

Engineers Comments Regarding Surface Water Drainage

Application Reference:	CM/6/24/DOC	Reviewer Reference:	ADC/EXT12/GK
Planning Officer:	Jessica Riches	Date of Review:	01.10.2024
Site Name:	Land to the West of Church Lane and South of Horsemere Green Lane Climping		
Application Description:	Approval of details reserved by condition imposed under CM/1/17/OUT relating to conditions 6-Phasing Plan and Programme , 8-Arboreal Method Statement, 9-surface water drainage scheme, 10-discharge of flows to watercourses or the culverting, diversion, infilling or obstruction of any watercourses on site , 11-Flood Management and Mitigation scheme, 12-Ecology Management and Mitigation Plan, 13-archaeological works, 14-Constuction Method Statement, 15-Travel Plan, 16-energy efficiency measures, 17-acoustic barrier, 21-Employment and Skills Plan and 22-provision of broadband.		
Assessment Number:	2 of 2		

Policy and Guidance Information

Arun District Council Surface Water Drainage Guidance - <https://www.arun.gov.uk/surfacewater>

WSCC Policy for the Management of Surface Water-

https://www.westsussex.gov.uk/media/12230/ws_ifa_policy_for_management_of_surface_water.pdf

Land Drainage Consent - <https://www.arun.gov.uk/land-drainage-consent/>

Arun District Council surface water pre-commencement conditions -

<https://www.arun.gov.uk/planning-pre-commencement-conditions>

Response

Condition 6: **Further information required**

Condition 10: **Further information required**

Comments

Condition 6

Although phasing plans have been included they do not explain how the drainage works following the construction of each phase.

The recommendation is that further information is required prior to the approval of this Discharge of conditions Application.

Condition 10

The applicant will need to detail all connections and crossings for existing watercourses and gain Ordinary Watercourse Consent. Additionally All watercourses maintenance, existing and proposed is to be detailed within the maintenance schedule.

The recommendation is that further information is required prior to the approval of this Discharge of conditions Application.

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Assessment Number:	2 of 2		

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Response

Condition 9: **Further information required**

Critical Items for Surface Water Drainage Design Conditions

The failure to adequately address the following items will result in an objection to an application to discharge a surface water drainage design condition.

If any of these items are inadequately addressed by the submission, then their correction may result in a redesign of the surface water drainage scheme. A redesign is likely to have site wide implications such as the potential for storage structures to increase in volume or plan area.

Items are further elaborated upon in the attached comment tracker where necessary.

Further comments which are unlikely to impact the design methodology will be provided in the comment tracker, these relate to the detailed design. Unless clearly stated, it is considered that these additional comments are unlikely to result in a redesign of the system. These can be addressed following a second consultation to prevent unnecessary refusals.

Critical Item	Reason	Status
Winter groundwater monitoring data	Adequate winter groundwater monitoring data must be supplied to evidence that infiltration	Insufficient

	designs have sufficient freeboard from the base of structures and the peak groundwater level. The same data is necessary to ensure that the potential for buoyancy has been adequately considered in attenuation designs.	
Winter infiltration testing data	Adequate winter infiltration testing must be supplied to justify the proposed discharge method and design infiltration rates. Infiltration tests must be completed strictly in accordance with BRE DG 365, CIRIA R156 or a similar approved method. Testing depths must account for peak groundwater levels and correspond with the location and depth of proposed infiltration features. Designs must be based upon the slowest infiltration rate evidenced closest to a proposed infiltration feature. Average design rates will not be accepted.	Compliant
The hierarchy for sustainable drainage	The proposed discharge method must accord with the Building Regulations & SuDS hierarchy, evidence must be supplied to justify the proposed discharge method.	Insufficient
Calculations	Calculations for pre-development run off rates must be based upon the positively drained area only. Proposed discharge rates must not increase flood risk on site or elsewhere. A minimum discharge rate of 2 l/s/ha must be applied.	Compliant
	Designs must be based on the most up to date rainfall data at the time of conditions being applied. FSR rainfall data will not be accepted. FEH rainfall data is based upon more recent records and continues to be updated.	Compliant
	Designs must use the correct climate change allowances at the time of conditions being applied. CV values for all events must be set to 1. This includes summer, winter, design, and simulation events. The correct allowance for urban creep must be applied.	Insufficient

