

Core Strategy Review Examination

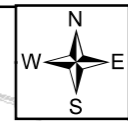
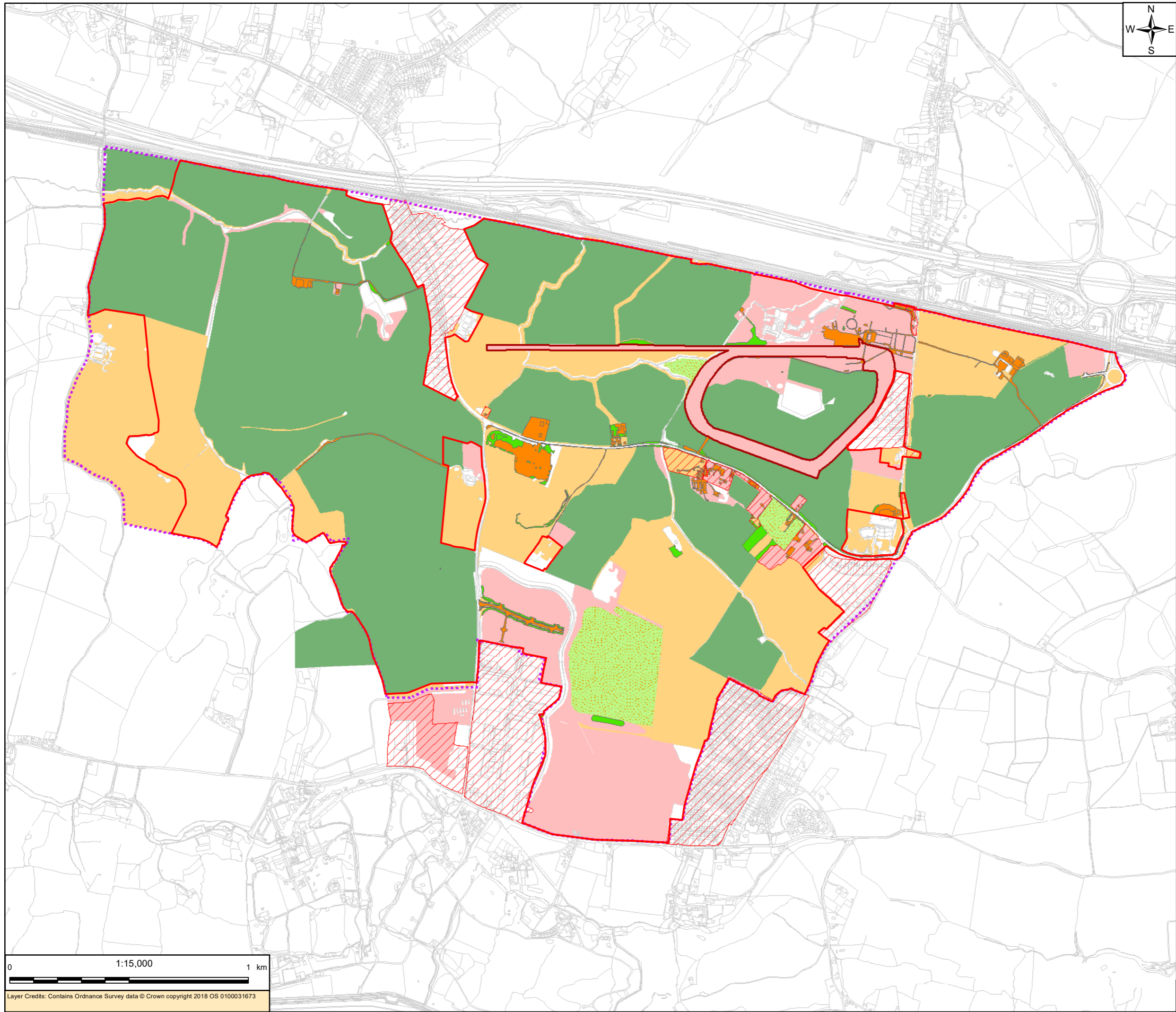
Statement of Common Ground

Natural England and Folkestone & Hythe District Council

Document EB 13.95(b)

APPENDIX I (1)

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- Legend**
- Outline Planning Application Boundary
 - Survey Area
 - Area Not Fully Surveyed
 - Racecourse
- Land Category**
- Cereals
 - Lowland Grazing Livestock
 - Hay Cut
 - Other Grassland
 - Mixed Type - Greenfield
 - Mixed Type - Urban

Drawing Number:
10029956-AUK-XX-XX-DR-CW-0023-P1

REV	Date	Description	Drawn	Check	Approv
P1	29-Sep-20	FOR INFORMATION	PN	BM	RG

ARCADIS Design & Consultancy for natural and built assets

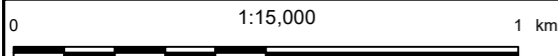
Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe
District Council

OTTERPOOL PARK

Existing Land Type - Full Surveyed Area

scale	original size	datum	grid
1:15,000	A3	Sx	BNG



Layer Credits: Contains Ordnance Survey data © Crown copyright 2018 OS 0100031673

Core Strategy Review Examination

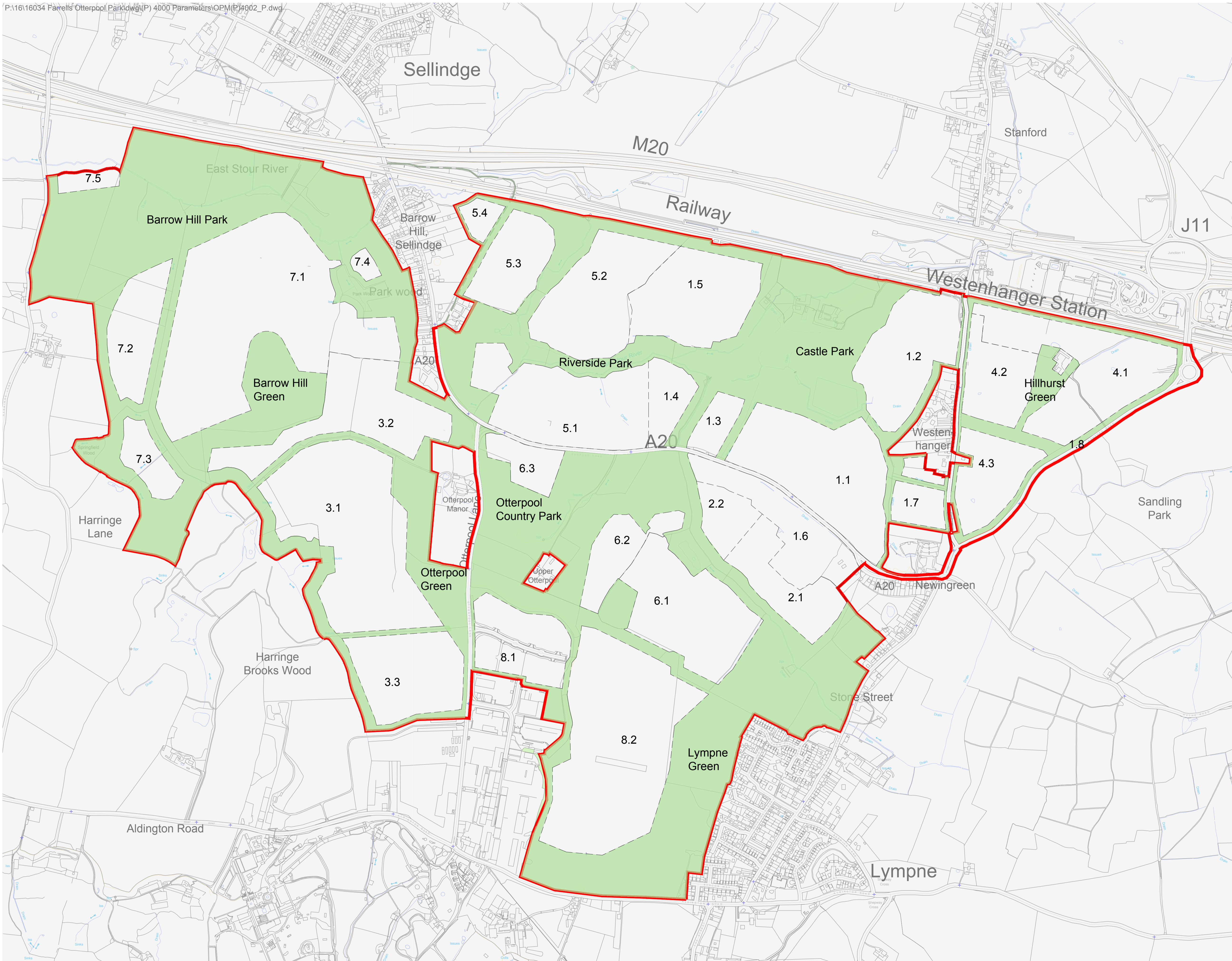
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APPENDIX I (2)

