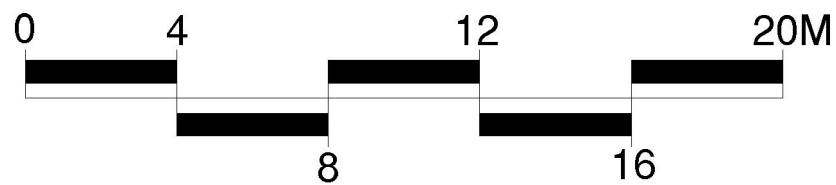
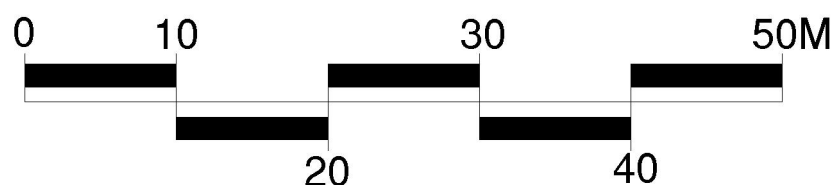


Burgess Hill Town Fc
Stadia AGP

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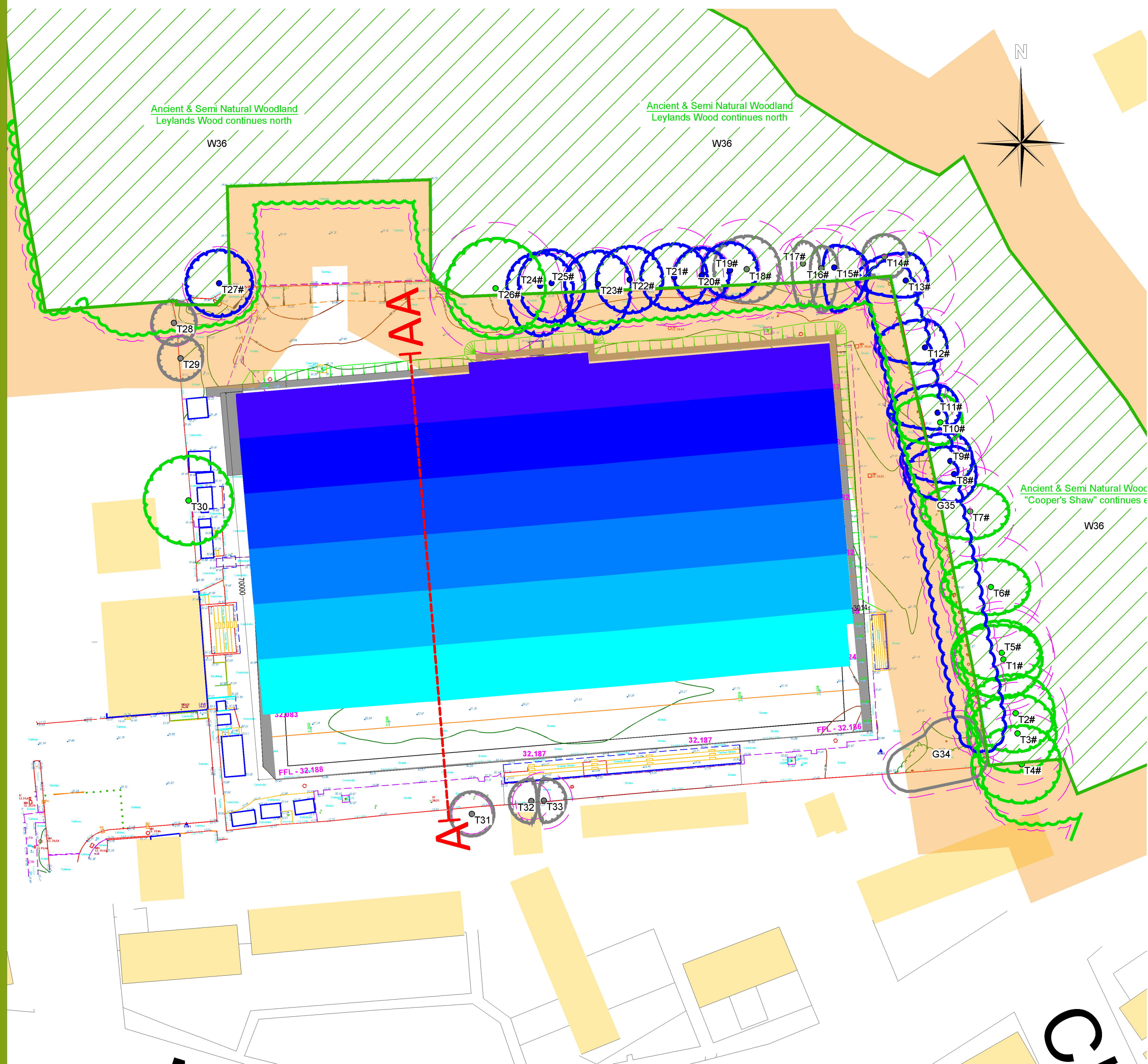