	Additional storage must be set to zero unless it can be evidenced where this is provided. Infiltration half-drain times must be less than 24 hours. A surcharged outfall must be modelled.	
Natural catchments design	Designs must replicate the natural drainage catchments of the site. All surface water drainage designs must therefore drain via gravity. The use of pumps for surface water drainage is not sustainable and will not be accepted.	Compliant
Plans	Plan areas and depths of drainage infrastructure must accurately correspond with the supporting calculations. A 3m easement must be provided from all watercourses and open SuDS features for maintenance purposes. This easement must be clearly shown on all plans.	Insufficient
Water quality benefits	An assessment of water quality is necessary to evidence that the proposed design provides adequate treatment of surface water.	Compliant
Biodiversity and amenity benefits	The surface water drainage design must provide biodiversity and amenity benefits.	Compliant
Trees	There should be no conflict between surface water drainage infrastructure and existing or proposed trees. The design must consider the potential growth of proposed trees and adequate mitigation must be provided to protect drainage infrastructure where conflict cannot be avoided.	Compliant

Additional comments to the planning officer

The NPPF states that when determining any planning application, local planning authorities should ensure that flood risk is not increased elsewhere (paragraph 173 and 180e). The PPG guides local planning authorities to refer to 'Sustainable drainage systems: non-statutory technical standards' and detailed industry guidance like The SuDS Manual [C753] by CIRIA to guide decisions about the design, maintenance, and operation of sustainable drainage systems for non-major development.

This consultation has been primarily informed by The SuDS Manual.

NoApplication Reference: CM/6/24/DOC	Initial Issue Date:
Site Name: Land to the West of Church Lane and South of Horsemere Green Lane Climping	Issue Date: 02/01/2024
	Reviewer Reference: ADC/EXT12/GK

Summary and Recommendation:

Condition 6: **Further information required**
Condition 9: **Further information required**
Condition 10: **Further information required**

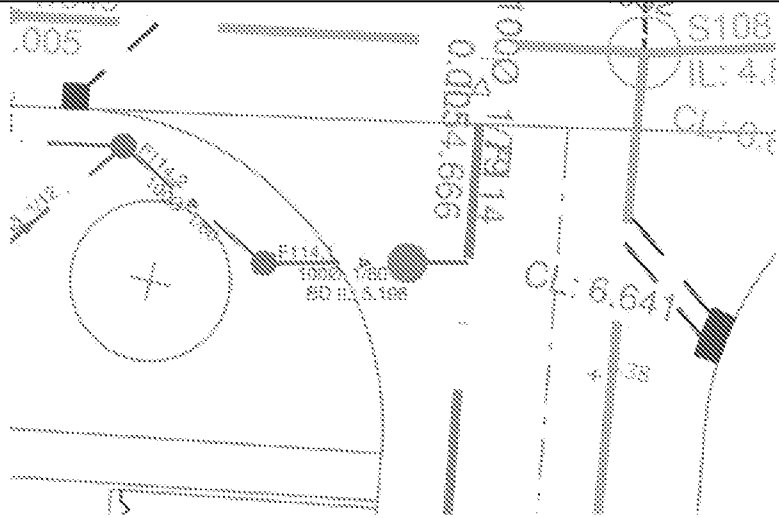
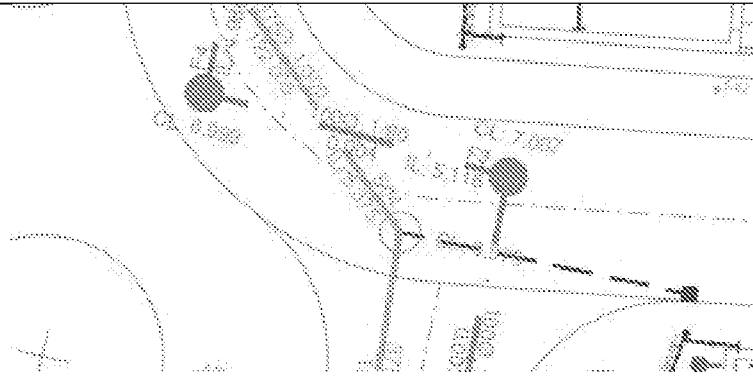
Please note: Any DOC application should only have a maximum of two consultation responses. If this is the second response for an open application and there are still comments outstanding, then please recommend that the application is refused.

