

Appendix D

Proposed Scheme Drawings Including Drainage Strategy

Tree Planting

Trees			
Number	Abbreviation	Species	Height
9 No.	BEPE	<i>Betula pendula</i>	1.5-2.0m
2 No.	BET JAC	<i>Betula utilis jacquemontii</i>	4.0-5.0m
6 No.	AI	<i>Amelanchier lamarckii</i>	2.5-3.0m
2 No.	RHTY	<i>Rhus typhina</i>	2.5-3.0m
12 No.	PRU TIB	<i>Prunus serrula tibetica</i>	3.0m

Conifers			
Number	Abbreviation	Species	Height
7 No.	Gb	Ginkgo biloba	

Street Planting Mix

Shrubs			
Number	Abbreviation	Species	Density
117 No.	PAC TER	<i>Pachysandra terminalis</i>	5/m ²
40 No.	PeBS	<i>Perovskia</i> 'Blue Spire'	5/m ²

Herbaceous		Species	Density
84 No.	ACH PAS	<i>Acchillea millefolium</i> 'Summer Pastels'	5/m ²
82 No.	CARTE	<i>Carex testacea</i>	5/m ²
62 No.	ECH PUR	<i>Echinacea purpurea</i>	5/m ²
73 No.	HeH	<i>Euphorbia characias</i> 'Humpty Dumpty'	5/m ²
62 No.	HEL ORI	<i>Helleborus orientalis</i>	5/m ²
40 No.	HeM	<i>Heuchera</i> 'Marmalade'	5/m ²
62 No.	SAL PUR	<i>Salvia officinalis</i> 'Purpurascens'	5/m ²
62 No.	SED HER	<i>Sedum</i> 'Herbstfreude'	5/m ²

Climbers			
Number	Abbreviation	Species	Density
117 No.	HED HEL	<i>Hedera helix</i>	5/m ²
62 No.	HED CRI	<i>Hedera helix</i> 'Parsley Crested'	5/m ²

Bulbs			
Number	Abbreviation	Species	Density
17 No.	Alg	<i>Allium giganteum</i>	5/m ²

Ferns			
Number	Abbreviation	Species	Density
27 No.	DRY WAL	<i>Dryopteris wallichiana</i>	5/m ²

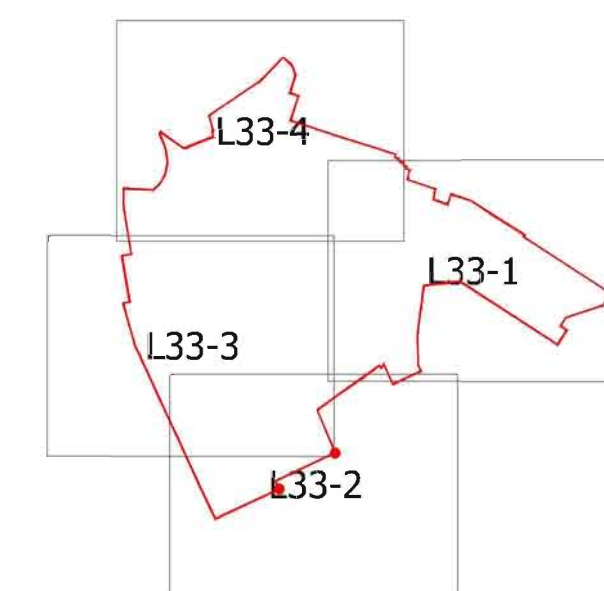
Grasses			
Number	Abbreviation	Species	Density
62 No.	HAK MAC	<i>Hakonechloa macra</i>	5/m ²
62 No.	LIMU	<i>Liriope muscari</i>	5/m ²
96 No.	She	<i>Sporobolus heterolepis</i>	5/m ²
117 No.	Ste	<i>Stipa tenuissima</i>	5/m ²

Native Plant Mix

Shrubs			
Number	Abbreviation	Species	Density
68 No.	COR SAN	<i>Cornus sanguinea</i>	3/m ²
51 No.	Cav	<i>Corylus avellana</i>	3/m ²
51 No.	Csc	<i>Cytisus scoparius</i>	3/m ²
51 No.	Ia	<i>Ilex aquifolium</i>	3/m ²
51 No.	LIG VUL	<i>Ligustrum vulgare</i>	3/m ²
51 No.	ROS PIM	<i>Rosa pimpinellifolia</i>	3/m ²
51 No.	Rac	<i>Ruscus aculeatus</i>	3/m ²
51 No.	VIB OPU	<i>Viburnum opulus</i>	3/m ²

LEGEND

- | | |
|-------|---|
| | Staffordshire clay patterned paver,
herringbone bond ,200 x 100 x 65mm,
blue |
| | Clay paver, herringbone bond,
200mmx65mmx85mm, buff, auburn,
Olive, yellow colour combination |
| | Flush granite kerb, 150x150xvaries,
silver grey |
| | Sloped profile granite kerb,
250x250xvaries, silver grey |
| | Clay paver, stretcher bond,
200mmx65mmx85mm, black |
| | PCC block paver, stretcher bond,
varies x 85mm, grey |
| | Wet pour rubber play surface |
| | Proposed Lawn |
| <hr/> | |
| | Metal stud road demarcation every 1m,
stainless steel |
| 1. | Steel vehicle bollard, 900mm high,
circular section, powder coated in
various colours |
| 2. | Lamp post |
| 3. | Cotinary lighting |
| 4. | Timber bench |
| 5. | Tree pit |
| 6. | Timber seating steps |
| 7. | Bespoke folded steel benches, powder
coated: various colours; 500mm high |
| 8. | Feature artwork |
| 9. | Steel railing, powder coated: black,
900mm high |
| 10. | Bike Rack |
| 11. | Tactile Paving, 300x300x50mm, blue
clay paver material to match adjacent
paving |
| 12. | Ramp |
| 13. | Play equipment |
| 14. | In situ concrete slabs, brush finished in
different directions, 10mm weathering
steel edges |
| 15. | Bio-Diverse Roof |
| 16. | Brick bin store |
| 17. | Undercroft Parking Vent |
| 18. | Two tier cycle parking stand (32 spcs) |
| 19. | 1.8m Metal Fence |
| 20. | 1.8m Brick Wall |
| | Proposed Tree |



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green

Drawing Title
Detailed Landscape Masterplan
Sheet 1 of 5

Date 07.01.16	Scale 1:100	Drawn by MV	Check by JH
Project No 18027	Drawing No L33-01	Revision A	

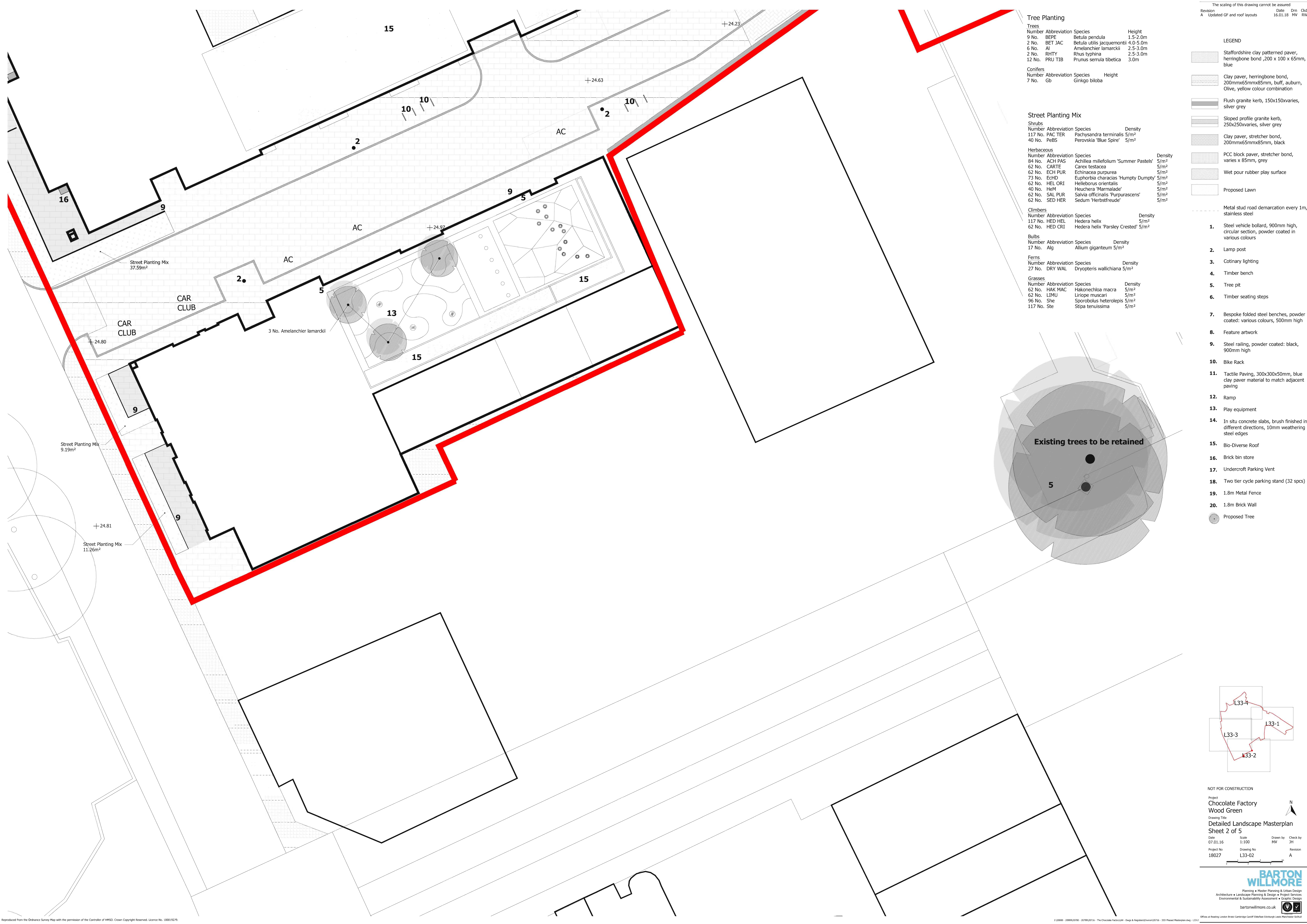
0 1 2 3 4 m

**BARTON
WILLMORE**

Planning • Master Planning & Urban Design
Architecture • Landscape Planning & Design • Project Services
Environmental & Sustainability Assessment • Graphic Design