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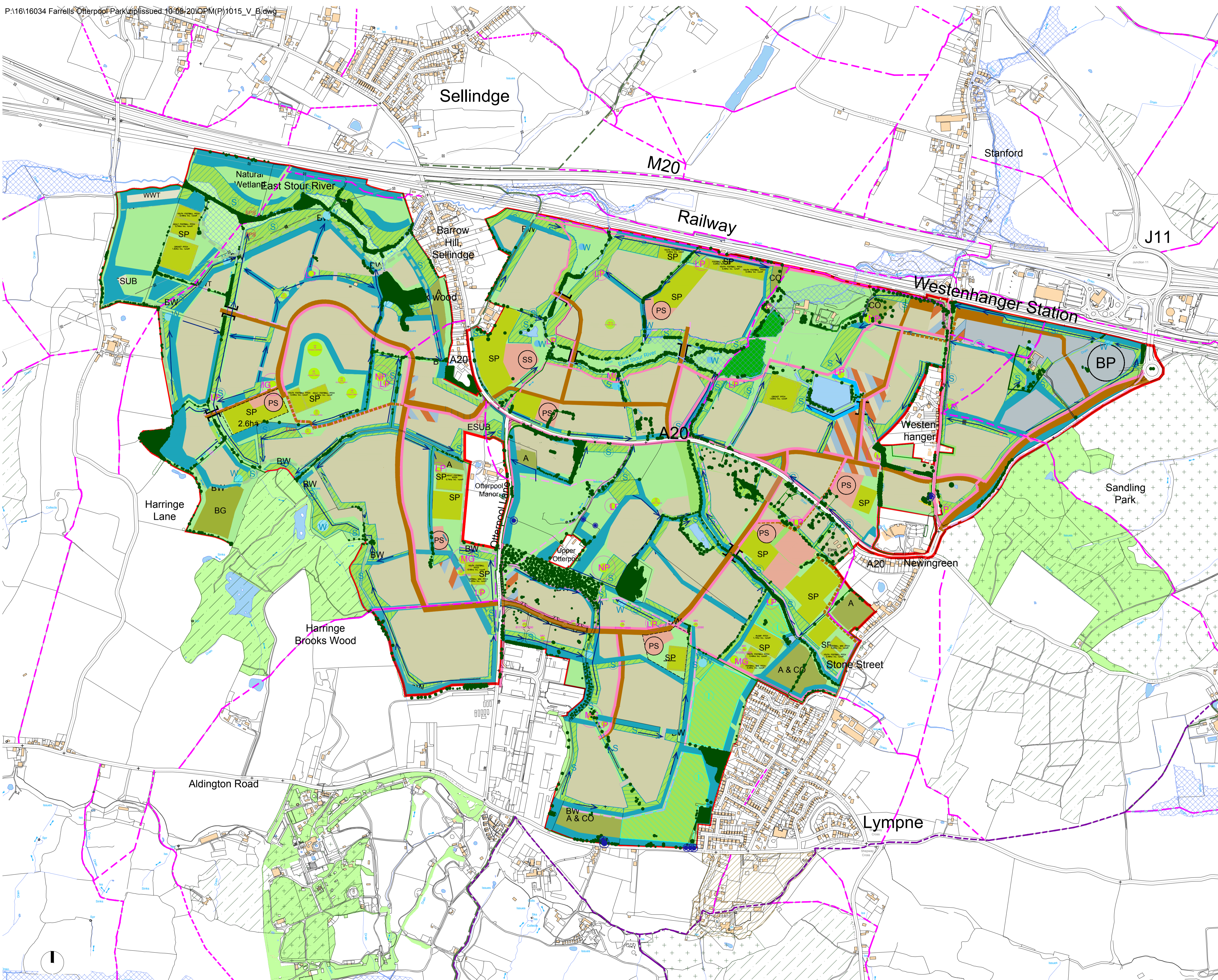
- Proposed**
- Proposed development areas
 - Numbered key to development a parameter plans specification for explanation of limits and referen other planning documents.
 - Proposed open space

Application Red Line

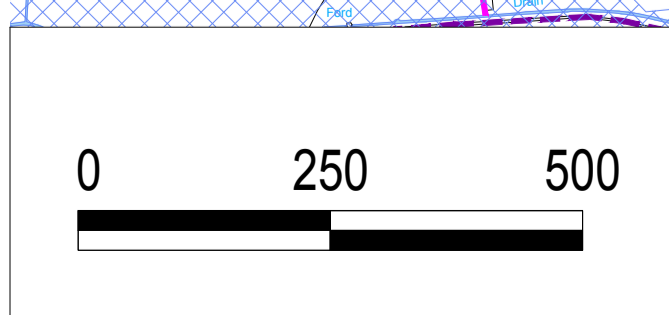


CLIENT	REVISIONS	DATE	STATUS	SCALE	PROJECT	DRAWING NAME	DRAWING NUMBER
Folkestone & Hythe District Council	First : 24-07-19 Rev A: 19-08-19 Rev B: 25-10-19 Rev C: 07-11-19 Rev D: 03-03-20 Rev E: 21-04-20 Rev F: 12-05-20 Rev G: 26-05-20 Rev H: 04-06-20 Rev J: 23-06-20 Rev K: 06-07-20 Rev L: 09-07-20 Rev M: 23-07-20 Rev N: 30-07-20 Rev P: 06-08-20	24-07-19	FOR APPROVAL	1:7,500 @ A1 1:15,000 @ A3	OTTERPOOL PARK	OPEN SPACE	OPM(P)4002_P

FARRELLS



- Existing**
- Existing Communities & Buildings
 - Existing Rivers, Streams and Ponds
 - Existing Woods outside application site
 - Existing Ancient Woodlands
 - Existing Registered Parklands
 - Existing Footpaths close to and in application site boundary
 - Existing Bridleway
 - Existing Bridleway
 - HV cables
 - Existing Flood Zone 2 + 3
 - Existing Scattered Trees
 - Existing Hedgerows and Tree Groups
 - Existing Trees with TPO
- Proposed**
- Proposed Development Areas
 - Proposed Green Infrastructure
 - Proposed Primary Cyclepath Routes and Footpaths
 - Proposed Primary Roads
 - Proposed Bridge Crossing over Stream
 - Proposed routes for Secondary Cyclepaths and Footpaths
 - Proposed Bridleway
 - Proposed Burial Ground area
 - Proposed Allotments
 - Proposed Sports Pitch areas
 - Proposed Play areas
 - Business development area
 - Proposed Secondary School
 - Proposed Primary School
 - Mixed use Local Centres
 - Proposed Business development area
 - Proposed SUDS Water Management Area
 - Proposed SUDS Infiltration Areas
 - Proposed Conveyance Swales
 - Proposed Foul Pump Station
 - Proposed Water Feature
 - Location of Heritage Feature
 - Advance Planting
 - Proposed Waste Water Treatment Infrastructure and Pipes
 - Application Red Line