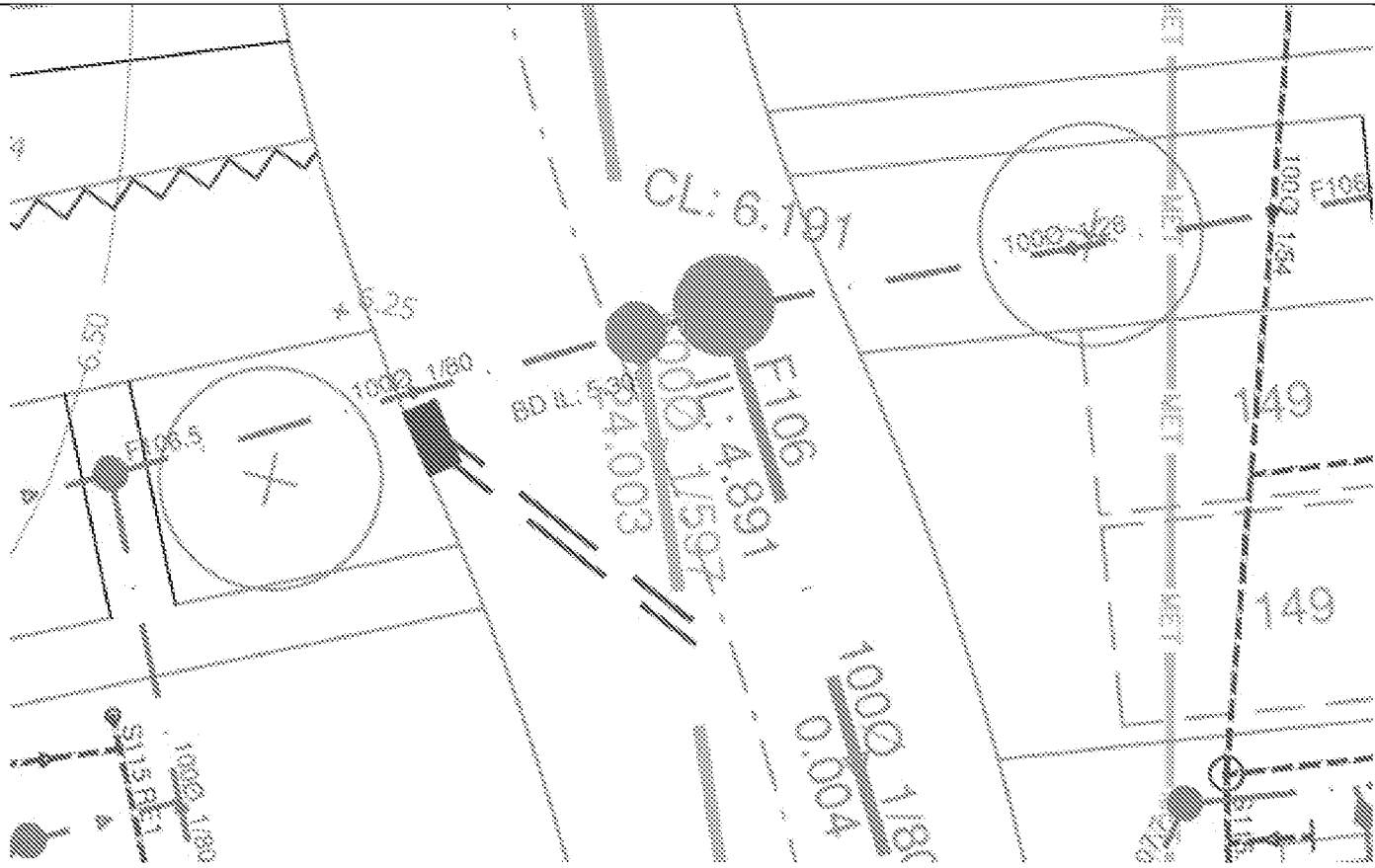
	ADC Drainage Comments	Designer Response	ADC Drainage Further Comment		
Date:	29/05/2024	16/07/2024	1/10/2024		
Condition Number: 6 [Phasing]					
Comment Number					
1.	The phasing plan is to include the relevant attenuation/infiltration basins.	No update.	Even though the updated phasing plan has been updated in accordance with the instructions of Jessica Riches (email 27/8/2024) it is still not clear where is the attenuation for each phase. Please present it on your drawing so it is clear that for each phase the drainage will be independent following the completion of its works.		
Condition Number: 9 [Surface water drainage design]					
Comment Number					
1.	No additional impermeable area has been indicated for Urban Creep, please show this on the impermeable areas plan and ensure the calculations are based upon 10% Urban Creep.	No comments – refer to updated design.	This comment remains. We haven't revised a revision of drawing D1886-PL105.	A 10% urban creep allowance has been applied to all plots. Please refer to the impermeable areas plans included with the response pack - FOR-E5139-489 to 491.	
2.	The proposed drainage sheets do not display any private drainage information, all sitewide drainage information is to be provided. Drawings are to be to a construction level of detail ensuring no room for interpretation.	No comments – refer to updated design.	Please show IL and CL for all the private drainage manholes. Please show material and bedding types for all private pipes. Please show the name/code of each private manhole	1. CL and IL information for private drainage is not shown on the layouts as the clarity of the drawing is reduced making it difficult for the groundwater to follow the designs. Please refer to the domestic manhole schedules for information on main private runs (FOR-E5139-419) 2. For mains drainage pipes up to 300mm will be vitrified clay. 300mm and over will be concrete (refer to FOR/E5139/410). 3. Noted on mains drainage and main private runs. Other private drainage has been omitted for clarity on the drawings.	
3.	Pipe materials are to be provided for all drainage runs, these are to be noted within the pipe label of each run on the drainage GA's.	No comments – refer to updated design.	Comment remains.	For mains drainage pipes up to 300mm will be vitrified clay. 300mm and over will be concrete (refer to FOR/E5139/410).	
4.	No proposed levels information has been provided on the Proposed drainage drawings meaning these can not be checked against manhole cover levels or the calculations please overlay the levels onto the drainage drawings.	No comments – refer to updated design.	Comment remains. Please also include road contours at the roads.	Please refer to the proposed levels design plans (FOR-E5139-501 to 522). Highways contours have now been included on the domestic drainage layout.	