bartonwillmore.co.uk





Tree Planting

Trees			
Number	Abbreviation	Species	Height
9 No.	BEPE	Betula pendula	1.5-2.0m
2 No.	BET JAC	Betula utilis jacquemontii	4.0-5.0m
6 No.	Al	Amelanchier lamarckii	2.5-3.0m
2 No.	RHTY	Rhus typhina	2.5-3.0m
12 No.	PRU TIB	Prunus serrula tibetica	3.0m

Conifers			
Number	Abbreviation	Species	Height
7 No.	Gb	Ginkgo biloba	

Street Planting Mix

Shrubs			
Number	Abbreviation	Species	Density
117 No.	PAC TER	Pachysandra terminalis	5/m²
40 No.	PeBS	Perovskia 'Blue Spire'	5/m²

Herbaceous			
Number	Abbreviation	Species	Density
84 No.	ACH PAS	Achillea millefolium 'Summer Pastels'	5/m²
62 No.	CARTE	Carex testacea	5/m²
62 No.	ECH PUR	Echinacea purpurea	5/m²
73 No.	ECHD	Euphorbia characias 'Humpty Dumpty'	5/m²
62 No.	HEL ORI	Helleborus orientalis	5/m²
40 No.	HeM	Heuchera 'Marmalade'	5/m²
62 No.	SAL PUR	Salvia officinalis 'Purpurascens'	5/m²
62 No.	SED HER	Sedum 'Herbstfreude'	5/m²

Climbers			
Number	Abbreviation	Species	Density
117 No.	HED HEL	Hedera helix	5/m²
62 No.	HED CRI	Hedera helix 'Parsley Crested'	5/m²

Bulbs			
Number	Abbreviation	Species	Density
17 No.	Alg	Allium giganteum	5/m²

Ferns			
Number	Abbreviation	Species	Density
27 No.	DRY WAL	Dryopteris wallichiana	5/m²

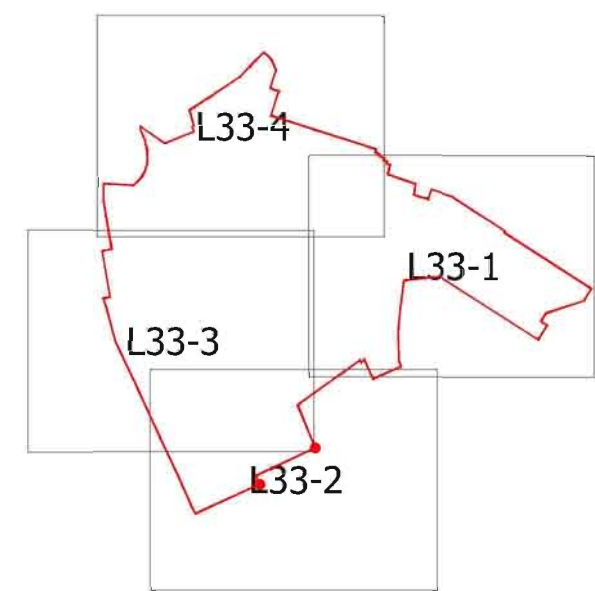
Grasses			
Number	Abbreviation	Species	Density
62 No.	HAK MAC	Hakonechloa macra	5/m²
62 No.	LIMU	Liriope muscari	5/m²
96 No.	She	Sporobolus heterolepis	5/m²
117 No.	Ste	Stipa tenuissima	5/m²

LEGEND

- Staffordshire clay patterned paver, herringbone bond, 200 x 100 x 65mm, blue
- Clay paver, herringbone bond, 200mmx65mmx85mm, buff, auburn, Olive, yellow colour combination
- Flush granite kerb, 150x150xvaries, silver grey
- Sloped profile granite kerb, 250x250xvaries, silver grey
- Clay paver, stretcher bond, 200mmx65mmx85mm, black
- PCC block paver, stretcher bond, varies x 85mm, grey
- Wet pour rubber play surface
- Proposed Lawn

- Metal stud road demarcation every 1m, stainless steel

- Steel vehicle bollard, 900mm high, circular section, powder coated in various colours
- Lamp post
- Cotinary lighting
- Timber bench
- Tree pit
- Timber seating steps
- Bespoke folded steel benches, powder coated: various colours, 500mm high
- Feature artwork
- Steel railing, powder coated: black, 900mm high
- Bike Rack
- Tactile Paving, 300x300x50mm, blue clay paver material to match adjacent paving
- Ramp
- Play equipment
- In situ concrete slabs, brush finished in different directions, 10mm weathering steel edges
- Bio-Diverse Roof
- Brick bin store
- Undercroft Parking Vent
- Two tier cycle parking stand (32 spcs)
- 1.8m Metal Fence
- 1.8m Brick Wall
- Proposed Tree



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green

Drawing Title
Detailed Landscape Masterplan
Sheet 2 of 5

Date 07.01.16	Scale 1:100	Drawn by DM	Check by JH
Project No 18027	Drawing No L33-02	Revision A	

- LEGEND
- Staffordshire clay patterned paver, herringbone bond ,200 x 100 x 65mm, blue
 - Clay paver, herringbone bond, 200mmx65mmx85mm, buff, auburn, Olive, yellow colour combination
 - Flush granite kerb, 150x150xvaries, silver grey
 - Sloped profile granite kerb, 250x250xvaries, silver grey
 - Clay paver, stretcher bond, 200mmx65mmx85mm, black
 - PCC block paver, stretcher bond, varies x 85mm, grey
 - Wet pour rubber play surface
 - Proposed Lawn
 - Metal stud road demarcation every 1m, stainless steel
 - 1. Steel vehicle bollard, 900mm high, circular section, powder coated in various colours
 - 2. Lamp post
 - 3. Cotinary lighting
 - 4. Timber bench
 - 5. Tree pit
 - 6. Timber seating steps
 - 7. Bespoke folded steel benches, powder coated: various colours, 500mm high
 - 8. Feature artwork
 - 9. Steel railing, powder coated: black, 900mm high
 - 10. Bike Rack
 - 11. Tactile Paving, 300x300x50mm, blue clay paver material to match adjacent paving
 - 12. Ramp
 - 13. Play equipment
 - 14. In situ concrete slabs, brush finished in different directions, 10mm weathering steel edges
 - 15. Bio-Diverse Roof
 - 16. Brick bin store
 - 17. Undercroft Parking Vent
 - 18. Two tier cycle parking stand (32 spcs)
 - 19. 1.8m Metal Fence
 - 20. 1.8m Brick Wall
 - Proposed Tree

Tree Planting

Trees			
Number	Abbreviation	Species	Height
9 No.	BEPE	Betula pendula	1.5-2.0m
2 No.	BET JAC	Betula utilis jacquemontii	4.0-5.0m
6 No.	AI	Amelanchier lamarckii	2.5-3.0m
2 No.	RHTY	Rhus typhina	2.5-3.0m
12 No.	PRU TIB	Prunus serrula tibetica	3.0m

Conifers			
Number	Abbreviation	Species	Height
7 No.	Gb	Ginkgo biloba	

Street Planting Mix

Shrubs			
Number	Abbreviation	Species	Density
117 No.	PAC TER	Pachysandra terminalis	5/m ²
40 No.	PeBS	Perovskia 'Blue Spire'	5/m ²