CLIENT	REVISIONS	DATE	STATUS	SCALE	PROJECT	DRAWING NAME	DRAWING NUMBER
Folkestone & Hythe District Council	First Issue: 15-05-18 rev A: 04-06-18 rev B: 06-09-18 rev C: 16-10-18 rev D: 23-10-18 rev E: 30-11-18 rev F: 07-12-18 rev G: 21-12-18 rev H: 11-02-19 rev J: 27-03-19 rev P: 03-03-20 rev N: 06-04-20 rev Q: 23-04-20 rev R: 19-05-20 rev S: 06-06-20 rev T: 16-06-20 rev U: 07-07-20 Rev V: 10-08-20 Rev V_B: 12-08-20	15-05-18	IN SUPPORT	1:7,500 @ A1 1:15,000 @ A3	OTTERPOOL PARK	ILLUSTRATIVE MASTERPLAN	OPM(P)1015_V_B



ALL DIMENSIONS, LEVELS, COORDINATES, SETTING OUT, TO BE CHECKED ON SITE AND ANY DISCREPANCY REPORTED IMMEDIATELY TO THE ARCHITECT AND PROJECT MANAGER.

Core Strategy Review Examination

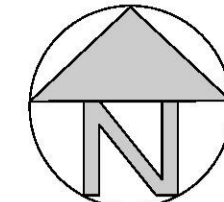
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APPENDIX I (3)

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- Site boundary
- Residential C3
- Commercial B1
- Landscaped buffer and division between existing residential dwellings
- Public open space
- Nature reserve and woodland
- Allotments
- Existing tree canopies retained
- Swales
- Public recreation ground and MUGA



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**LANDSCAPING & LAND
 USE PARAMETER PLAN**
 Scale: 1:1250



Rev.	Description	Date

Client: **Quinn Estates**

Project: **Mixed Use
 Development,
 Main Road, Sellinge**

Title: **Landscaping
 and Land
 Use Parameter Plan**



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 Tel: 01303 814455 e-mail: rca@rdaarchitects.co.uk © RDA Architects

Date: 07/03/2018 A1 Scale: 1:1250

14.13810	-	PRELIMINARY
Project	Sheet	Status/Revision

Drawing Status

Core Strategy Review Examination

Statement of Common Ground

Natural England and Folkestone & Hythe District Council

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APPENDIX I (4)

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Indicative nitrogen budget for new development - Scoping data

Client name	Folkstone and Hythe DC
Development name	Masterplan Framework (Incl CSD9A & CSD9B)
Development location (grid reference)	TR112 365 https://gridreferencefinder.com/
Number of residential dwellings	10350
Local Planning Authority	Folkstone and Hythe DC

	Figures	Units	Data source	Guidance
Sewage treatment works that development drains to (if known)	Sellidgde sewage works		Southern Water	Not Used in this Calcs as onsite WwTW is used instead
Total Nitrogen existing consent for this treatment works, if any, (if Known)	N/A	mg/l		
Total Phosphorous existing consent for this treatment works, if any, (if Known)	N/A	mg/l	Southern Water - annual mean currently consented Total Phosphorous value is 1 mg/l	
Total Nitrogen proposed consent for this treatment works, if any, (if Known)	N/A	mg/l	Not available at present from the Environment Agency - this is indicative annual mean Total Phosphorous value for the proposed consent to accommodate Otterpool	
Total Phosphorous proposed consent for this treatment works, if any, (if Known)	0.3	mg/l	Environment Agency - this is indicative annual mean Total Phosphorous value for the proposed consent to accommodate Otterpool	Not Used in this Calcs as onsite WwTW is used instead
Total area of site	784.1	hectares	See Proposed Land Use Tab See Proposed Land Use Tab	Otterpool Park FMP plus CSD9A & CSD9B
New Urban Area	345.7	hectares	For sensitivity test, reduced urban area by 25.2 to account for other SuDS in development parcels	Otterpool Park FMP plus CSD9A & CSD9B
Area of designated Suitable Alternative Natural Space (SANG)/open space	226.07	hectares	See Proposed Land Use Tab. For sensitivity test, increased SANG area by 25.2 to account for other SuDS in development parcels	Otterpool Park FMP plus CSD9A & CSD9B
Area of Community Farm/Allotments	9.8	hectares	See Proposed Land Use Tab Based on the habitat survey info presented in the previous OP Outline Planning Application in 2019, consultations with FHDC & Land Agents etc. See Existing Land Type Tab	Otterpool Park FMP plus CSD9A & CSD9B
Current land use nitrate loss from current site land use	A mixture of arable land, improved grassland & species poor semi-improved grassland (see the breakdown in Table 1 below)	kgN/ha/yr		

Table 1A - Existing Land Types and Nutrient Loss Rates (Otterpool Framework Masterplan)

Land Type	Hectares	Average Nutrient Loss Rate	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)
Cereals	324.9	27.3	0.36
Lowland Grazing Livestock	119.1	12.2	0.24
Racetrack	13.5	13.3	0.5
Hay Cut	18.9	5	0.14
Other Grassland/Greenfield	101.1	5	0.14
Mixed area - Urban	11.5	14.3	0.83
Mixed area - Greenfield	4.5	5	0.14
Remaining Urban Area in Framework Masterplan, CSD9A & CSD9B	19.9	14.3	0.83
	613.4		

Average of urban & lowland grazing livestock loss rates used.

See 'Existing Land Type Overview' tab for further detail .

	Hectares
Remaining existing area within Otterpool Framework boundary excluded from the NN Assessment (i.e. 71 ha existing community, 54.9 ha retained farmland & 16.8 ha retained buildings/waterbodies/woodland/ hedgerows/ other ecological features)	142.7

Table 1B - Existing Land Types and Nutrient Loss Rates (CSD9A & CSD9B)

Land Type	Hectares	Average Nutrient Loss Rate	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)
CSD9B (Cereals)	17.16	27.3	0.36
CSD9B (Urban)	0.7	14.3	0.83
CSD9B (Other Grassland/greenfield)	1.05	5	0.14
CSD9A (Urban)	0.08	14.3	0.83
CSD9A (Other Grassland/greenfield)	8.98	5	0.14
	27.97		

New development nitrogen budget

Client	Folkstone and Hythe DC		
Development	Otterpool Park Garden Town - Masterplan Framework (incl CSD9A & CSD9B)		
Number of residential dwellings	10350		
Local Planning Authority	Folkstone and Hythe DC		
Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population	2.4	Natural England recommendation	
Occupancy rate	110	lps/d Natural England recommendation	
Step 2 confirm water use (litres per person)	N/A	N/A	N/A - This calculation is alternative for onsite WwTW option.
Step 3 confirm Waste water Treatment Works (WwTW) and permitted TN concentration	N/A	N/A	N/A - This calculation is alternative for onsite WwTW option.
Permitted Total Phosphate concentration	7.2	mg/l Severn Trent Connect	
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	0.1	mg/l Severn Trent Connect	ST Connect's UCAS certified TN value
Proposed permitted Total Phosphate concentration to accommodate Otterpool	24840	Persons	ST Connect's committed TP value, Onsite WwTW permit u/s outfall option.
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment	2732400	litres/day	
Additional population	7.2	mg/l TN	ST Connect's UCAS certified TN value
Wastewater volume generated by development	0.1	mg/l TP	ST Connect's committed TP value, Onsite WwTW permit u/s outfall option.
Receiving WwTW environmental permit for TP	6.48	mg/l TN	Applied 90% correction as a precautionary basis.
90% of the proposed consent TN limit	0.09	mg/l TP	
90% of the proposed consent TP limit	1770962	mg TN/day	
TN discharged after WwTW treatment	245916	kg TP/day	
TP discharged after WwTW treatment	6462.67	kg TN/yr	
Annual wastewater total nitrogen load	89.76	kg TP/yr	
Annual wastewater total phosphorous load			