5.	No gully's have been shown or methods of water collection, only primary drainage runs have been shown.	No comments – refer to updated design.	Comment closed.	Noted	
6.	A CV value of 0.75 has been used within the calculations, ADC require a CV value of 1.	No comments – refer to updated design.	Comment closed.	Noted	
7.	A climate change factor of 40% has been used, ADC require a climate change value of 45%.	No comments – refer to updated design.	Comment closed.	Noted	
8.	All drainage runs should achieve a self-cleansing velocity of 1m/s.	No comments – refer to updated design.	Comment remains.	All pipes have been designed to achieve self-cleansing. Outside of 'dummy' pipes used in modelling attenuation features.	
9.	A catchment area plan should be provided showing which impermeable areas are being included into each drainage run to allow for cross examination with the calculations.	No comments – refer to updated design.	Comment remains.	A 10% urban creep allowance has been applied to all plots. Please refer to the impermeable areas plans included with the response pack - FOR-E5139-489 to 491.	
10.	The 1 in 100 year storm event clearly displays flooding, flooding should not occur where possible. In the instance of small flooding being unavoidable a plan displaying the extent of the flooding is to be provided including a flood management route.	No comments – refer to updated design.	Comment remains.	The calcs have been updated, small amounts of flooding are shown in the most extreme storm events modelled. A flood flows assesment has shown the minor flooding, exceedance flows will be contained within the highway and conveyed down the roads where it will enter the system further downstream via gullies.	
11.	No drainage details have been provided, all materials and structures are to have details provided including control devices.	No comments – refer to updated design.	Headwall details have been provided but they are generic. Each headwall should contain the outfall IL, the basin level, the pipe size and the earthworks details. There have been submitted typical details of the swale but detailed design details are required. Please provide detailed construction details for all the attenuation tanks. Also, include the road/footpath detail above where applicable.	Refer to headwall sections plans - FOR-E5139-482 to 485. Altho specific headwall details are shown on these plans. The sections shown on the plans give specific information for how the headwalls tie-in with surrounding earthworks and base of basins	
12.	No manhole schedules have been provided.	No comments – refer to updated design.	Manhole schedule submitted but many manholes are missing probably due to wrong printing options. All the manholes are shown as Type E which is impossible. Please also note which manholes are catchpits. All the manholes have a diameter of 450 which is wrong in many cases. Please amend. Please specify the cover type on manhole schedule. Clarify how the shallow pipes will be protected.	The schedules (domestics FOR-E5139-419 and mains FOR-E5139-415 to 418) give information on manholes. Information on all private drainage is not given as this is subject to change on-site during construction and to offer the groundworker a level of flexibility. These refer to the inspection chambers, manhole types have been removed for clarity (as they are not applicable) - FOR-E5139-419 These refer to the main inspection chambers for the private drainage. Refer to table on plan regarding cover types - FOR-E5139-415 to 418 Pipes shall be protected in accordance with pipe bedding details (FOR-E5139-474). Where minimum cover cannot be achieved, pipes shall be protected via a concrete slab.	
13.	Groundwater monitoring is required to be undertaken throughout the wettest months	No comments – refer to updated design.	The comment remains.		