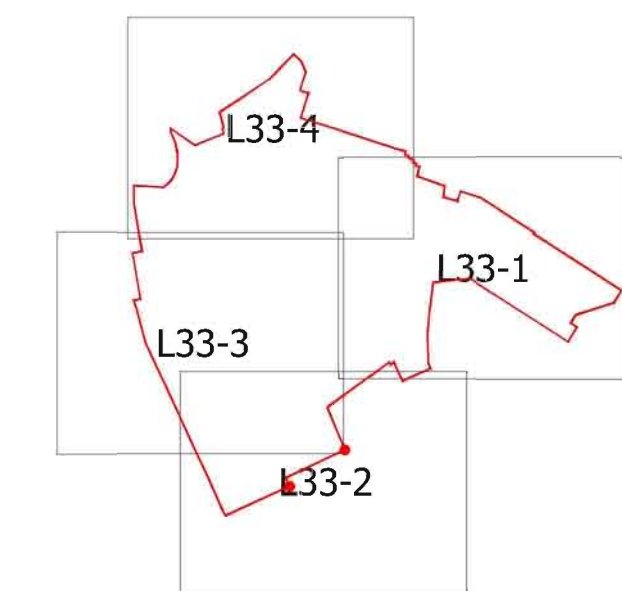
Herbaceous			
Number	Abbreviation	Species	Density
84 No.	ACH PAS	Achillea millefolium 'Summer Pastels'	5/m ²
62 No.	CARTE	Carex testacea	5/m ²
62 No.	ECH PUR	Echinacea purpurea	5/m ²
73 No.	ECHD	Euphorbia characias 'Humpty Dumpty'	5/m ²
62 No.	HEL ORI	Helleborus orientalis	5/m ²
40 No.	HeM	Heuchera 'Marmalade'	5/m ²
62 No.	SAL PUR	Salvia officinalis 'Purpurascens'	5/m ²
62 No.	SED HER	Sedum 'Herbstfreude'	5/m ²

Climbers			
Number	Abbreviation	Species	Density
117 No.	HED HEL	Hedera helix	5/m ²
62 No.	HED CRI	Hedera helix 'Parsley Crested'	5/m ²

Bulbs			
Number	Abbreviation	Species	Density
17 No.	Alg	Allium giganteum	5/m ²

Ferns			
Number	Abbreviation	Species	Density
27 No.	DRY WAL	Dryopteris wallichiana	5/m ²

Grasses			
Number	Abbreviation	Species	Density
62 No.	HAK MAC	Hakonechloa macra	5/m ²
62 No.	LIMU	Liriope muscari	5/m ²
96 No.	She	Sporobolus heterolepis	5/m ²
117 No.	Ste	Stipa tenuissima	5/m ²



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green

Drawing Title
Detailed Landscape Masterplan
Sheet 3 of 5

Date
07.01.16

Scale
1:100@A0

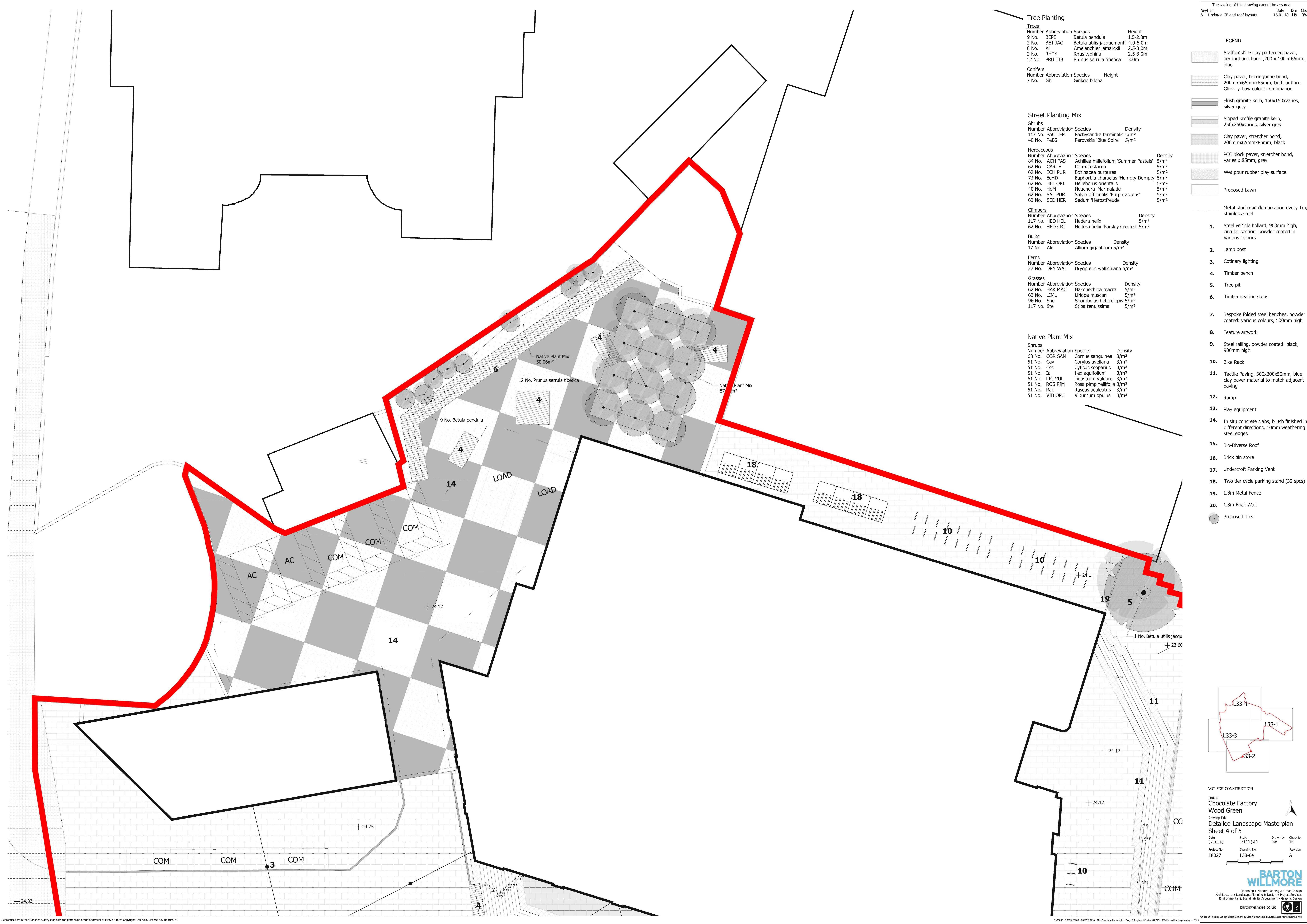
Project No
18027

Drawing No
L33-03

Drawn by
JH

Check by
JH

Revision
A



Tree Planting

Trees	Number	Abbreviation	Species	Height
9 No.	BEPE	Betula pendula		1.5-2.0m
2 No.	BET JAC	Betula utilis jacquemontii		4.0-5.0m
6 No.	AI	Amelanchier lamarckii		2.5-3.0m
2 No.	RHTY	Rhus typhina		2.5-3.0m
12 No.	PRU TIB	Prunus serrula tibetica		3.0m

Conifers	Number	Abbreviation	Species	Height
7 No.	Gb	Ginkgo biloba		

Street Planting Mix

Shrubs	Number	Abbreviation	Species	Density
117 No.	PAC TER	Pachysandra terminalis		5/m ²
40 No.	PeBS	Perovskia 'Blue Spire'		5/m ²

Herbaceous	Number	Abbreviation	Species	Density
84 No.	ACH PAS	Achillea millefolium 'Summer Pastels'		5/m ²
62 No.	CARTE	Carex testacea		5/m ²
62 No.	ECH PUR	Echinacea purpurea		5/m ²
73 No.	EHID	Euphorbia characias 'Humpty Dumpty'		5/m ²
62 No.	HEL ORI	Helleborus orientalis		5/m ²
40 No.	HeM	Heuchera 'Marmalade'		5/m ²
62 No.	SAL PUR	Salvia officinalis 'Purpurascens'		5/m ²
62 No.	SED HER	Sedum 'Herbstfreude'		5/m ²

Climbers	Number	Abbreviation	Species	Density
117 No.	HED HEL	Hedera helix		5/m ²
62 No.	HED CRI	Hedera helix 'Parsley Crested'		5/m ²

Bulbs	Number	Abbreviation	Species	Density
17 No.	Alg	Allium giganteum		5/m ²

Ferns	Number	Abbreviation	Species	Density
27 No.	DRY WAL	Dryopteris wallichiana		5/m ²

Grasses	Number	Abbreviation	Species	Density
62 No.	HAK MAC	Hakonechloa macra		5/m ²
62 No.	LIMU	Liriope muscari		5/m ²
96 No.	She	Sporobolus heterolepis		5/m ²
117 No.	Ste	Stipa tenuissima		5/m ²

Native Plant Mix

Shrubs	Number	Abbreviation	Species	Density
68 No.	COR SAN	Cornus sanguinea		3/m ²
51 No.	Cav	Corylus avellana		3/m ²
51 No.	Csc	Cytisus scoparius		3/m ²
51 No.	Ia	Ilex aquifolium		3/m ²
51 No.	LIG VUL	Ligustrum vulgare		3/m ²
51 No.	ROS PIM	Rosa pimpinellifolia		3/m ²
51 No.	Rac	Ruscus aculeatus		3/m ²
51 No.	VIB OPU	Viburnum opulus		3/m ²

LEGEND

- Staffordshire clay patterned paver, herringbone bond ,200 x 100 x 65mm, blue
- Clay paver, herringbone bond, 200mmx65mmx85mm, buff, auburn, Olive, yellow colour combination
- Flush granite kerb, 150x150xvaries, silver grey
- Sloped profile granite kerb, 250x250xvaries, silver grey
- Clay paver, stretcher bond, 200mmx65mmx85mm, black
- PCC block paver, stretcher bond, varies x 85mm, grey
- Wet pour rubber play surface
- Proposed Lawn