Stage 2	Figures	Units/ Data source	Further information
Current land use	A mixture of arable land (i.e. Cereals/Lowland Grazing Livestock), Hay Cut, Mixed and Other Grassland (see the breakdown in Table 2 below and Land Type Overview Tab) - this largely based on the habitat survey info presented in the previous OP Outline Planning Application in 2019.	Ecology Survey report reference/remote imagery	Sellindge CSD9A & CSD9B Sites included separately based on available data.
Total area of existing 'agricultural' and other land	641.4	hectares	See Table 2A/2B & Input Data Tab
Nitrate loss from current site land use	See Table 2A/2B	kgN/ha/yr	
Phosphorus loss from current site land use	See Table 2A/2B	kgP/ha/yr	
Total nitrate loss from current land use	12102.96	kgN/yr	See Table 2A/2B
Total Phosphate loss from current land use	204.49	kgP/yr	See Table 2A/2B

Stage 3	Figures	units/ Data source	Further information
New urban area	345.7	hectares/site layout	See Proposed Land Use Tab. For sensitivity test, reduced urban area by 25.2 to account for other SuDS in development parcels
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4943.53	kgN/yr	
Phosphorous load from future urban area	286.93	kgP/yr	
New SANG/open space	226.1	ha	Excluded proposed mitigation areas (i.e. Wetland & Woodland areas). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	For sensitivity test, increased SANG area by 25.2 to account for other SuDS in development parcels
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1130.35	kgN/yr	
Phosphorous Load from SANG/open space	31.65	kgP/yr	
New Community Farm/Allotments area	9.8	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.5	kgN/ha/yr	
New Community Farm/Allotments phosphorous load	0.28	kgP/ha/yr	
Nitrogen Load from Community Farm/Allotments	230.30	kgN/yr	
Phosphorous Load from New Community Farm/Allotments	2.74	kgP/yr	
New Woodland	35	ha	See Proposed Land Use Tab
New Woodland Area nitrogen load	5	kgN/ha/yr	
New Woodland Area phosphorous load	0.07	kgP/ha/yr	
Nitrogen Load from New Woodland	175	kgN/yr	
Phosphorous Load from New Woodland	0.70	kgP/yr	
Combined nitrogen load from future land uses	6479.18	kgN/yr	
Combined phosphorous load from future land uses	322.03	kgP/yr	

Disclaimer:
This nutrient budget is provided in good faith, populated using the best available science and expert opinion and adhering to the precautionary principle. Arcadis accept no responsibility from loss or damage however incurred as a direct or indirect result of acting upon this nitrogen budget and the figures contained herein.

Table 2A - Existing Land Types and Nutrient Loss Rates (Otterpool Masterplan Framework)

Land Type	Hectares	Average Nutrient Loss Rate		Estimated Nutrient loss	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	224.9	27.3	0.36	6089.77	116.96
Lowland Grazing Livestock	119.1	12.1	0.24	1453.02	28.58
Roadtrack	13.5	13.25	0.535	178.88	7.22
Hay Cut	18.9	18.9	0.14	34.53	2.65
Other Grassland/Greenfield	101.1	5	0.14	505.50	14.15
Mixed area - Urban	11.5	14.3	0.83	164.45	9.55
Mixed area - Greenfield	4.5	5	0.14	22.50	0.63
Remaining Urban Area in Framework Masterplan, CSD9A & CSD9B	19.9	14.3	0.83	284.37	18.52
	613.4			11673.19	196.24

Table 2B - Existing Land Types and Nutrient Loss Rates (CSD9A & CSD9B)

Land Type	Hectares	Average Nutrient Loss Rate		Estimated Nutrient loss	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
CSD9B (Cereals)	17.16	27.3	0.36	468.47	6.18
CSD9B (Urban)	0.7	14.3	0.83	10.01	0.58
CSD9B (Other Grassland/greenfield)	1.95	5	0.14	9.75	0.15
CSD9A (Urban)	0.98	14.3	0.83	14	0.07
CSD9A (Other Grassland/greenfield)	8.98	5	0.14	44.90	1.26
	28.0			629.77	8.23

Stage 1 to Stage 3 Nutrient Loading Calcs Summary

	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	6462.7	89.8
Stage 2 - existing agriculture landuse load	12103.0	204.5
Stage 3 - proposed development landuse load	6479.2	322.0

Stage 4 - Net Change in Nitrogen and Phosphorous Budget

	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	6462.7	89.8
Step 2 (Stage 3 - Stage 2)	-5623.8	-117.5
Step 3 (Step 1 + Step 2)	838.9	207.3
Step 4 (= Step 3, i.e. NIP budget without buffer)	838.9	207.3
Step 5 (Step 4 + 20%)	1006.7	248.8
Step 6 (Step 4 + Step 5)	1006.7	248.8

Nitrogen/Phosphorous Budget with 20% buffer

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Framework (incl CSD9A & CSD9B)
Number of residential dwellings	10350
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population	2.4	Natural England recommendation	
Occupancy rate	90	l/p/d Natural England recommendation	
Step 2 confirm water use (litres per person)	90	l/p/d Natural England recommendation	
Step 3 confirm Waste water Treatment Works (WwTW) and permitted TN concentration	Onsite WwTW N/A	NAV	N/A - This calculation is alternative for onsite WwTW option.
Permitted Total Phosphate concentration	N/A		N/A - This calculation is alternative for onsite WwTW option.
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	7.2	mg/l Severn Trent Connect	N/A - This calculation is alternative for onsite WwTW option.
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.1	mg/l Severn Trent Connect	ST Connect's UCAS certified TN value
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			ST Connect's committed TP value, Onsite WwTW permit u/s outfall option.
Additional population	24840	Persons	
Wastewater volume generated by development	2235600	litres/day	
Receiving WwTW environmental permit for TN	7.2	mg/l TN	ST Connect's UCAS certified TN value
Receiving WwTW environmental permit for TP	0.1	mg/l TP	ST Connect's committed TP value, Onsite WwTW permit u/s outfall option.
90% of the proposed consent TN limit	6.48	mg/l TN	Applied 90% correction as a precautionary basis.
90% of the proposed consent TP limit	0.09	mg/l TP	
TN discharged after WwTW treatment	14486688	mg/TN/day	
TP discharged after WwTW treatment	201204.00	mg/TP/day	
Annual wastewater total nitrogen load	5287.64	kg/TN/yr	
Annual wastewater total phosphorous load	73.44	kg/TP/yr	

Stage 2	Figures	Units/ Data source	Further information
Current land use	A mixture of arable land (i.e. Cereals/Lowland Grazing Livestock), Hay Cut, Mixed and Other Grassland (see the breakdown in Table 2 below and 'Land Type Overview' Tab) - this largely based on the habitat survey info presented in the previous OP Outline Planning Application in 2019.	Ecology Survey report reference/remote imagery	Sellindge CSD9A & CSD9B Sites included separately based on available data .
Total area of existing 'agricultural' and other land	641.4	hectares	See Table 2A/2B & Input Data Tab
Nitrate loss from current site land use	See Table 2A/2B	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2A/2B	knP/ha/yr	
Total nitrate loss from current land use	12102.96	kgN/yr	See Table 2A/2B
Total Phosphate loss from current land use	204.49	kgP/yr	See Table 2A/2B