	being October – march. The entire duration must be covered.		The trial holes contained at “Phase II Site Investigation Report” were undertaken between March and July 2024. Please also provide a plan showing the borehole results and the infiltration rates across the site.	Please find included with the response pack current and previous groundwater monitoring and a plan showing locations	
14.	Buoyancy calculations are required for all basins based on the updated basin design and recorded groundwater levels at the site together with details of the depths of material required to combat flotation. The calculations must take account for the total depth of the impermeable liner and not just the invert of the basin to determine displaced groundwater.	No comments – refer to updated design.	Comment remains.	Please find current buoyancy calculations included in response pack.	
15.	Please provide further information and commentary for the catchment which currently drains to the proposed point of discharge together with evidence that the receiving network has capacity to receive additional flows. This connection to the water course also serves the highway drainage for a large section of the A259 and Church Lane.	No comments – refer to updated design.	Comment remains.	The on-site drainage has been designed in accordance with the approved FRA and to ensure that discharge from the site is not greater. The existing drainage regime and potential outfalls for the site have been assessed in section 1.5 of the approved FRA.	
16.	A new water course is proposed along the northern site boundary. Is this just a conveyance swale for the onsite system or does this receive flows from anywhere offsite? There is no mention of this in the FRA. It is noted that the side slopes are 1:2 these should be reduced to 1:3 as it is noted that the ‘swale’ is up to 1.9m deep in some places.	No comments – refer to updated design.	Comment remains.	This is a proposed swale for conveying flows from the proposed site. SI works done by G and W encountered groundwater at 1.5m bgl in the road south of the swale. The swale is proposed as a conveyancing feature and will not infiltrate into the ground. Swale banks shall be 1:3 with a granular sub-base. For the swale levels refer to FOR-E5139-492.	
17.	The impact of groundwater needs to be considered for the proposed swale. Should the swale be located within the groundwater, how will ground water be prevented from entering the swale? Buoyancy calculations will need to be provided should the swale be proposed as lined.	No comments – refer to updated design.	Comment remains. Also please provide detailed design construction details and cross-sections.	The swale is proposed as a conveyancing feature and will not infiltrate into the ground.	