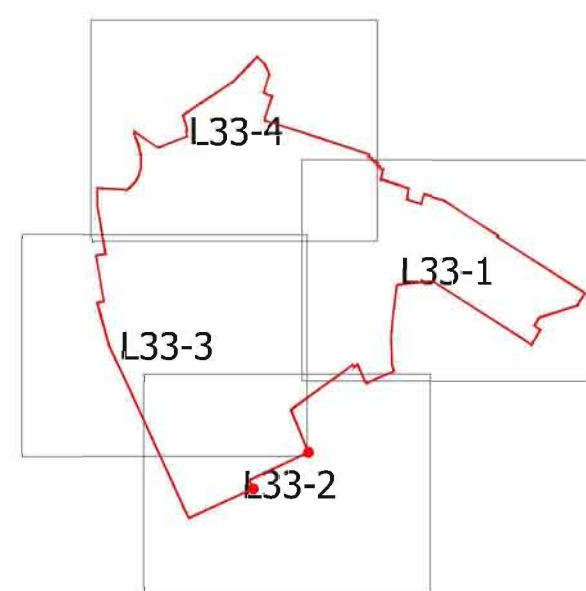
- Metal stud road demarcation every 1m, stainless steel

- Steel vehicle bollard, 900mm high, circular section, powder coated in various colours
- Lamp post
- Cotinary lighting
- Timber bench
- Tree pit
- Timber seating steps

- Bespoke folded steel benches, powder coated: various colours, 500mm high
- Feature artwork
- Steel railing, powder coated: black, 900mm high
- Bike Rack
- Tactile Paving, 300x300x50mm, blue clay paver material to match adjacent paving

- Ramp
- Play equipment
- In situ concrete slabs, brush finished in different directions, 10mm weathering steel edges
- Bio-Diverse Roof
- Brick bin store
- Undercroft Parking Vent
- Two tier cycle parking stand (32 spcs)
- 1.8m Metal Fence
- 1.8m Brick Wall

- Proposed Tree



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green

Drawing Title
Detailed Landscape Masterplan
Sheet 4 of 5

Date 07.01.16 Scale 1:100@A0 Drawn by JH Check by JH
Project No 18027 Drawing No L33-04 Revision A

BARTON WILLMORE

Planning • Master Planning & Urban Design
Architecture • Landscape Planning & Design • Project Services
Environmental & Sustainability Assessment • Graphic Design
bartonwillmore.co.uk

- LEGEND
- Staffordshire clay patterned paver, herringbone bond ,200 x 100 x 65mm, blue
 - Clay paver, herringbone bond, 200mmx65mmx85mm, buff, auburn, Olive, yellow colour combination
 - Flush granite kerb, 150x150xvaries, silver grey
 - Sloped profile granite kerb, 250x250xvaries, silver grey
 - Clay paver, stretcher bond, 200mmx65mmx85mm, black
 - PCC block paver, stretcher bond, varies x 85mm, grey
 - Wet pour rubber play surface
 - Proposed Lawn
 - Metal stud road demarcation every 1m, stainless steel
 - 1. Steel vehicle bollard, 900mm high, circular section, powder coated in various colours
 - 2. Lamp post
 - 3. Cotinary lighting
 - 4. Timber bench
 - 5. Tree pit
 - 6. Timber seating steps
 - 7. Bespoke folded steel benches, powder coated: various colours, 500mm high
 - 8. Feature artwork
 - 9. Steel railing, powder coated: black, 900mm high
 - 10. Bike Rack
 - 11. Tactile Paving, 300x300x50mm, blue clay paver material to match adjacent paving
 - 12. Ramp
 - 13. Play equipment
 - 14. In situ concrete slabs, brush finished in different directions, 10mm weathering steel edges
 - 15. Bio-Diverse Roof
 - 16. Brick bin store
 - 17. Undercroft Parking Vent
 - 18. Two tier cycle parking stand (32 spcs)
 - 19. 1.8m Metal Fence
 - 20. 1.8m Brick Wall
 - Proposed Tree

Tree Planting

Number	Abbreviation	Species	Height
9 No.	BEPE	Betula pendula	1.5-2.0m
2 No.	BET JAC	Betula utilis jacquemontii	4.0-5.0m
6 No.	AI	Amelanchier lamarckii	2.5-3.0m
2 No.	RHTY	Rhus typhina	2.5-3.0m
12 No.	PRU TIB	Prunus serrula tibetica	3.0m

Number	Abbreviation	Species	Height
7 No.	Gb	Ginkgo biloba	

Street Planting Mix

Number	Abbreviation	Species	Density
117 No.	PAC TER	Pachysandra terminalis	5/m ²
40 No.	PeBS	Perovskia 'Blue Spire'	5/m ²

Number	Abbreviation	Species	Density
84 No.	ACH PAS	Achillea millefolium 'Summer Pastels'	5/m ²
62 No.	CARTE	Carex testacea	5/m ²
62 No.	ECH PUR	Echinacea purpurea	5/m ²
73 No.	ECHD	Euphorbia characias 'Humpty Dumpty'	5/m ²
62 No.	HEL ORI	Heliothis orientalis	5/m ²
40 No.	HeM	Heuchera 'Marmalade'	5/m ²
62 No.	SAL PUR	Salvia officinalis 'Purpurascens'	5/m ²
62 No.	SED HER	Sedum 'Herbstfreude'	5/m ²

Number	Abbreviation	Species	Density
117 No.	HED HEL	Hedera helix	5/m ²
62 No.	HED CRI	Hedera helix 'Parsley Crested'	5/m ²

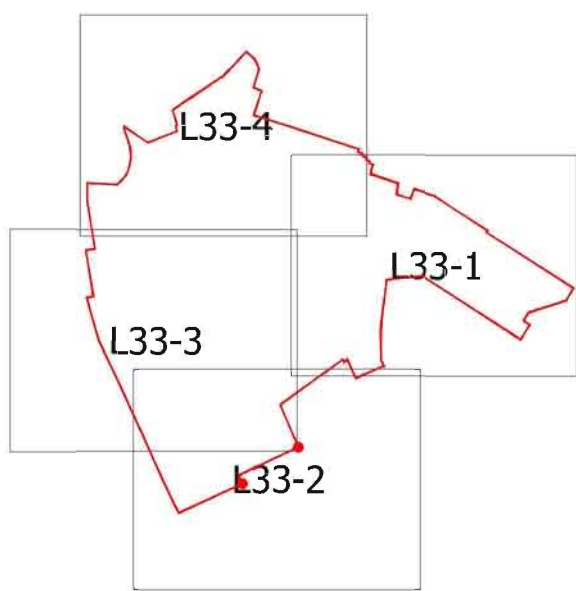
Number	Abbreviation	Species	Density
17 No.	Alg	Allium giganteum	5/m ²

Number	Abbreviation	Species	Density
27 No.	DRY WAL	Dryopteris wallchiana	5/m ²

Number	Abbreviation	Species	Density
62 No.	HAK MAC	Hakonechloa macra	5/m ²
62 No.	LIMU	Liriope muscari	5/m ²
96 No.	She	Sporobolus heterolepis	5/m ²
117 No.	Ste	Stipa tenuissima	5/m ²

Native Plant Mix

Number	Abbreviation	Species	Density
68 No.	COR SAN	Cornus sanguinea	3/m ²
51 No.	Cav	Corylus avellana	3/m ²
51 No.	Csc	Cytisus scoparius	3/m ²
51 No.	Ia	Ilex aquifolium	3/m ²
51 No.	LIG VUL	Ligustrum vulgare	3/m ²
51 No.	ROS PIM	Rosa pinnatifolia	3/m ²
51 No.	Rac	Ruscus aculeatus	3/m ²
51 No.	VIB OPU	Viburnum opulus	3/m ²



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green
Drawing Title
Detailed Landscape Masterplan
General Arrangement
Date
07.01.16
Scale
1:250@A0
Project No
18027
Drawing No
L33-06
Drawn by
JH
Check by
JH
Revision
A

- LEGEND
- Staffordshire clay patterned paver, herringbone bond, 200 x 100 x 65mm, blue
 - Clay paver, herringbone bond, 200mmx65mmx85mm, buff, auburn, olive, yellow colour combination
 - Flush granite kerb, 150x150xvaries, silver grey
 - Sloped profile granite kerb, 250x250xvaries, silver grey
 - Clay paver, stretcher bond, 200mmx65mmx85mm, black
 - PCC block paver, stretcher bond, varies x 95mm, grey
 - Wet pour rubber play surface
 - Proposed Lawn
 - Metal stud road demarcation every 1m, stainless steel
 - 1. Steel vehicle bollard, 900mm high, circular section, powder coated in various colours
 - 2. Lamp post
 - 3. Cotnary lighting
 - 4. Timber bench
 - 5. Tree pit
 - 6. Timber seating steps
 - 7. Bespoke folded steel benches, powder coated: various colours, 500mm high
 - 8. Feature artwork
 - 9. Steel railing, powder coated: black, 900mm high
 - 10. Bike Rack
 - 11. Tactile Paving, 300x300x50mm, blue clay paver material to match adjacent paving
 - 12. Ramp
 - 13. Play equipment
 - 14. In situ concrete slabs, brush finished in different directions, 10mm weathering steel edges
 - 15. Bio-Diverse Roof
 - 16. Brick bin store
 - 17. Undercroft Parking Vent
 - 18. Two tier cycle parking stand (32 spcs)
 - 19. 1.8m Metal Fence
 - 20. 1.8m Brick Wall
 - Proposed Tree