Stage 3	Figures	units/ Data source	Further information
New urban area	345.7	hectares/site layout	See Proposed Land Use Tab. For sensitivity test, reduced urban area by 25.2 ha to account for other SuDS in development parcels
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4943.53	kgN/yr	
Phosphorous load from future urban area	286.93	kgP/yr	
New SANG/open space	226.1	ha	Excluded proposed mitigation areas (i.e. Wetland & Woodland areas). See Input Data Tab and Proposed Land Use Tab for details. For sensitivity test, increased SANG area by 25.2 ha to account for other SuDS in development parcels
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.44	kgP/ha/yr	
Nitrogen Load from SANG/open space	1130.35	kgN/yr	
Phosphorous Load from SANG/open space	31.65	kgP/yr	
New Community Farm/Allotments area	9.8	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.5	kgN/ha/yr	
New Community Farm/Allotments phosphorous load	0.26	kgP/ha/yr	
Nitrogen Load from Community Farm/Allotments	230.30	kgN/yr	
Phosphorous Load from New Community Farm/Allotments	2.74	kgP/yr	
New Woodland	35	ha	See Proposed Land Use Tab
New Woodland Area nitrogen load	5	kgN/ha/yr	
New Woodland Area phosphorous load	0.02	kgP/ha/yr	
Nitrogen Load from New Woodland	175	kgN/yr	
Phosphorous Load from New Woodland	0.70	kgP/yr	
Combined nitrogen load from future land uses	6479.18	kgN/yr	
Combined phosphorous load from future land uses	322.03	kgP/yr	

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Table 2A - Existing Land Types and Nutrient Loss Rates (Otterpool Masterplan Framework)

Land Type	Hectares	Average Nutrient Loss Rate		Estimated Nutrient loss	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	324.9	27.3	0.36	8869.77	116.96
Lowland Grazing Livestock	119.1	12.2	0.24	1453.02	28.58
Racetrack	13.5	13.25	0.535	178.88	7.22
Hay Cut	18.9	5	0.14	94.50	2.65
Other Grassland/Greenfield	101.1	5	0.14	505.50	14.15
Mixed area - Urban	11.5	14.3	0.83	164.45	9.55
Mixed area - Greenfield	4.5	5	0.14	22.50	0.63
Remaining Urban Area in Framework Masterplan, CSD9A & CSD9B	19.9	14.3	0.83	284.57	16.33
	613.4			11573.19	196.26

Table 2B - Existing Land Types and Nutrient Loss Rates (CSD9A & CSD9B)

Land Type	Hectares	Average Nutrient Loss Rate		Estimated Nutrient loss	
		Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
CSD9B (Cereals)	17.16	27.3	0.36	468.47	6.18
CSD9B (Urban)	0.7	14.3	0.83	10.01	0.58
CSD9B (Other Grassland/greenfield)	1.05	5	0.14	5.25	0.15
CSD9A (Urban)	0.08	14.3	0.83	1.14	0.07
CSD9A (Other Grassland/greenfield)	8.98	5	0.14	44.90	1.26
	28.0			529.77	8.23

Stage 1 to Stage 3 Nutrient Loading Calcs Summary

	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	5287.6	73.4
Stage 2 - existing agriculture landuse load	12103.0	204.5
Stage 3 - proposed development landuse load	6479.2	322.0

Stage 4 - Net Change in Nitrogen and Phosphorous Budget

	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	5287.6	73.4
Step 2 (Stage 3 - Stage 2)	-5623.8	117.5
Step 3 (Step 1 + Step 2)	-336.1	191.0
Step 4 (= Step 3, i.e. N/P budget without buffer)	-336.1	191.0
Step 5 (Step 4*20%)	-67.2	38.2
Step 6 (Step 4 + Step 5)	-403.4	229.2
	-403.4	229.2

Nitrogen/Phosphorous Budget with 20% buffer

Nutrient Budget Summary

WwTW Option	PCC Rate - 110 l/p/d		PCC Rate - 90 l/p/d	
	TN (Kg/yr)	TP (Kg/yr)	TN (Kg/yr)	TP (Kg/yr)
Severn Trent Connect - onsite WwTW	1007	249	-403	229

Nutrient Mitigation - Wetland Area Requirement Summary

WwTW Option	PCC Rate - 110 l/p/d		PCC Rate - 90 l/p/d	
	TN Wetland Area (ha)	TP Wetland Area (ha)	TN Wetland Area (ha)	TP Wetland Area (ha)
Severn Trent Connect - onsite WwTW	1.1	20.7	-0.4	19.1

Assumed Wetland TN removal rate

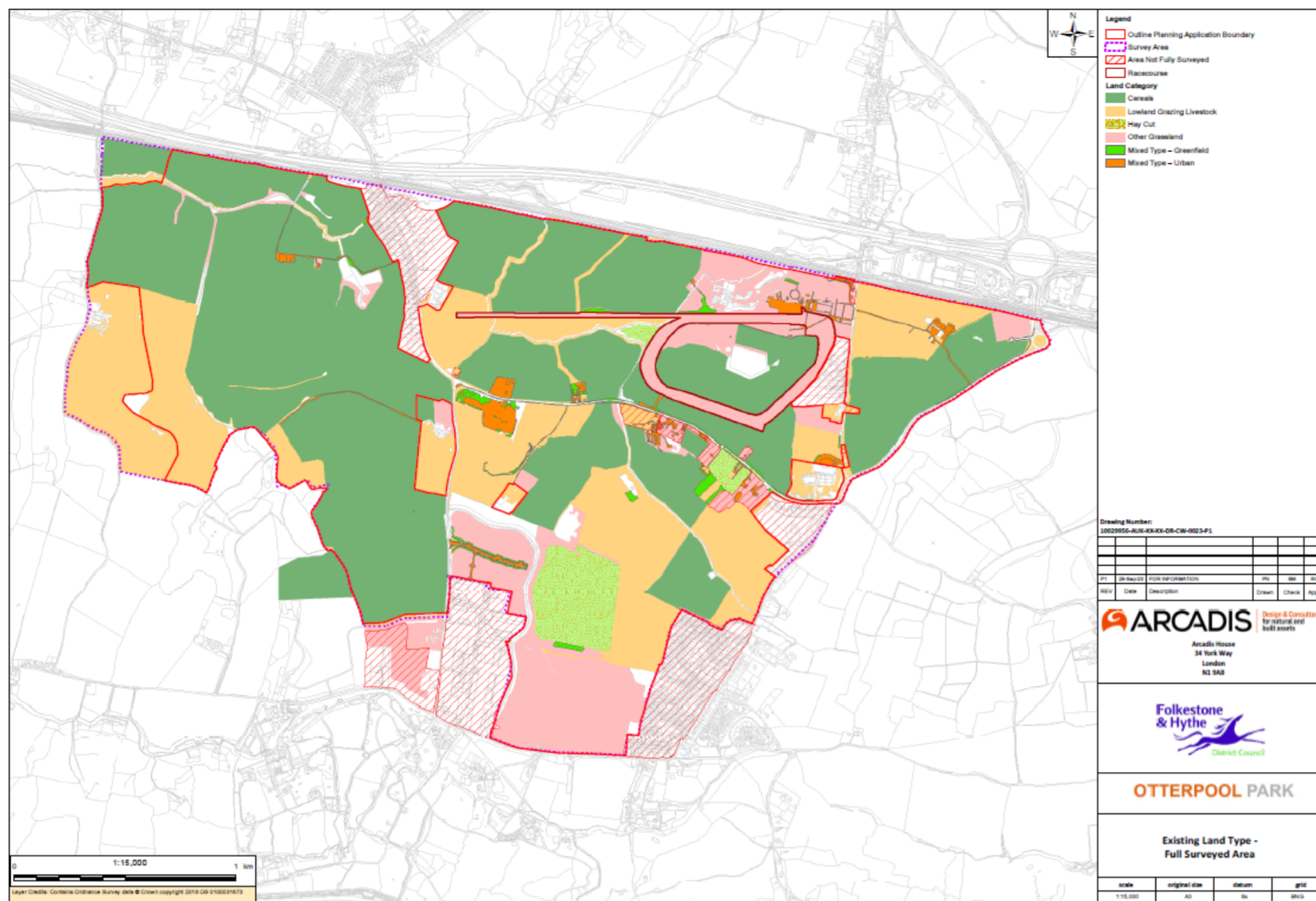
93 g/m2/yr

930 kg/ha/yr

Assumed Wetland TP removal rate

1.2 g/m2/yr

12 kg/ha/yr



Existing Land Type Area Statement within Outline Planning Application Boundary		
Land Category	Area in Mt	Area in Ha
Cereals	3189561.4	319.0
Lowland Grazing Livestock	1191257.8	119.1
Racetrack	135944.9	13.6
Hay Cut	188948.6	18.9
Other Grassland	682491.8	68.2
Mixed Type - Urban	114712.8	11.5
Mixed Type - Greenfield	45277.5	4.5
	5548194.8	554.8

