Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Catchment 1	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE: 29/01/2024	DATE:	DATE:

Rainfall (mm)	74.7	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	100	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	0.28
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	0.28

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0.28	0	0	
Site Area (km^2)	0.0028	0	0	
Total Rainfall Volume (m^3)	209.2	0.0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	85.00%	**Total**
Volume of Runoff (m^3)	**117.1**	**0.0**	**0.0**	**117.1**

Runoff Calculations for Proposed Development

Permeable (ha)	0
Impermeable (ha)	0.0485
Semi Impermeable (ha)	0.2315
Total (ha)	0.28

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0	0.0485	0.2315	
Site Area (km^2)	0	0.000485	0.002315	
Total Rainfall Volume (m^3)	0.0	36.2	172.9305	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	85%	**Total**
Volume of Runoff (m^3)	**0.0**	**36.2**	**147.0**	**183.2**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	74.7
Return Period (yrs)	100
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	104.58

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0.0028	0	0	
Total Rainfall Volume (m^3)	292.8	0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	85%	**Total**
Volume of Runoff (m^3)	**163.9**	**0.0**	**0.0**	163.9

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0	0.000485	0.002315	
Total Rainfall Volume (m^3)	0.0	50.7	242.1027	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	85.00%	**Total**
Volume of Runoff (m^3)	**0.0**	**50.7**	**205.8**	256.5

SUMMARY	
Existing Runoff	117.1
Post-Devel Runoff (present day)	183.2
Difference	***66.1***
Existing Runoff	117.1
Post-Devel runoff + CC	256.5
Difference	***139.4***
Exisitng Runoff +CC	163.9
Post-Devel +CC	256.5
Difference	**92.6**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$

Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Catchment 2	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE: 29/01/2024	DATE:	DATE:

Rainfall (mm)	74.7	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	100	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	0.264
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	0.264

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0.264	0	0	
Site Area (km^2)	0.00264	0	0	
Total Rainfall Volume (m^3)	197.2	0.0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	80.00%	**Total**
Volume of Runoff (m^3)	**110.4**	**0.0**	**0.0**	**110.4**

Runoff Calculations for Proposed Development

Permeable (ha)	0
Impermeable (ha)	0.0485
Semi Impermeable (ha)	0.2155
Total (ha)	0.264

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0	0.0485	0.2155	
Site Area (km^2)	0	0.000485	0.002155	
Total Rainfall Volume (m^3)	0.0	36.2	160.9785	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	80%	**Total**
Volume of Runoff (m^3)	**0.0**	**36.2**	**128.8**	**165.0**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	74.7
Return Period (yrs)	100
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	104.58

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0.00264	0	0	
Total Rainfall Volume (m^3)	276.1	0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	80%	**Total**
Volume of Runoff (m^3)	**154.6**	**0.0**	**0.0**	154.6

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0	0.000485	0.002155	
Total Rainfall Volume (m^3)	0.0	50.7	225.3699	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	80.00%	**Total**
Volume of Runoff (m^3)	**0.0**	**50.7**	**180.3**	231.0

SUMMARY	
Existing Runoff	110.4
Post-Devel Runoff (present day)	165.0
Difference	***54.6***
Existing Runoff	110.4
Post-Devel runoff + CC	231.0
Difference	***120.6***
Exisitng Runoff +CC	154.6
Post-Devel +CC	231.0
Difference	**76.5**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$

Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Catchment 1	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE: 29/01/2024	DATE:	DATE:

Rainfall (mm)	74.7	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	100	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	0.457
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	0.457

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0.457	0	0	
Site Area (km^2)	0.00457	0	0	
Total Rainfall Volume (m^3)	341.4	0.0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	81.00%	**Total**
Volume of Runoff (m^3)	**191.1**	**0.0**	**0.0**	**191.1**

Runoff Calculations for Proposed Development

Permeable (ha)	0
Impermeable (ha)	0.0675
Semi Impermeable (ha)	0.3895
Total (ha)	0.457

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	0	0.0675	0.3895	
Site Area (km^2)	0	0.000675	0.003895	
Total Rainfall Volume (m^3)	0.0	50.4	290.9565	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	81%	**Total**
Volume of Runoff (m^3)	**0.0**	**50.4**	**235.7**	**286.1**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	74.7
Return Period (yrs)	100
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	104.58

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0.00457	0	0	
Total Rainfall Volume (m^3)	477.9	0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	81%	**Total**
Volume of Runoff (m^3)	**267.5**	**0.0**	**0.0**	267.5

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0	0.000675	0.003895	
Total Rainfall Volume (m^3)	0.0	70.6	407.3391	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	81.00%	**Total**
Volume of Runoff (m^3)	**0.0**	**70.6**	**329.9**	400.5