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Surface Water Drainage Design

The proposed design of the AGP development is for a permeable surface construction. The surface of the synthetic turf area shall be permeable with the underlying stone sub-base acting as an attenuation/storage area for surface water. The stone base will act as an attenuation system to increase attenuation capabilities of the playing field area. This is combined with a perforated drainage system being installed underneath the pitch base to connect to the existing outfall chamber at the north of the development site.

It is intended that a positive drainage scheme (land drainage); shall be installed beneath the development area comprising UPVC perforated carrier and lateral pipe drains.

The granular pitch substrate (typically consisting of Type 3 unbound (SHW 800 Series) to comply with BSEN 13285) is intended to provide onsite containment and attenuation within the granular sub-base, before surface water enters an outfall.

The designed surface water drainage solution should be based upon the following criteria, to maintain satisfactory system performance:

- Provide adequate functionality over a period of twenty years.
- Ensure that surface water is removed from the surface area at a rate necessary to prevent surface flooding experienced during acute rainstorms and to ensure the facility will not be lost through rain at the highest intensity which may be expected to occur either once every five years or through continuous rainfall of 50mm over a 24 hour period.
- Ensure that surface water is effectively removed from the facility construction to ensure that load bearing capacity of the substrate is not weakened by an increase in moisture content or becomes more susceptible to frost damage.
- Protect the installation from influences of groundwater or surface water from surrounding areas.
- Prevent the risk of uncontrolled flooding elsewhere (to land adjacent to the development).
- Comply with all applicable Sustainable Urban Drainage System (SUDS) requirements with attenuated flows (containment within the granular pitch sub-base) incorporated wherever necessary, without affecting the performance of the pitch.

Only natural surface water is being dealt with. The new development will not increase to the volume of water that the existing site area is currently subjected to.

The area is in a Category 1 flood zone and as such is at a low risk of flooding. Water discharging from the playing field area currently reaches the existing surface water drainage system, without any control or restrictions.

The collector drainage pipe to the synthetic pitch will connect to the existing surface water chamber within the site with a restricted outfall rate.

In terms of the proposed restricted outfall rate, where one restricted discharge rate is proposed for all events, the Qbar (average annual) greenfield runoff rate should be used. The QBAR for this site is 4.47 l/s. We have, therefore, used 4.47l/s as the suggested limited discharge rate. Calculations have been based on a 1 in 30 year storm event with a 40% allowance for climate change.

Surface water discharge rate will be restricted and the installation of the new drainage system to this area of the site will provide a more careful, managed control of discharge than the current arrangement.

The foundations of the new synthetic turf area includes:

- 215mm deep layer of type 3 stone
- 40mm macadam
- 15mm shockpad
- 30mm infill of sand and rubber on the carpet

The minimum 300mm deep aggregate base construction offers a wedge for surface water attenuation prior to filling and flooding the pitch surface or surrounding grassed areas. The available volume of the wedge is created through the following calculations:

- The pitch layer constructed at a 1 in 200 gradient offers a volume and capacity of 916.5m³
- Based on a voidage space of 37% this offers 338.90m³ of water attenuation.
- The drainage system, shown in drawing 'SSL3402 07 - Proposed AGP Drainage Layout', can also attenuate an additional 70m³

The surface water attenuation calculations as per the table below shows the following:

- 1 in 30 year storm event + 40% allowance for climate change at run off restricted to 4.47l/s - would require 377m³ of attenuation

The attenuation provided by the pitch design (408m³) will comfortably cater for a 1 in 30 storm event +40% (377m³) without flooding either the pitch surface or surrounding areas