Tree Planting

Number	Abbreviation	Species	Height
9 No.	BEPE	Betula pendula	1.5-2.0m
2 No.	BET JAC	Betula utilis jacquemontii	4.0-5.0m
6 No.	AL	Amelanchier lamarckii	2.5-3.0m
2 No.	RHTY	Rhus typhina	2.5-3.0m
12 No.	PRU TIB	Prunus serrula tibetica	3.0m

Conifers

Number	Abbreviation	Species	Height
7 No.	GO	Ginkgo biloba	

Street Planting Mix

Trees

Number	Abbreviation	Species	Density
2 No.	AL	Amelanchier lamarckii	Counted

Shrubs

Number	Abbreviation	Species	Density
122 No.	PAC TER	Pachysandra terminalis	5/m²
41 No.	PeBS	Perovskia 'Blue Spire'	5/m²

Herbaceous

Number	Abbreviation	Species	Density
88 No.	ACH PAS	Achillea millefolium 'Summer Pastels'	5/m²
64 No.	CARTE	Carex testacea	5/m²
64 No.	ECH PUR	Echinacea purpurea	5/m²
76 No.	ECHD	Euphorbia characias 'Humpty Dumpty'	5/m²
64 No.	HEL ORI	Heleborus orientalis	5/m²
41 No.	HeM	Heuchera 'Marmalade'	5/m²
64 No.	SAL PUR	Salvia officinalis 'Purpurascens'	5/m²
64 No.	SED HER	Sedum 'Herbstfreude'	5/m²

Climbers

Number	Abbreviation	Species	Density
122 No.	HED HEL	Hedera helix 'Parsley Crested'	5/m²
64 No.	HED CRJ	Hedera helix 'Crested'	5/m²

Bulbs

Number	Abbreviation	Species	Density
17 No.	Alig	Allium giganteum	5/m²

Ferns

Number	Abbreviation	Species	Density
28 No.	DRY WAL	Dryopteris wallichiana	5/m²

Grasses

Number	Abbreviation	Species	Density
64 No.	HAK MAC	Hakonechloa macra	5/m²
64 No.	LIMU	Liriope muscari	5/m²
100 No.	She	Sporobolus heterolepis	5/m²
122 No.	Ste	Stipa tenuissima	5/m²

Native Plant Mix

Shrubs

Number	Abbreviation	Species	Density
68 No.	COR SAN	Cornus sanguinea	3/m²
51 No.	Cov	Corylus avellana	3/m²
51 No.	Csc	Cytisus scoparius	3/m²
51 No.	la	Ilex aquifolium	3/m²
51 No.	LIG VUL	Ligustrum vulgare	3/m²
51 No.	ROS PTM	Rosa pimpinellifolia	3/m²
51 No.	Rac	Ruscus aculeatus	3/m²
51 No.	VIB OPU	Viburnum opulus	3/m²



NOT FOR CONSTRUCTION

Project
Chocolate Factory
Wood Green

Drawing Title
Detailed Landscape Masterplan
General Arrangement

Date
07 01 16

Scale
1:250@A0

Drawn by
JH

Check by
JH

Project No
18027

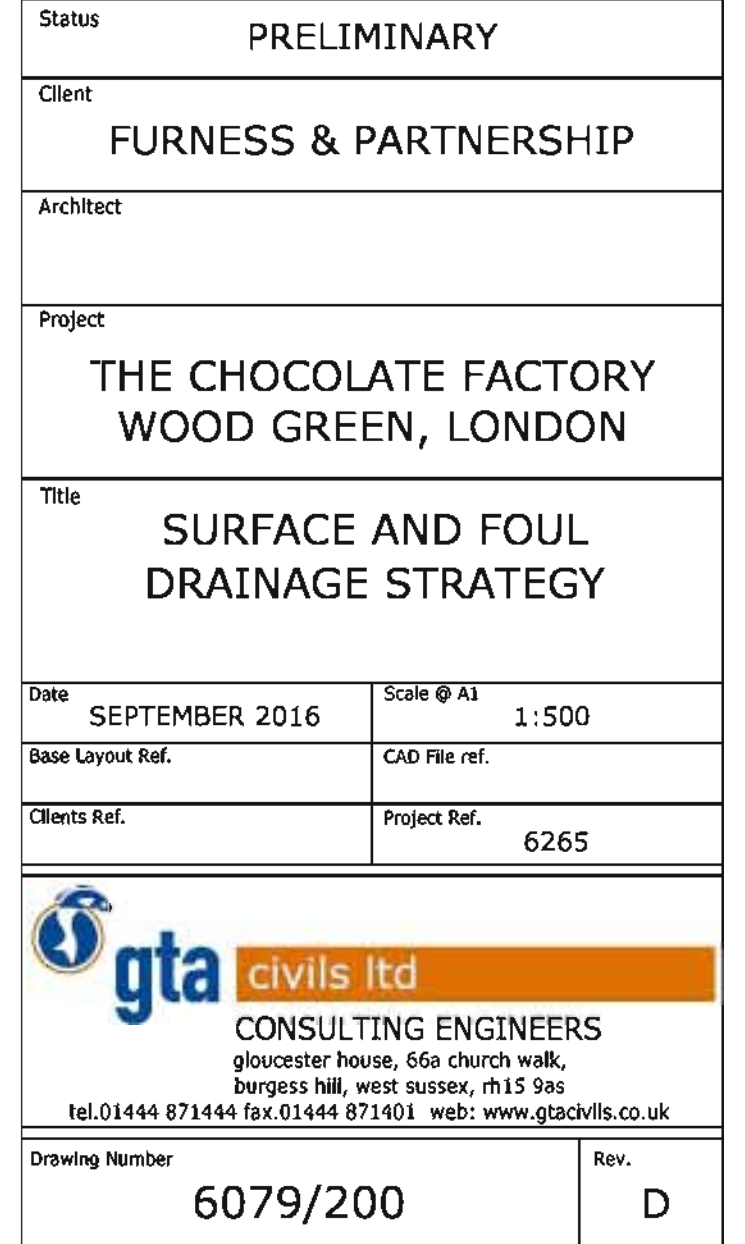
Drawing No
L33-06

Revision
A

BARTON WILLMORE

Resilient + Robust Planning & Urban Design
Architecture + Landscape Planning & Design + Project Services
Environmental & Sustainability Assessment + Graphic Design
bartonwillmore.co.uk

Office at Reading: London South Central Rail, Great Ouse Valley, Reading, UK



Appendix E

Drainage Calculations

GTA Civils Ltd		Page 1												
66a Church Walk Burgess Hill West Sussex RH15 9AS														
Date 05/05/2017 13:57 File	Designed by CSLade Checked by													
Micro Drainage		Source Control 2015.1												
<u>ICP SUDS Mean Annual Flood</u> Input <table><tr><td>Return Period (years)</td><td>100</td><td>Soil</td><td>0.500</td></tr><tr><td>Area (ha)</td><td>0.277</td><td>Urban</td><td>0.750</td></tr><tr><td>SAAR (mm)</td><td>667</td><td>Region Number</td><td>Region 6</td></tr></table> Results 1/s QBAR Rural 1.4 QBAR Urban 3.8 Q100 years 7.8 Q1 year 3.3 Q30 years 6.7 Q100 years 7.8			Return Period (years)	100	Soil	0.500	Area (ha)	0.277	Urban	0.750	SAAR (mm)	667	Region Number	Region 6
Return Period (years)	100	Soil	0.500											
Area (ha)	0.277	Urban	0.750											
SAAR (mm)	667	Region Number	Region 6											
©1982-2015 XP Solutions														

GTA Civils Ltd		Page 1
Gloucester House 66a Church Walk Burgess Hill RH15 9AS		
Date 10/10/2016 16:36 File AT2.srcx	Designed by jpakenham Checked by	
Micro Drainage Source Control 2013.1		
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 1 Soil 0.500 Area (ha) 0.411 Urban 0.750 SAAR (mm) 667 Region Number Region 6 Results l/s QBAR Rural 2.1 QBAR Urban 5.7 Q1 year 4.8 Q1 year 4.8 Q30 years 9.9 Q100 years 11.5		
©1982-2012 Micro Drainage Ltd		

GTA Civils Ltd		Page 1
Gloucester House 66a Church Walk Burgess Hill RH15 9AS		
Date 10/10/2016 16:37 File AT3.srcx	Designed by jpakenham Checked by	
Micro Drainage	Source Control 2013.1	
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 100 Soil 0.500 Area (ha) 0.170 Urban 0.750 SAAR (mm) 667 Region Number Region 6 Results l/s QBAR Rural 0.9 QBAR Urban 2.4 Q100 years 4.8 Q1 year 2.0 Q30 years 4.1 Q100 years 4.8		
©1982-2012 Micro Drainage Ltd		

GTA Civils Ltd		Page 1
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 1	
Date 06.09.16	Designed by CS	
File AT1_A.srcx	Checked by	
Micro Drainage		Source Control 2015.1