18.	The FRA and drainage plans state that the system 'is proposed that a 'hybrid' strategy will be implemented, with infiltration maximised where possible in view of site constraints'. Has this been considered? The site should in accordance with the SuDS hierarchy infiltrate to ground in the first instance wherever possible taking into account the ground water levels and recorded soakage rates from the investigations on site.	No comments – refer to updated design.	Comment remains.	The groundwater monitoring carried out and observations during the onsite works found groundwater levels on-site to be relatively shallow. Therefore, a hybrid approach has not been able to be pursued. The current strategy uses SuDS features in the form of swales, basins and tanks for conveyancing and storage of run-off.	
19.	Further details of the permeable paving storage blankets is required.	No comments – refer to updated design.	Comment remains.	Permeable paving is no longer required as the storage requirements have been met via basins and tanks.	
20.			All drawings should be at a construction issue level. They are currently labelled as 'INITIAL TENDER ISSUE'.	Noted, plans have been updated subject to adopting authority.	
21.			All the inspection chambers at the drainage details have been named Type D even though they have different details. Please rename accordingly and update the manhole schedules.	Manhole type removed for inspection chambers as this is not applicable.	
22.			Please provide detailed constructions details of all the ponds including two cross-section for each pond.	Refer to drawings FOR-E5139-486 to 488 and 482 to 485	
23.			At the FRA is suggested the rate of discharge from the site will be restricted to QBar, at 20.50l/s. Has this been implemented? Please provide detailed design details of the hydrobreak or any other similar mean of flow restriction.	A hydro-brake will be used at the site's outfall. The hydro-brake has been designed so peak flows do not exceed 20.5 l/sec.	
24.			Please clarify the incoming and the outcoming ILs at the manholes where there is a change at the pipe diameters.	Refer to manhole schedules FOR-E5139-415 to 418.	
25.			There are several locations where the private surface water drainage is crossing foul pipes (both private and public). Please confirm that there is no clash between them.	A clash has been undertaken to ensure that the pipes can cross via the design software site3D.	
26.			Please provide detailed design construction details for the internal hydrobrakes.	Please find hydro-brake details included with response pack	
27.			Make clear the text shown at the attenuation tanks at drawing FOR/E5139/454.	Plans updated as per comment	
28.			There is an attenuation tank at drawing FOR/E5139/455 which is not connected with any pipes. Please clarify why.	Tank updated to show connection	
29.			There is an attenuation tank at drawing FOR/E5139/456 which is not connected with any pipes. Please clarify why.	Tank updated to show connection	
30.					

			 Please clarify the CL and IL of the foul manhole and whether it is private or not.	Plans updated for clarity, this is not a manhole. The symbol is indicating a backdrop	
31.			 Please confirm that there is no pipe clashing at the above location.	A pipe clash check has been undertaken and these pipes to clear eachother	
32.			 Please confirm that there is no pipe clashing at the above location.	A pipe clash check has been undertaken and these pipes to clear eachother	