PROJECT NO: 24-339
PROJECT: Burgess Hill Town FC

Attenuation Estimates

Minimum Storage Required: 377 m³ incl cc allowance

FACTOR	VALUE	SOURCE
Return Period (yrs)	30	Environment Agency, Water Authority, etc.
Limiting Discharge (l/s)	4.47	Environment Agency, Water Authority, etc.
Contributing Area (ha)	0.7625	Site plans
Impervious, PIMP (%)	100	Site plans
M5-60min (mm)	20	Volume 3 maps and site location
SAAR (mm/yr)	826	Volume 3 maps and site location
Ratio, r:	0.3	Volume 3 maps and site location
Soil Type:	4	Volume 3 maps and site location
SOIL:	0.45	Soil Type and Volume 1, Section 7.4
UCWI:	94	SAAR and Volume 1, Figure 9.7
Calculated PR	80.81	
Percentage Runoff =	80.81	

FACTOR	VALUE
Additional Inflow (l/s)	0
Calculate/Specify PR:	Calculate
Specify PR:	100

Climate Change Allowance 40

M-D values taken from FEH for storm durations of 15 minutes or greater

Duration, D (min)	M5-60 (mm)	Z1 for r=0.30 (mm)	M5-D (mm)	Z2 for M30 (mm)	M30-D (mm)	Incl climate change (mm)	Area C (ha)	PR (%)	Runoff (m ³)	Add. Runoff (m ³)	Total Runoff (m ³)	Limiting Discharge (m ³ /min)	Limiting Runoff (m ³)	Storage Required (m ³)
5	20	0.34	6.8	1.45	9.9	13.8	0.76	81	85.2	0.0	85.2	0.27	1.3	83.8
10	20	0.50	10.0	1.49	14.9	20.9	0.76	81	128.5	0.0	128.5	0.27	2.7	125.9
15					20.5	28.6	0.76	81	176.4	0.0	176.4	0.27	4.0	172.4
30					27.2	38.1	0.76	81	234.9	0.0	234.9	0.27	8.0	226.9
60					34.6	48.4	0.76	81	298.2	0.0	298.2	0.27	16.1	282.1
120					41.8	58.5	0.76	81	360.4	0.0	360.4	0.27	32.2	328.2
240					49.8	69.7	0.76	81	429.7	0.0	429.7	0.27	64.4	365.3
360					54.9	75.8	0.76	81	473.4	0.0	473.4	0.27	96.6	376.9
480					58.7	82.1	0.76	81	506.0	0.0	506.0	0.27	128.7	377.2
600					61.7	86.4	0.76	81	532.6	0.0	532.6	0.27	160.9	371.7
720					64.4	90.1	0.76	81	555.5	0.0	555.5	0.27	193.1	362.4
840					66.8	93.5	0.76	81	575.8	0.0	575.8	0.27	225.3	350.5
1440					76.1	106.6	0.76	81	656.8	0.0	656.8	0.27	386.2	270.6
2160					85.1	119.2	0.76	81	734.3	0.0	734.3	0.27	579.3	155.0
2880					92.7	129.7	0.76	81	799.3	0.0	799.3	0.27	772.4	26.8

Attenuation Calcs - using FEH.xls.xls

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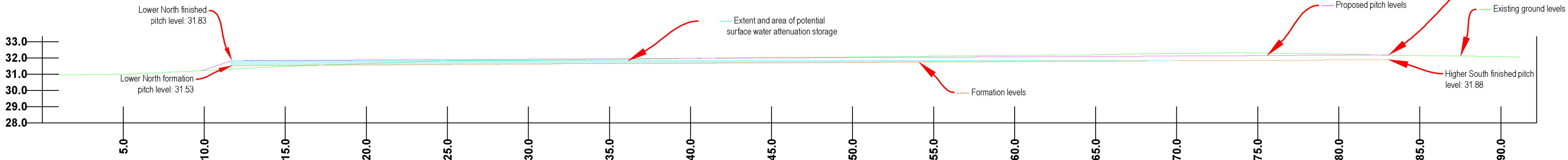
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Attenuation Calcs - using FEH.xls.xls

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Attenuation Scheme Scale 1:500



AGP Attenuation Volume Calculations

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REV DESCRIPTION REV CK DATE

Surfacing Standards Limited
SPORTS PITCH CONSULTANTS

AUTHOR
LS

TITLE
Burgess Hill Town Fc
Stadia AGP
Proposed AGP Drainage Strategy

PROJECT
SSL3402

SCALE
Varies

SIZE
A1

DRAWING No
08

REVISION
00

Section AA-A Showing Surface Water Attenuation Storage - Scale 1:200