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 289 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.805	0.805	0.0	3.8	3.8	66.9	O K
30 min Summer	1.026	1.026	0.0	3.8	3.8	85.3	O K
60 min Summer	1.214	1.214	0.0	3.8	3.8	100.9	O K
120 min Summer	1.336	1.336	0.0	3.8	3.8	111.1	O K
180 min Summer	1.352	1.352	0.0	3.8	3.8	112.4	O K
240 min Summer	1.326	1.326	0.0	3.8	3.8	110.2	O K
360 min Summer	1.263	1.263	0.0	3.8	3.8	105.0	O K
480 min Summer	1.203	1.203	0.0	3.8	3.8	100.0	O K
600 min Summer	1.143	1.143	0.0	3.8	3.8	95.0	O K
720 min Summer	1.085	1.085	0.0	3.8	3.8	90.2	O K
960 min Summer	0.974	0.974	0.0	3.8	3.8	80.9	O K
1440 min Summer	0.774	0.774	0.0	3.8	3.8	64.3	O K
2160 min Summer	0.532	0.532	0.0	3.8	3.8	44.2	O K
2880 min Summer	0.359	0.359	0.0	3.8	3.8	29.8	O K
4320 min Summer	0.197	0.197	0.0	3.7	3.7	16.4	O K
5760 min Summer	0.159	0.159	0.0	3.0	3.0	13.2	O K
7200 min Summer	0.133	0.133	0.0	2.5	2.5	11.1	O K
8640 min Summer	0.115	0.115	0.0	2.2	2.2	9.6	O K
10080 min Summer	0.102	0.102	0.0	1.9	1.9	8.5	O K
15 min Winter	0.907	0.907	0.0	3.8	3.8	75.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.494	0.0	71.1	25
30 min Summer	88.809	0.0	91.9	39
60 min Summer	54.549	0.0	112.9	68
120 min Summer	32.365	0.0	134.0	124
180 min Summer	23.543	0.0	146.2	182
240 min Summer	18.683	0.0	154.7	230
360 min Summer	13.462	0.0	167.2	286
480 min Summer	10.666	0.0	176.6	348
600 min Summer	8.898	0.0	184.2	414
720 min Summer	7.671	0.0	190.5	482
960 min Summer	6.064	0.0	200.8	616
1440 min Summer	4.349	0.0	216.0	878
2160 min Summer	3.115	0.0	232.1	1240
2880 min Summer	2.456	0.0	244.0	1588
4320 min Summer	1.755	0.0	261.5	2212
5760 min Summer	1.381	0.0	274.5	2944
7200 min Summer	1.147	0.0	284.8	3672
8640 min Summer	0.985	0.0	293.5	4408
10080 min Summer	0.866	0.0	301.0	5136
15 min Winter	137.494	0.0	79.6	25

GTA Civils Ltd		Page 2
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 1	
Date 06.09.16 File AT1_A.srcx	Designed by CS Checked by	

Micro Drainage Source Control 2015.1

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	1.158	1.158	0.0	3.8	3.8	96.2	O K
60 min Winter	1.376	1.376	0.0	3.8	3.8	114.4	O K
120 min Winter	1.529	1.529	0.0	3.8	3.8	127.1	O K
180 min Winter	1.562	1.562	0.0	3.8	3.8	129.9	O K
240 min Winter	1.547	1.547	0.0	3.8	3.8	128.6	O K
360 min Winter	1.466	1.466	0.0	3.8	3.8	121.9	O K
480 min Winter	1.388	1.388	0.0	3.8	3.8	115.4	O K
600 min Winter	1.306	1.306	0.0	3.8	3.8	108.5	O K
720 min Winter	1.222	1.222	0.0	3.8	3.8	101.6	O K
960 min Winter	1.057	1.057	0.0	3.8	3.8	87.8	O K
1440 min Winter	0.756	0.756	0.0	3.8	3.8	62.9	O K
2160 min Winter	0.406	0.406	0.0	3.8	3.8	33.8	O K
2880 min Winter	0.210	0.210	0.0	3.8	3.8	17.4	O K
4320 min Winter	0.149	0.149	0.0	2.8	2.8	12.3	O K
5760 min Winter	0.118	0.118	0.0	2.2	2.2	9.8	O K
7200 min Winter	0.098	0.098	0.0	1.9	1.9	8.1	O K
8640 min Winter	0.084	0.084	0.0	1.6	1.6	7.0	O K
10080 min Winter	0.074	0.074	0.0	1.4	1.4	6.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	88.809	0.0	102.9	39
60 min Winter	54.549	0.0	126.5	68
120 min Winter	32.365	0.0	150.1	124
180 min Winter	23.543	0.0	163.7	180
240 min Winter	18.683	0.0	173.3	234
360 min Winter	13.462	0.0	187.3	330
480 min Winter	10.666	0.0	197.8	376
600 min Winter	8.898	0.0	206.3	452
720 min Winter	7.671	0.0	213.4	526
960 min Winter	6.064	0.0	225.0	672
1440 min Winter	4.349	0.0	242.0	940
2160 min Winter	3.115	0.0	260.0	1284
2880 min Winter	2.456	0.0	273.3	1536
4320 min Winter	1.755	0.0	292.9	2232
5760 min Winter	1.381	0.0	307.4	2944
7200 min Winter	1.147	0.0	319.0	3680
8640 min Winter	0.985	0.0	328.7	4408
10080 min Winter	0.866	0.0	337.1	5088

GTA Civils Ltd		Page 3
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 1	
Date 06.09.16 File AT1_A.srcx	Designed by CS Checked by	

Micro Drainage Source Control 2015.1

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.700	Shortest Storm (mins)	15
Ratio R	0.438	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.276

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To:	From:	To:	From:	To:
	(ha)		(ha)		(ha)
0	4 0.092	4	8 0.092	8	12 0.092

GTA Civils Ltd		Page 4
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 1	
Date 06.09.16 File AT1_A.srcx	Designed by CS Checked by	

Micro Drainage Source Control 2015.1

Model Details

Storage is Online Cover Level (m) 1.600

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	87.5	87.5	1.700	0.0	178.7
1.600	87.5	178.7			

Pump Outflow Control

Invert Level (m) 0.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	3.8000	1.800	3.8000	3.400	3.8000	5.000	3.8000
0.400	3.8000	2.000	3.8000	3.600	3.8000	5.200	3.8000
0.600	3.8000	2.200	3.8000	3.800	3.8000	5.400	3.8000
0.800	3.8000	2.400	3.8000	4.000	3.8000	5.600	3.8000
1.000	3.8000	2.600	3.8000	4.200	3.8000	5.800	3.8000
1.200	3.8000	2.800	3.8000	4.400	3.8000	6.000	3.8000
1.400	3.8000	3.000	3.8000	4.600	3.8000		
1.600	3.8000	3.200	3.8000	4.800	3.8000		

GTA Civils Ltd		Page 1
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 2	
Date 06.09.16 File AT2.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 286 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	1.137	1.137	0.0	5.7	5.7	99.4	O K
30 min Summer	1.446	1.446	0.0	5.7	5.7	126.4	O K
60 min Summer	1.708	1.708	0.0	5.7	5.7	149.3	O K
120 min Summer	1.870	1.870	0.0	5.7	5.7	163.5	O K
180 min Summer	1.884	1.884	0.0	5.7	5.7	164.6	O K
240 min Summer	1.838	1.838	0.0	5.7	5.7	160.7	O K
360 min Summer	1.739	1.739	0.0	5.7	5.7	152.0	O K
480 min Summer	1.647	1.647	0.0	5.7	5.7	143.9	O K
600 min Summer	1.559	1.559	0.0	5.7	5.7	136.2	O K
720 min Summer	1.474	1.474	0.0	5.7	5.7	128.9	O K
960 min Summer	1.315	1.315	0.0	5.7	5.7	114.9	O K
1440 min Summer	1.028	1.028	0.0	5.7	5.7	89.9	O K
2160 min Summer	0.680	0.680	0.0	5.7	5.7	59.4	O K
2880 min Summer	0.431	0.431	0.0	5.7	5.7	37.7	O K
4320 min Summer	0.201	0.201	0.0	5.7	5.7	17.6	O K
5760 min Summer	0.160	0.160	0.0	4.6	4.6	14.0	O K
7200 min Summer	0.134	0.134	0.0	3.8	3.8	11.7	O K
8640 min Summer	0.115	0.115	0.0	3.3	3.3	10.1	O K
10080 min Summer	0.102	0.102	0.0	2.9	2.9	8.9	O K
15 min Winter	1.281	1.281	0.0	5.7	5.7	112.0	O K
30 min Winter	1.634	1.634	0.0	5.7	5.7	142.8	O K
60 min Winter	1.939	1.939	0.0	5.7	5.7	169.5	O K
120 min Winter	2.147	2.147	0.0	5.7	5.7	187.6	O K
180 min Winter	2.185	2.185	0.0	5.7	5.7	191.0	O K
240 min Winter	2.156	2.156	0.0	5.7	5.7	188.4	O K
360 min Winter	2.028	2.028	0.0	5.7	5.7	177.3	O K
480 min Winter	1.910	1.910	0.0	5.7	5.7	166.9	O K
600 min Winter	1.789	1.789	0.0	5.7	5.7	156.3	O K
720 min Winter	1.666	1.666	0.0	5.7	5.7	145.6	O K
960 min Winter	1.428	1.428	0.0	5.7	5.7	124.8	O K
1440 min Winter	0.995	0.995	0.0	5.7	5.7	87.0	O K
2160 min Winter	0.493	0.493	0.0	5.7	5.7	43.1	O K
2880 min Winter	0.214	0.214	0.0	5.7	5.7	18.7	O K
4320 min Winter	0.148	0.148	0.0	4.2	4.2	13.0	O K
5760 min Winter	0.117	0.117	0.0	3.3	3.3	10.2	O K
7200 min Winter	0.098	0.098	0.0	2.8	2.8	8.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.494	0.0	106.0	25
30 min Summer	88.809	0.0	136.9	39
60 min Summer	54.549	0.0	168.1	68
120 min Summer	32.365	0.0	199.5	124
180 min Summer	23.543	0.0	217.7	182
240 min Summer	18.683	0.0	230.4	228
360 min Summer	13.462	0.0	249.0	284
480 min Summer	10.666	0.0	263.0	348
600 min Summer	8.898	0.0	274.3	414
720 min Summer	7.671	0.0	283.7	482
960 min Summer	6.064	0.0	299.1	616
1440 min Summer	4.349	0.0	321.8	876
2160 min Summer	3.115	0.0	345.6	1240
2880 min Summer	2.456	0.0	363.3	1584
4320 min Summer	1.755	0.0	389.4	2208
5760 min Summer	1.381	0.0	408.7	2936
7200 min Summer	1.147	0.0	424.2	3672
8640 min Summer	0.985	0.0	437.1	4408
10080 min Summer	0.866	0.0	448.2	5136
15 min Winter	137.494	0.0	118.7	25
30 min Winter	88.809	0.0	153.3	39
60 min Winter	54.549	0.0	188.3	68
120 min Winter	32.365	0.0	223.5	124
180 min Winter	23.543	0.0	243.8	180
240 min Winter	18.683	0.0	258.0	234
360 min Winter	13.462	0.0	278.8	328
480 min Winter	10.666	0.0	294.6	374
600 min Winter	8.898	0.0	307.2	450
720 min Winter	7.671	0.0	317.8	526
960 min Winter	6.064	0.0	335.0	670
1440 min Winter	4.349	0.0	360.4	938
2160 min Winter	3.115	0.0	387.1	1284
2880 min Winter	2.456	0.0	406.9	1532
4320 min Winter	1.755	0.0	436.2	2208
5760 min Winter	1.381	0.0	457.8	2936
7200 min Winter	1.147	0.0	475.1	3672