SUMMARY	
Existing Runoff	191.1
Post-Devel Runoff (present day)	286.1
Difference	***95.0***
Existing Runoff	191.1
Post-Devel runoff + CC	400.5
Difference	***209.4***
Exisitng Runoff +CC	267.5
Post-Devel +CC	400.5
Difference	**133.0**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$

Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Cachment 4	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE:	DATE:	DATE:

Rainfall (mm)	74.7	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	100	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	1.894
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	1.894

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	1.894	0	0	
Site Area (km^2)	0.01894	0	0	
Total Rainfall Volume (m^3)	1414.8	0.0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	80.00%	**Total**
Volume of Runoff (m^3)	**792.0**	**0.0**	**0.0**	**792.0**

Runoff Calculations for Proposed Development

Permeable (ha)	1.5105
Impermeable (ha)	0
Semi Impermeable (ha)	0.3835
Total (ha)	1.894

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	100	100	100	
Rainfall Depth (mm)	74.7	74.7	74.7	
Site Area (ha)	1.5105	0	0.3835	
Site Area (km^2)	0.015105	0	0.003835	
Total Rainfall Volume (m^3)	1128.3	0.0	286.4745	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff from paved areas	N/A	100%	80%	**Total**
Volume of Runoff (m^3)	**631.6**	**0.0**	**229.2**	**860.8**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	74.7
Return Period (yrs)	100
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	104.58

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0.01894	0	0	
Total Rainfall Volume (m^3)	1980.7	0	0	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	80%	**Total**
Volume of Runoff (m^3)	**1108.8**	**0.0**	**0.0**	1108.8

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	104.58	104.58	104.58	
Site Area (km^2)	0.015105	0	0.003835	
Total Rainfall Volume (m^3)	1579.7	0.0	401.0643	
$PR_{(RURAL)}$	55.98%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	80.00%	**Total**
Volume of Runoff (m^3)	**884.3**	**0.0**	**320.9**	1205.1

SUMMARY	
Existing Runoff	792.0
Post-Devel Runoff (present day)	860.8
Difference	***68.8***
Existing Runoff	792.0
Post-Devel runoff + CC	1205.1
Difference	***413.1***
Exisitng Runoff +CC	1108.8
Post-Devel +CC	1205.1
Difference	**96.3**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$

Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Catchment 5 (Construction Compund 1)	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE: 29/01/2024	DATE:	DATE:

Rainfall (mm)	62.96	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	30	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	0.4033
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	0.4033

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	30	30	30	
Rainfall Depth (mm)	62.96	62.96	62.96	
Site Area (ha)	0.4033	0	0	
Site Area (km^2)	0.004033	0	0	
Total Rainfall Volume (m^3)	253.9	0.0	0	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff from paved areas	N/A	100%	82.00%	**Total**
Volume of Runoff (m^3)	**138.7**	**0.0**	**0.0**	**138.7**

Runoff Calculations for Proposed Development

Permeable (ha)	0
Impermeable (ha)	0
Semi Impermeable (ha)	0.4033
Total (ha)	0.4033

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	30	30	30	
Rainfall Depth (mm)	62.96	62.96	62.96	
Site Area (ha)	0	0	0.4033	
Site Area (km^2)	0	0	0.004033	
Total Rainfall Volume (m^3)	0.0	0.0	253.91768	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff from paved areas	N/A	100%	82%	**Total**
Volume of Runoff (m^3)	**0.0**	**0.0**	**208.2**	**208.2**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	62.96
Return Period (yrs)	30
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	88.14

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	88.14	88.14	88.14	
Site Area (km^2)	0.004033	0	0	
Total Rainfall Volume (m^3)	355.5	0	0	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	82%	**Total**
Volume of Runoff (m^3)	**194.2**	**0.0**	**0.0**	194.2

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	88.14	88.14	88.14	
Site Area (km^2)	0	0	0.004033	
Total Rainfall Volume (m^3)	0.0	0.0	355.484752	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	82.00%	**Total**
Volume of Runoff (m^3)	**0.0**	**0.0**	**291.5**	291.5

SUMMARY	
Existing Runoff	138.7
Post-Devel Runoff (present day)	208.2
Difference	***69.5***
Existing Runoff	138.7
Post-Devel runoff + CC	291.5
Difference	***152.8***
Exisitng Runoff +CC	194.2
Post-Devel +CC	291.5
Difference	**97.3**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$

Calculation Sheet

CLIENT:	PROJECT:	JOB NO.:	CALC. REF. NO.:
Convatec	PEP Wind and Solar	BR10167	PAGE: 1 OF 2
CALCULATION	CALC. BY:	CHECKED BY:	APPROVED BY:
Runoff Volume: Catchment 6 (Construction Compund 2)	(NAME AND SIGNATURE) H Wilson	(NAME AND SIGNATURE)	(NAME AND SIGNATURE)
	DATE: 29/01/2024	DATE:	DATE:

Rainfall (mm)	62.96	from FEH 2022 DDF modelling
SAAR	1625	from FEH or via UK SuDS Tools
SPRHOST or SPR (%)	49.84	SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
Return Period (yrs)	30	
Duration (hrs)	6	

Note: For durations shorter than 0.5hours FEH DDF should not be used.