33.			There is an attenuation tank at drawing FOR/E5139/460 which is not connected with any pipes. Please clarify why.	Plan updated to show tank connection	
34.			There are several occasions with overlapping text at several drainage layout drawings. Please make them clear.	Plans updated to make text clearer	
35.			 It is not clear where the smaller size foul manhole is connected to. Please clarify.	Symbol indicated a backdrop, plan updated for clarity	
36.			There is an attenuation tank at drawing FOR/E5139/464 which is not connected with any pipes. Please clarify why.	Plan updated to show tank connections	
37.			A SUDS maintenance schedule has been provided within the FRA and not as a separate document. However, this contains the basic tables from the SUDS manual and it does not comply with ACC guidance. Please provide a SUDS maintenance schedule I accordance to the ACC checklist for maintenance.	Please find the SuDS maintenace plan included with the response pack	
Condition Number: 10 [Watercourses]					
Comment Number					
1.	The applicant will need to detail all connections and crossings for existing watercourses and gain	No comments – refer to updated design.	Comment remains.	The on-site drainage connects into a existing manhole located east of the site boundary and not directly into a watercourse. The proposed on-site drainage design	

	Ordinary Watercourse Consent.				
2.	All watercourses maintenance, existing and proposed is to be detailed within the maintenance schedule.	No comments – refer to updated design.	Comment remains.	Please find the SuDS maintenace plan included with the response pack	

Drainage Engineers response

Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk

To register to receive notifications of planning applications in your area please go to
<https://www1.arun.gov.uk/planning-application-finder>



From: Paul Cann <Paul.Cann@arun.gov.uk>
Sent: Wednesday, October 2, 2024 2:18 PM
To: Planning.Responses <Planning.Responses@arun.gov.uk>
Cc: Sarah Burrow <Sarah.Burrow@arun.gov.uk>; Karl McLaughlin <Karl.McLaughlin@arun.gov.uk>
Subject: RE: Planning Re-Consultation on: CM/6/24/DOC

Please find enclosed our consultants response.

Regards

Paul Cann
Principal Drainage Engineer, Coastal Engineers and Flood Prevention

T: 01903 737819

E: paul.cann@arun.gov.uk

Arun District Council, Civic Centre, Maltravers Rd
Littlehampton, West Sussex, BN17 5LF
www.arun.gov.uk



From: Land Drainage <Land.Drainage@arun.gov.uk>
Sent: Friday, July 19, 2024 10:04 AM
To: Paul Cann <Paul.Cann@arun.gov.uk>
Subject: FW: Planning Re-Consultation on: CM/6/24/DOC

From: Planning.Responses <Planning.Responses@arun.gov.uk>
Sent: Friday, July 19, 2024 9:04:12 AM (UTC+00:00) Monrovia, Reykjavik
To: Land Drainage <Land.Drainage@arun.gov.uk>
Subject: Planning Re-Consultation on: CM/6/24/DOC

To: **Engineers (Drainage)**

NOTIFICATION FROM ARUN DISTRICT COUNCIL

TOWN AND COUNTRY PLANNING ACT 1990

Application No: CM/6/24/DOC
Registered: 29th February 2024
Site Address: Land to the West of Church Lane and South of Horsemere Green Lane
Climping
Grid Reference: 500058 102025
Category: Discharge of Condi
Description of Works: Approval of details reserved by condition imposed under CM/1/17/OUT relating to conditions 6-Phasing Plan and Programme, 8-Arboricultural Method Statement, 9-surface water drainage scheme, 10-discharge of flows to watercourses or the culverting, diversion, infilling or obstruction of any

watercourses on site, 11-Flood Management and Mitigation scheme, 12-Ecology Management and Mitigation Plan, 13-archaeological works, 14-Constuction Method Statement, 15-Travel Plan, 16-energy efficiency measures, 17-acoustic barrier, 21-Employment and Skills Plan and 22-provision of broadband.

I am able to inform you that I have received an amendment to the above application dated 15th July 2024 relating to: Various substitute and additional plans.

[Click here to view the plans and documents](#)

If you should wish to make further representations as a result of this amendment you should click the link below and then click on 'Enter comment'.

[Click here to make further comments](#)

Please make any further comment by **2nd August 2024**.

Please be aware that any comments you may make will be available on our website so please do not insert personal details or signatures on your reply.

Yours sincerely

Jessica Riches

Planning Case Officer-Arun District Council

Telephone: 01903 737852

Email: jessica.riches@arun.gov.uk

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