GTA Civils Ltd		Page 2
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 2	
Date 06.09.16 File AT2.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
8640 min Winter	0.084	0.084	0.0	2.4	2.4	7.3	O K
10080 min Winter	0.074	0.074	0.0	2.1	2.1	6.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Winter	0.985	0.0	489.6	4400
10080 min Winter	0.866	0.0	502.0	5136

GTA Civils Ltd		Page 3
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 2	
Date 06.09.16 File AT2.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Rainfall Details

Rainfall Model	FSR	Ratio R	0.438	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Shortest Storm (mins)	15
Region	England and Wales	Winter Storms	Yes	Longest Storm (mins)	10080
M5-60 (mm)	20.700	Cv (Summer)	0.750	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.411

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To: (ha)	From:	To: (ha)	From:	To: (ha)
0	4 0.137	4	8 0.137	8	12 0.137

GTA Civils Ltd		Page 4
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 2	
Date 06.09.16 File AT2.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Model Details

Storage is Online Cover Level (m) 2.200

Cellular Storage Structure

Invert Level (m) 0.000 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	92.0	92.0	2.200	92.0	210.8	2.300	0.0	210.8

Pump Outflow Control

Invert Level (m) 0.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	5.7000	1.200	5.7000	2.200	5.7000	3.200	5.7000	4.200	5.7000	5.200	5.7000
0.400	5.7000	1.400	5.7000	2.400	5.7000	3.400	5.7000	4.400	5.7000	5.400	5.7000
0.600	5.7000	1.600	5.7000	2.600	5.7000	3.600	5.7000	4.600	5.7000	5.600	5.7000
0.800	5.7000	1.800	5.7000	2.800	5.7000	3.800	5.7000	4.800	5.7000	5.800	5.7000
1.000	5.7000	2.000	5.7000	3.000	5.7000	4.000	5.7000	5.000	5.7000	6.000	5.7000

GTA Civils Ltd		Page 1
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 3	
Date 06.09.16 File AT3.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 297 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max E Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	0.400	0.400	0.0	2.4	2.4	41.8	O K
30 min Summer	0.509	0.509	0.0	2.4	2.4	53.2	O K
60 min Summer	0.603	0.603	0.0	2.4	2.4	63.0	O K
120 min Summer	0.668	0.668	0.0	2.4	2.4	69.8	O K
180 min Summer	0.681	0.681	0.0	2.4	2.4	71.1	O K
240 min Summer	0.673	0.673	0.0	2.4	2.4	70.3	O K
360 min Summer	0.651	0.651	0.0	2.4	2.4	68.0	O K
480 min Summer	0.627	0.627	0.0	2.4	2.4	65.6	O K
600 min Summer	0.602	0.602	0.0	2.4	2.4	62.9	O K
720 min Summer	0.576	0.576	0.0	2.4	2.4	60.2	O K
960 min Summer	0.525	0.525	0.0	2.4	2.4	54.9	O K
1440 min Summer	0.432	0.432	0.0	2.4	2.4	45.2	O K
2160 min Summer	0.320	0.320	0.0	2.4	2.4	33.5	O K
2880 min Summer	0.243	0.243	0.0	2.4	2.4	25.4	O K
4320 min Summer	0.176	0.176	0.0	2.1	2.1	18.4	O K
5760 min Summer	0.144	0.144	0.0	1.7	1.7	15.1	O K
7200 min Summer	0.123	0.123	0.0	1.5	1.5	12.9	O K
8640 min Summer	0.108	0.108	0.0	1.3	1.3	11.3	O K
10080 min Summer	0.096	0.096	0.0	1.2	1.2	10.0	O K
15 min Winter	0.450	0.450	0.0	2.4	2.4	47.0	O K
30 min Winter	0.573	0.573	0.0	2.4	2.4	59.9	O K
60 min Winter	0.682	0.682	0.0	2.4	2.4	71.3	O K
120 min Winter	0.761	0.761	0.0	2.4	2.4	79.5	O K
180 min Winter	0.781	0.781	0.0	2.4	2.4	81.6	O K
240 min Winter	0.777	0.777	0.0	2.4	2.4	81.2	O K
360 min Winter	0.745	0.745	0.0	2.4	2.4	77.9	O K
480 min Winter	0.714	0.714	0.0	2.4	2.4	74.6	O K
600 min Winter	0.679	0.679	0.0	2.4	2.4	70.9	O K
720 min Winter	0.641	0.641	0.0	2.4	2.4	67.0	O K
960 min Winter	0.565	0.565	0.0	2.4	2.4	59.1	O K
1440 min Winter	0.425	0.425	0.0	2.4	2.4	44.5	O K
2160 min Winter	0.266	0.266	0.0	2.4	2.4	27.8	O K
2880 min Winter	0.191	0.191	0.0	2.3	2.3	19.9	O K
4320 min Winter	0.141	0.141	0.0	1.7	1.7	14.7	O K
5760 min Winter	0.113	0.113	0.0	1.4	1.4	11.8	O K
7200 min Winter	0.094	0.094	0.0	1.1	1.1	9.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	137.494	0.0	43.8	22
30 min Summer	88.809	0.0	56.6	36
60 min Summer	54.549	0.0	69.5	66
120 min Summer	32.365	0.0	82.5	122
180 min Summer	23.543	0.0	90.0	182
240 min Summer	18.683	0.0	95.2	224
360 min Summer	13.462	0.0	102.9	280
480 min Summer	10.666	0.0	108.7	344
600 min Summer	8.898	0.0	113.4	410
720 min Summer	7.671	0.0	117.3	478
960 min Summer	6.064	0.0	123.7	612
1440 min Summer	4.349	0.0	133.0	870
2160 min Summer	3.115	0.0	142.9	1236
2880 min Summer	2.456	0.0	150.3	1564
4320 min Summer	1.755	0.0	161.0	2252
5760 min Summer	1.381	0.0	169.0	2992
7200 min Summer	1.147	0.0	175.4	3680
8640 min Summer	0.985	0.0	180.8	4416
10080 min Summer	0.866	0.0	185.4	5144
15 min Winter	137.494	0.0	49.0	22
30 min Winter	88.809	0.0	63.4	36
60 min Winter	54.549	0.0	77.8	64
120 min Winter	32.365	0.0	92.4	122
180 min Winter	23.543	0.0	100.8	178
240 min Winter	18.683	0.0	106.7	232
360 min Winter	13.462	0.0	115.3	304
480 min Winter	10.666	0.0	121.8	372
600 min Winter	8.898	0.0	127.0	446
720 min Winter	7.671	0.0	131.4	522
960 min Winter	6.064	0.0	138.5	666
1440 min Winter	4.349	0.0	149.0	930
2160 min Winter	3.115	0.0	160.1	1276
2880 min Winter	2.456	0.0	168.3	1560
4320 min Winter	1.755	0.0	180.4	2292
5760 min Winter	1.381	0.0	189.3	3000
7200 min Winter	1.147	0.0	196.5	3744