Runoff Calculations for Existing Site

Permeable (ha)	0.3752
Impermeable (ha)	0
Semi Permeable (ha)	0
Total (ha)	0.3752

	Existing Permeable	Existing Impermeable	Existing Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	30	30	30	
Rainfall Depth (mm)	62.96	62.96	62.96	
Site Area (ha)	0.3752	0	0	
Site Area (km^2)	0.003752	0	0	
Total Rainfall Volume (m^3)	236.2	0.0	0	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff from paved areas	N/A	100%	79.00%	**Total**
Volume of Runoff (m^3)	**129.0**	**0.0**	**0.0**	**129.0**

Runoff Calculations for Proposed Development

Permeable (ha)	0
Impermeable (ha)	0
Semi Impermeable (ha)	0.3752
Total (ha)	0.3752

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Storm duration (mins)	360	360	360	
Rainfall Return Period	30	30	30	
Rainfall Depth (mm)	62.96	62.96	62.96	
Site Area (ha)	0	0	0.3752	
Site Area (km^2)	0	0	0.003752	
Total Rainfall Volume (m^3)	0.0	0.0	236.22592	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff from paved areas	N/A	100%	79%	**Total**
Volume of Runoff (m^3)	**0.0**	**0.0**	**186.6**	**186.6**

Calculation Sheet

Runoff Calculations for Proposed Development with Climate Change

Rainfall (mm)	62.96
Return Period (yrs)	30
Duration (hrs)	6
100y Climate Change %	40%
Rainfall + CC (mm)	88.14

	Exisiting Permeable	Exisiting Impermeable	Existing Semi Permeable	
Rainfall Depth (mm)	88.14	88.14	88.14	
Site Area (km^2)	0.003752	0	0	
Total Rainfall Volume (m^3)	330.7	0	0	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	79%	**Total**
Volume of Runoff (m^3)	**180.7**	**0.0**	**0.0**	180.7

	Proposed Permeable	Proposed Impermeable	Proposed Semi Permeable	
Rainfall Depth (mm)	88.14	88.14	88.14	
Site Area (km^2)	0	0	0.003752	
Total Rainfall Volume (m^3)	0.0	0.0	330.716288	
$PR_{(RURAL)}$	54.63%	N/A	N/A	
% Runoff (Urban/ImpA)	N/A	100%	79.00%	**Total**
Volume of Runoff (m^3)	**0.0**	**0.0**	**261.3**	261.3

SUMMARY	
Existing Runoff	129.0
Post-Devel Runoff (present day)	186.6
Difference	***57.6***
Existing Runoff	129.0
Post-Devel runoff + CC	261.3
Difference	***132.2***
Exisitng Runoff +CC	180.7
Post-Devel +CC	261.3
Difference	**80.6**

Following the methodology set out in section 7 of the Environment Agency publication ' Preliminary Rainfall Runoff Managament for Developments' Report SC030219

Runoff Volume difference - extra runoff volume (m3) from development over Greenfield Runoff

[RD] Rainfall depth (mm)	56.37	100y 6h event, from FEH DDF
PIMP	1.191	the impermeable area as a percentage of the total area (values from 0 to 100)
[A] Site Area	2.634	the area of the site in hectares
SOIL	0.4	the "SPR" value for the relevant FSR soil type, or the SPRHOST value (values from 0.1 to 0.53) SPRHOST from FEH data; SPR from (SOIL = 0.1SOIL1 + 0.3SOIL2 + 0.37SOIL3 + 0.47SOIL4 + 0.53SOIL5)
[α] Proportion of Paved area draining to network or river	1	values from 0 to 1
[β] Proportion of Pervious Area draining to network or river	1	values from 0 to 1 (only reduce this from 1 if some pervious areas such (eg back gardens) cannot drain to the netowrk or river)
Runoff factor for contributing paved surfaces	0.8	

Volume Difference **7.07352 m^3**

$$Vol_{xs} = 10.RD.A\left[\frac{PIMP}{100}(\alpha 0.8) + \left(1 - \frac{PIMP}{100}\right)(\beta.SOIL) - SOIL\right]$$