	20				
External works (driveways and road)	8				
Removal/backfill of temporary drainage features	2				
Landscaping	7				
Inspection	3				
Snagging	4				
Handover	2				
TO BE REVIEWED DURING THE CONSTRUCTION PHASE					

At the end of each week, the condition of the surface water drainage system is to be recorded and any issues are to be highlighted to the client.

If any of the details change through the development period, then this document is to be revised accordingly with the relevant details and method statements.



APPENDIX C

Contact Monitoring & Maintenance Record Sheet

CSWMP - Monitoring and Maintenance Record Sheet

Job No.	236/2020							
Site	Residential development at Oakleigh							
Address	Station Road, Bentley, Suffolk, IP9 2DW							
Description of Works	16 no. dwellings (5 no. bungalows and 11 no. houses), including associated garages, related infrastructure and landscaping							
Principal Contractor	Thorcross Builders Ltd							
Monitoring Personnel	Appointed Monitor - TBC							
Monitoring Point	Location	Туре	Frequency	Inspection Date	By whom	Comments/Findings	Maintenance Required	Action Date
1 to 6	Site Compound and Site Boundaries	Interception Channels	Daily			eg; weather condtions, upstream work process, siltation, leakage, overspill, oil.	eg; remove silt, re-wrap bail, relocate,	
7 to 19	Alongside trench soakaways and at inlets	Filtration Bunds	Daily					
20	Centre of roundabout	Temporary infiltration basin	Daily					
21 to 26	Site boundaries within plots	Trench Soakaways	Daily					
27	Site entrance	Existing dwelling	Daily					



APPENDIX D

Flood warnings and Alerts

The Environment Agency provide a flood warning system for Fluvial Flooding and the Met Office provide a flood warning system for Pluvial Flooding.

Floodline Warnings Direct is a free flood warning service operated by the Environment Agency (EA) nationwide. The EA monitor and predict river levels taking into account tide heights and weather conditions on a 24/7 basis which is then used when considering the issuing of flood warnings. Recipients of warnings through this service are required to acknowledge the warning has been received.

Registration for the Floodline Warnings Direct service can be undertaken online (https://www.gov.uk/sign-up-for-flood-warnings) or over the phone (0345 988 1188). Occupiers should select the *Home category* when registering and will need to supply a *telephone number* that is contactable 24/7 and a *current email address*.

The MetOffice flood warning system will not automatically alert to warnings and regular checks at the following webpage should be made; https://www.metoffice.gov.uk/public/weather/warnings.

The three levels of Flood Warning Alert, Action and Responsibility are listed in the following table.



The three levels of Flood Warning Alert, Action and Responsibility are shown below:

Sign up; www.fws.e agency.gov.uk/app	environment-	Met Office Flood Warnings https://www.metoffice.gov.uk/public/weather/warnings	Action	Responsibility
	Flood Alert - Prepare Flooding is possible. Be prepared. Issued two hours to two days in advance of flooding.	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. Flooding is possible.	 Assess the flood type and how this will affect your site. Be prepared and inform personnel. Ready your essential items. Monitor local water levels and the flood forecast on EA and Met Office websites. 	Principal Contractor
	Flood Warning - Act Flooding is expected. Immediate action required. Issued half an hour to one day in advance of flooding.	Flood Alert – Amber Warning 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. Flooding is possible.	 Move plant, materials and personnel to a safe place. Where items cannot be moved, they should be secured. Turn off electricity and water supplies if safe to do so. Put flood protection equipment in place. 	Principal Contractor





Severe Flood Warning -Survive

Severe flooding.

Danger to life.

Issued when
flooding poses a
significant threat
to life.

Flood Alert - Red Warning

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

- Stay in a safe place with a means of escape.
- Be ready should you need to evacuate from your site.
- Co-operate with the emergency services.
- Call 999 if you are in immediate danger.

Principal Contractor

The Environment Agency issues a message to tell people that the Warning is No Longer in Force and that the flood threat has passed. It includes useful advice on what to do next.

Further information regarding the local situation can be found:

- By telephoning Floodline (0345 988 1188);
- From local radio and television stations; or
- Online:
 - www.flood-warning-information.service.gov.uk
 - apps.facebook.com/floodalerts
 - www.metoffice.gov.uk/public/weather/flood-warnings