Racetrack area deducted from "Other Grassland" area

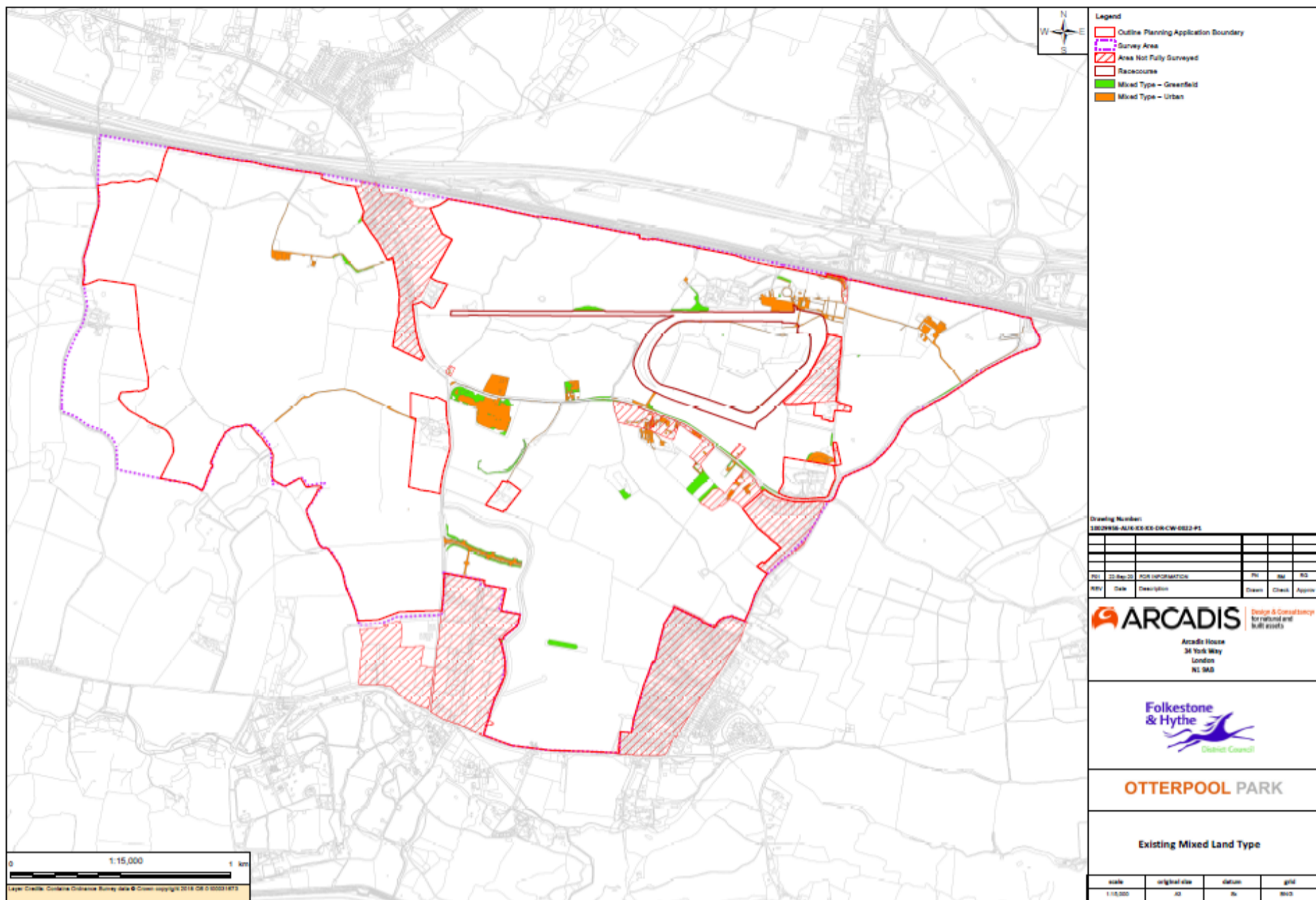
Existing Land Type Area Statement Outside Outline Planning Application Boundary But Within Framework Masterplan Where Existing Land Use Will Be Changed		
Land Category	Area in Mt	Area in Ha
Cereals	59053.0	5.9
Other Grassland	328090.0	32.8
Urban	199241.0	19.9
	586384.0	58.6

	Area in Ha
Retained farmland in Framework Masterplan Area	54.9
Existing Community in Framework Masterplan Area	71.0
Other existing retained land within Otterpool OPA (e.g. vegetation/buildings/waterbodies/ecological features)	16.8
	142.7

	Area in Ha
Outline Planning Application Boundary	585.2
Framework Masterplan Boundary	756.1

Existing Land Type Area Statement For CSD9A & CSD9B	
Land Type	Area in Ha
CSD9B (Cereals)	17.16
CSD9B (Urban)	0.7
CSD9B (Other Grassland/greenfield)	1.05
CSD9A (Urban)	0.08
CSD9A (Other Grassland/greenfield)	8.98
	27.97

Note: Existing landuse data for CSD9A and CSD9B is currently taken from FHDC Stodmarsh Nutrient Budget (dated 21/09/2020) without GIS measurement although Arcadis undertaken a quick sense check by comparing with Google Aerial images to validate this info.



Sr No	Mixed Land Bifurcation	Area In mt	Area In mt	Reclassify
1	Bare ground	23746.05	114712.81	Mixed Type - Urban
2	Building	14063.76		
3	Hardstanding	76903.00		
4	Broad-leaved semi-natural woodland	2368.32	45277.52	Mixed Type - Greenfield
5	Dense/continuous scrub	10226.22		
6	ESP	5400.94		
7	Introduced shrub	4640.75		
8	Parkland Scattered Trees	610.57		
9	Plantation woodland	7195.03		
10	Riparian	335.52		
11	Standing water	2286.54		
12	Tall ruderal	12213.65		
Total		159990.33	159990.33	

28/09/2020 Farrells

phase	Phase Urban areas ha	Phase urban area sub-totals	Phase houses sub totals
1.1	18.94		
1.2	12.93		
1.3	2.80	34.67	1096
1.4	4.10		
1.5	13.43	17.53	432
1.6	9.98	9.98	281
1.7	3.77	3.77	166
2.1	8.05		
2.2	3.98	12.03	207
3.1	25.86		
3.2	14.58	40.44	985
3.3	11.62	11.62	487
3.4	1.45	1.45	32
4.1	17.58		
4.2	7.33		
4.3	7.66	32.56	547
5.1	17.72		
5.2	14.53		
5.3	7.67		
5.4	1.62	41.54	1495
6.1	15.66		
6.2	5.64	21.30	460
6.3	3.75	3.75	298
7.1	38.68		
7.2	7.73		
7.3	3.68		
7.4	0.83		
7.5	1.58	52.51	1194
8.1	8.86	8.86	319
8.2	30.73	30.73	501
9	29.7	29.7	1500
Total Urban in Framework Masterplan	352.43		
Total Landscape open space in Framework Masterplan	277.77		
Existing community in framework masterplan area	71		
Retained farmland in framework masterplan area	54.9		
Total OP Framework Area	756.10	352.43	10000

	New Urban Area (ha)	New Open Space (ha)	Total Site Area (ha)	Impermeability (%)	Houses (No)
Sellindge CSD9A	7.56	1.50	9.06	83%	188
Sellindge CSD9B	10.91	8.00	18.91	58%	162
CSD9A & 9B TOTAL	18.47	9.50	27.97		350

PROPOSED LAND USE AREA SUMMARY FOR NUTRIENT LOADING CALCS - OTTERPOOL FRAMEWORK MASTERPLAN

	Ha	Ha
Excluded Retained Existing Land		
Existing community in framework masterplan area	71.0	
Retained farmland in framework masterplan area	54.9	
Existing vegetation/buildings/ waterbodies/ ecological features within the current OPA boundary	16.8	142.7
Excluded Mitigation Land From SANG		
Wetlands	24.8	60
Woodland*	35	
Community Farm/Allotment Land in current OPA boundary	9.8	
Remaining Total SANG in Framework Masterplan*	216.57	Increased SANG area by 25.2 to account for other SuDS in development parcels
Total Urban Area in Framework Masterplan	327.2	Reduced urban area by 25.2 to account for other SuDS in development parcels
Total OP Framework Area Check	756.1	

*note leachate loads from woodland is calculated separately instead of SANG leachate rates.