GTA Civils Ltd		Page 2
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 3	
Date 06.09.16 File AT3.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Summary of Results for 100 year Return Period (+30%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
8640 min Winter	0.081	0.081	0.0	1.0	1.0	8.5	O K
10080 min Winter	0.072	0.072	0.0	0.9	0.9	7.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
8640 min Winter	0.985	0.0	202.5	4416
10080 min Winter	0.866	0.0	207.6	5144

GTA Civils Ltd		Page 3
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 3	
Date 06.09.16 File AT3.srcx	Designed by CS Checked by	
Micro Drainage	Source Control 2015.1	

Rainfall Details

Rainfall Model	FSR	Ratio R	0.438	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Shortest Storm (mins)	15
Region	England and Wales	Winter Storms	Yes	Longest Storm (mins)	10080
M5-60 (mm)	20.700	Cv (Summer)	0.750	Climate Change %	+30

Time Area Diagram

Total Area (ha) 0.170

Time (mins) Area			Time (mins) Area		
From:	To:	(ha)	From:	To:	(ha)
0	4	0.085	4	8	0.085

GTA Civils Ltd		Page 4
66a Church Walk Burgess Hill West Sussex RH15 9AS	6079 The Chocolate Factory Attenuation Tank 3	
Date 06.09.16 File AT3.srcx	Designed by CS Checked by	
Micro Drainage Source Control 2015.1		

Model Details

Storage is Online Cover Level (m) 0.800

Cellular Storage Structure

Invert Level (m) 0.000 Infiltration Coefficient Side (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Base (m/hr) 0.00000 Safety Factor 2.0

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	110.0	110.0	0.800	110.0	153.2	0.900	0.0	153.2

Pump Outflow Control

Invert Level (m) 0.000

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	2.4000	1.200	2.4000	2.200	2.4000	3.200	2.4000	4.200	2.4000	5.200	2.4000
0.400	2.4000	1.400	2.4000	2.400	2.4000	3.400	2.4000	4.400	2.4000	5.400	2.4000
0.600	2.4000	1.600	2.4000	2.600	2.4000	3.600	2.4000	4.600	2.4000	5.600	2.4000
0.800	2.4000	1.800	2.4000	2.800	2.4000	3.800	2.4000	4.800	2.4000	5.800	2.4000
1.000	2.4000	2.000	2.4000	3.000	2.4000	4.000	2.4000	5.000	2.4000	6.000	2.4000

Appendix F

Haringey Drainage Proforma

This form identifies the information required by Haringey LLFA to enable technical assessment of flows and volumes determined as part of drainage / SuDS calculations.

*Note : * means delete as appropriate; Numbers in brackets refer to accompanying notes.*

SITE DETAILS

- | | | |
|-----|--|--|
| 1.1 | Planning application reference | HGY/2017/3020 |
| 1.2 | Site name | The Chocolate Factory, Clarendon Road N22 6XJ 1.37ha |
| 1.3 | Total application site area ⁽¹⁾ | 1.37ha |

VOLUME AND FLOW DESIGN INPUTS

- | | | |
|------|---|--|
| 2.1 | Site area which is positively drained by SuDS ⁽²⁾ | 0.858ha |
| 2.2 | Impermeable area drained pre development ⁽³⁾ | 1.3ha approx.. |
| 2.3 | Impermeable area drained post development ⁽³⁾ | 0.858ha |
| 2.4 | Additional impermeable area | 0 |
| 2.5 | Predevelopment use ⁽⁴⁾ | Factory |
| 2.6 | Method of discharge ⁽⁵⁾ | pumped to SW sewer |
| 2.7 | Infiltration rate (where applicable) | n/a |
| 2.8 | Influencing factors on infiltration | London Clay – impervious stratum |
| 2.9 | Depth to highest known ground water table | not known at this stage |
| 2.10 | Coefficient of runoff (Cv) ⁽⁶⁾ | 0.75 summer events, 0.84 winter events: |
| 2.11 | Justification for Cv used | the drainage strategy will be amended with cv =1 |
| 2.12 | FEH rainfall data used (Note that FSR is no longer the preferred rainfall calculation method) | ~~Y/N~~ |
| 2.13 | Will storage be subject to surcharge by elevated water levels in watercourse / sewer | ~~Y/N~~ -varies |
| 2.14 | Invert level at outlet (invert level of final flow control) | varies – 4 outfalls |
| 2.15 | Design level used for surcharge water level at point of discharge ⁽¹⁴⁾ | varies |

CALCULATION OUTPUTS

Sections 3 and 4 refer to site where storage is provided by attenuation and / or partial infiltration. Where all flows are infiltrated to ground omit Sections 3 -5 and complete Section 6.

3.0 Defining rate of runoff from the site

- | | | |
|-----|---|---------------------------------|
| 3.1 | Max. discharge for 1 in 1 year rainfall | 11.9l/s for the site |
| 3.2 | Max. discharge for Q_{med} rainfall | 11.9 for the site (Q_{bar}) |
| 3.3 | Max. discharge for 1 in 30 year rainfall | 11.9 l/s for the site |
| 3.4 | Max. discharge for 1 in 100 year rainfall | 11.9l/s for the site |
| 3.5 | Max. discharge for 1 in 100 year plus 30%CC | 11.9 l/s for the site |

4.0 Attenuation storage to manage peak runoff rates from the site

- | | | |
|-----|---|--|
| 4.1 | Storage - 1 in 1 year | 0.037 m ³ /m ² ... (of developed impermeable area) |
| 4.2 | Storage - 1in 30 year ⁽⁷⁾ | 0.112m ³ /m ² |
| 4.3 | Storage - 1in 100 year ⁽⁸⁾ | 0.158m ³ /m ² |
| 4.4 | Storage - 1 in 100 year plus 30%CC ⁽⁹⁾ | m ³ 0.207m ³ /m ² |

5.0 Controlling volume of runoff from the site

- | | | |
|-----|--|-----------------------------------|
| 5.1 | Pre development runoff volume ⁽¹⁰⁾ | (tbd) m ³ for the site |
| 5.2 | Post development runoff volume (unmitigated) ⁽¹⁰⁾ | (tbd) m ³ for the site |
| 5.3 | Volume to be controlled/does not leave site ^(5.2 - 5.1) ... | m ³ for the site |
| 5.4 | Volume control provided by | |
| - | Interception losses ⁽¹¹⁾ | m ³ |
| - | Rain harvesting ⁽¹²⁾ | |
| - | Infiltration (even at very low rates) | m ³ |
| - | Separate area designated as long term storage ⁽¹³⁾ | |
| 5.5 | Total volume control (sum of inputs for 5.4) | m ³ ⁽¹⁵⁾ |

~~6.0 Site storage volumes (full infiltration only)~~

- | | | |
|----------------|---|---|
| ~~6.1~~ | ~~Storage - 1in 30 year ⁽⁷⁾~~ | ~~.....m³.....m³/m² (of developed impermeable area)~~ |
| ~~6.2~~ | ~~Storage - 1 in 100 year plus CC ⁽⁹⁾~~ | ~~.....m³.....m³/m²~~ |

Notes

1. All area with the proposed application site boundary to be included.
 2. The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.
 3. Impermeable area should be measured pre and post development. Impermeable surfaces includes, roofs, pavements, driveways and paths where runoff is conveyed to the drainage system.
 4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to GF status in all instances. The design statement and drawings explain / demonstrate how flows will be managed from the site.
 5. Runoff may be discharge via one or a number of means.
 6. Sewers for Adoption 6th Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the application should justify the selection of Cv.
 7. Storage for the 1 in 30 year must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.
 8. Runoff generated from rainfall events up to the 1 in 100 year will not be allowed to leave the site in an uncontrolled way. Temporary flooding of specified areas to shallow depths (150-300mm) may be permitted in agreement with the LLFA.
 9. Climate change is specified as 30% increase to rainfall intensity, unless otherwise agreed with the LLFA / EA.
 10. To be determined using the 100 year return period 6 hour duration rainfall event.
 11. Where Source Control is provided Interception losses will occur. An allowance of 5mm rainfall depth can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of subcatchments and source control techniques.
 12. Please refer to Rain harvesting BS for guidance on available storage.
 13. Flow diverted to Long term storage areas should be infiltrated to the ground, or where this is not possible, discharged to the receiving water at slow flow rates (maximum 2 l/s/ha). LT storage would not be allowed to empty directly back into attenuation storage and would be expected to drain away over 5-10 days. Typically LT storage may be provided on multi-functional open space or sacrificial car parking areas.
 14. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Storm sewers are designed for pipe full capacity for 1 in 1 to 1 in 5year return period. Beyond this, the pipe network will usually be in conditions of surcharge. Where information cannot be gathered from Thames Water, engineering judgement should be used to evaluate potential impact (using sensitivity analysis for example).
 15. In controlling the volume of runoff the total volume from mitigation measures should be greater than or equal to the additional volume generated.
- 



Drainage - Flood Risk - Highways - Transport

GTA Civils, Gloucester House, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS

T: 01444 871444 F: 01444 871401 E: enquiries@gtacivils.co.uk www: gtacivils.co.uk

GTA Civils Limited, Registered in England No. 4192991. VAT Registration No. 777 5043 04