Wetland Details Summary

Wetland ID	Wetland Area (m ²)	Wetland Area (ha)	Wetland Depth (m)	Treatment depth (m)	Comments
W1	12070	1.21	0.72	0.42	Receives storm discharge. W1, W2, W3 & W8 are interlinked (Total area 3.7ha).
W2	8060	0.81	0.73	0.43	Receives storm discharge. W1, W2, W3 & W8 are interlinked (Total area 3.7ha).
W3	2510	0.25	0.45	0.15	Receives storm discharge. W1, W2, W3 & W8 are interlinked (Total area 3.7ha).
W4	17030	1.70	0.37	0.07	Receives storm discharge
W5	21670	2.17	0.46	0.16	Receives storm discharge
W6	26320	2.63	0.87	0.27	Receives storm discharge
W7	18740	1.87	0.54	0.24	Receives storm discharge
W8	14590	1.46	0.79	0.49	Receives storm discharge. W1, W2, W3 & W8 are interlinked (Total area 3.7ha).
W9	2690	0.27	0.73	0.13	Receives storm discharge. W9 & W10 are interlinked (Total area 1.1ha)
W10	7780	0.78	0.81	0.21	Receives storm discharge. W9 & W10 are interlinked (Total area 1.1ha)
W11	4320	0.43	0.65	0.05	Receives storm discharge. W11 & W12 are interlinked (Total area 1.7ha).
W12	12620	1.26	0.34	0.04	Receives storm discharge. W11 & W12 are interlinked (Total area 1.7ha).
W14	11100	1.11	0.38	0.08	Receives storm discharge
W13	88571	8.86	0.35	0.25	Receives wastewater discharge. The total footprint of the wetland is 11.8ha but only 75% is taken as effective area due to earth works required for cascade wetland features.
	248071	24.81			

Preliminary Hydraulic Loading Calcs For Storm Wetlands

Storm Wetland	Contributing Drainage Zones	First Flush Treatment Storage Check - using 15mm depth (Based on EA R&D Technical Report P2-159/TR2)				Alternative Treatment Storage Check - (Based on EA R&D Technical Report P2-159/TR2)			
		Contributing Storm Drainage Zone Area (ha)	Estimated Storm Catchment Impermeability (%)	Paved First Flush Volume (m3)	Average Treatment Depth (m)	WWAR (%)	Treatment Storage Rq (m3/ha) - Ref Figure 2.2	Treatment Storage Rq (m3)	Average Wetland Depth (m)
W1	WH1 (75%), ET1, ET2	66.86	51%	5121	0.42	2%	64	4279	0.35
W2	WH2 (80%), ETS	33.66	68%	3445	0.43	2%	76	2558	0.32
W3	WH1 (25%)	8.29	30%	367	0.15	3%	45	373	0.15
W4	RS2, RS3 & RH4	23.04	34%	1178	0.07	7%	49	1129	0.07
W5	RS1, WH3, EO3 & WO2	62.32	37%	3466	0.16	3%	52	3241	0.15
W6	WO1, WO3, BH1, BH3, BH6, BH7, WO4	121.76	39%	7175	0.27	2%	53	6453	0.25
W7	BH2, BH4, BH5 & Phase 9	101.25	29%	4404	0.24	2%	44	4455	0.24
W8	WH2 (20%), WN1, WN2, EO4, SO6(30%), EO1 (70%), EO2, SO1, SO2 (70%), SO3, SO4, SO5	131.85	36%	7179	0.49	1%	51	6724	0.46
W9	RS5 (25%)	4.87	49%	357	0.13	6%	61	297	0.11
W10	WH5, RS5 (75%)	23.04	47%	1617	0.21	3%	60	1382	0.18
W11	WH4 (30%)	4.73	29%	205	0.05	9%	44	208	0.05
W12	WH4 (70%)	11.05	29%	479	0.04	11%	44	486	0.04
W14	EO5, EO1 (30%), SO2 (30%)	21.12	27%	855	0.08	5%	43	908	0.08
				35849				32493	

Preliminary Hydraulic Loading Calcs For Wastewater Wetland (W13)

	Effective Wetland Area* (m ²)	Effective Wetland Depth (m)	Max Dry Weather Flow, DWF (m ³ /day)	Hydraulic Retention Time, HRT (days)
OPTION 1 - Assuming 50mm effective treatment depth	88571	0.05	3432.00	1.3
OPTION 2 - Assuming 150mm effective treatment depth	88571	0.15	3432.00	3.9
OPTION 3 - Assuming 250mm effective treatment depth	88571	0.25	3432.00	6.5

NB. * Total wetland area for W13 is 118095 but assumed 75% for effective wetland area and remaining 25% for creating bunds for cascade features (i.e. @ 1 in 20 existing ground slope)

Otterpool Wetland Location Plan

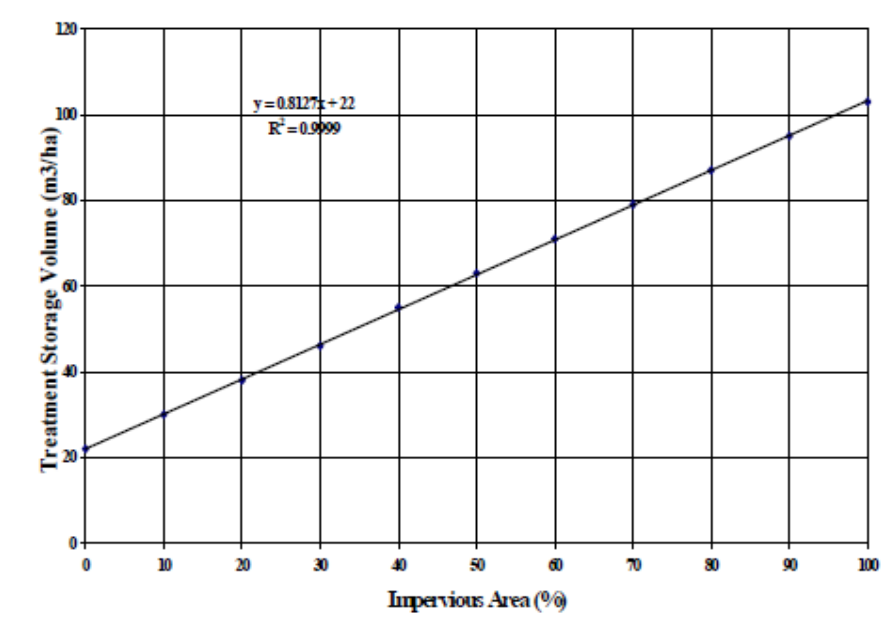
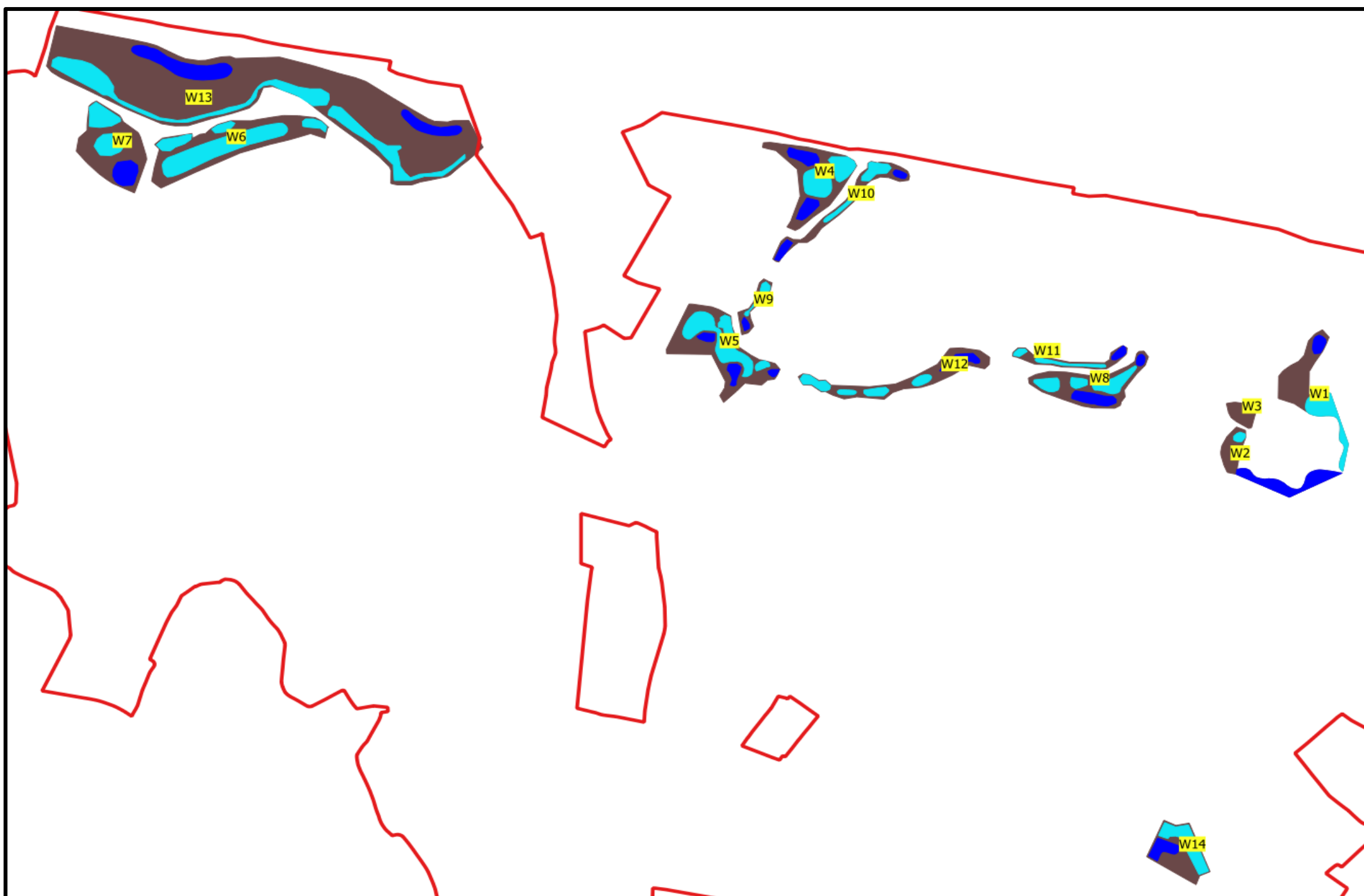


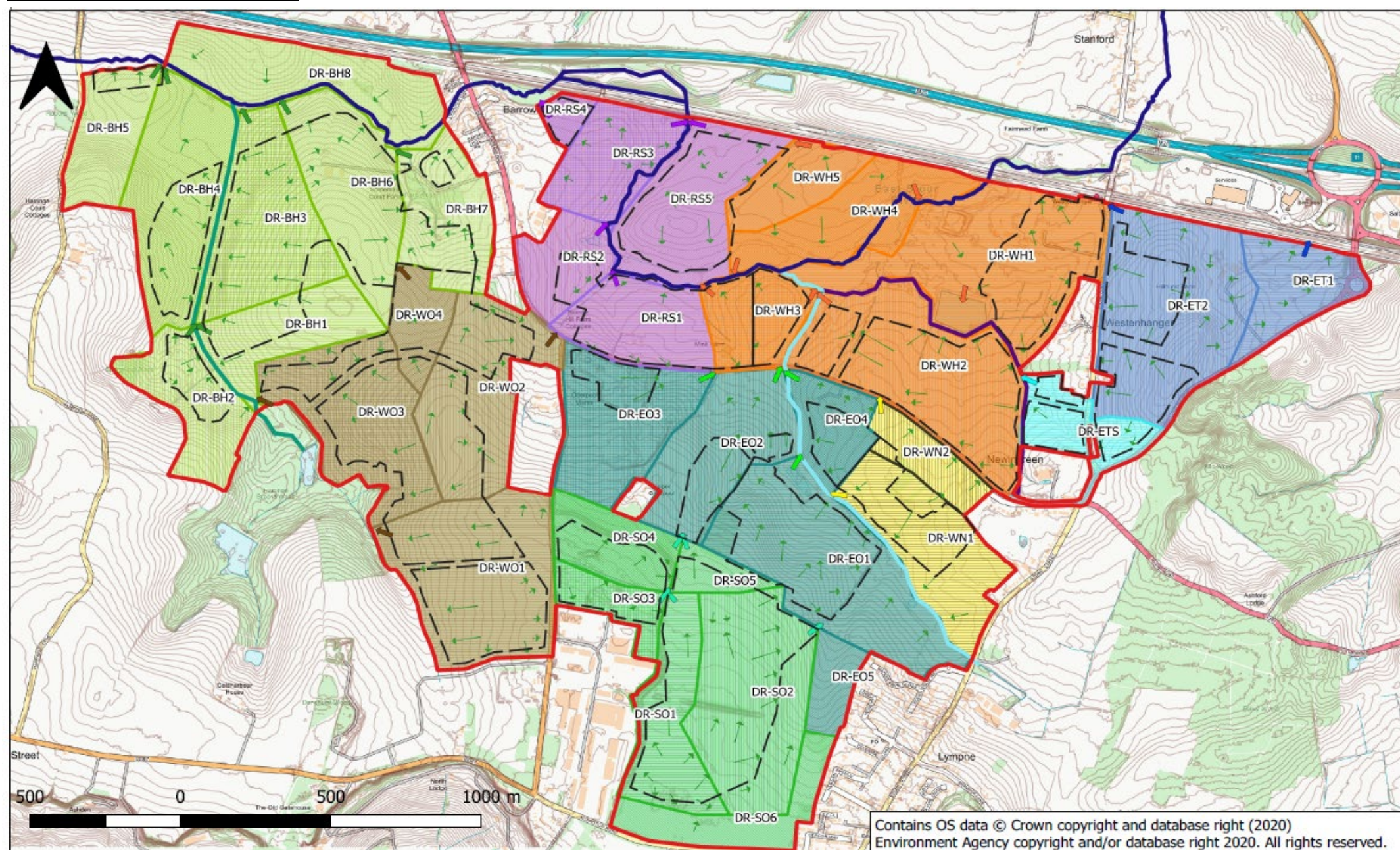
Figure 2.2 Wetland Treatment Storage Volumes

Guidance Manual for Constructed Wetlands

R&D Technical Report P2-159/TR2

J. B. Ellis, R.B.E. Shutes and D.M. Revitt

Otterpool Stormwater Drainage Zones



Otterpool SuDS Strategy Overview Plan



