Core Strategy Review Examination

Statement of Common Ground

Natural England and Folkestone & Hythe District Council

Document EB 13.95(a)

APPENDIX F (1)

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N
W E
S

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

0 1:15,000 1 km

Drawing Number:
10029956-AUK-XX-XX-DR-CW-0017-P2

REV	Date	Description	Drawn	Check	Approv
P2	29-Sep-20	FOR INFORMATION	PN	BM	RG

ARCADIS Design & Consultancy for natural and built assets

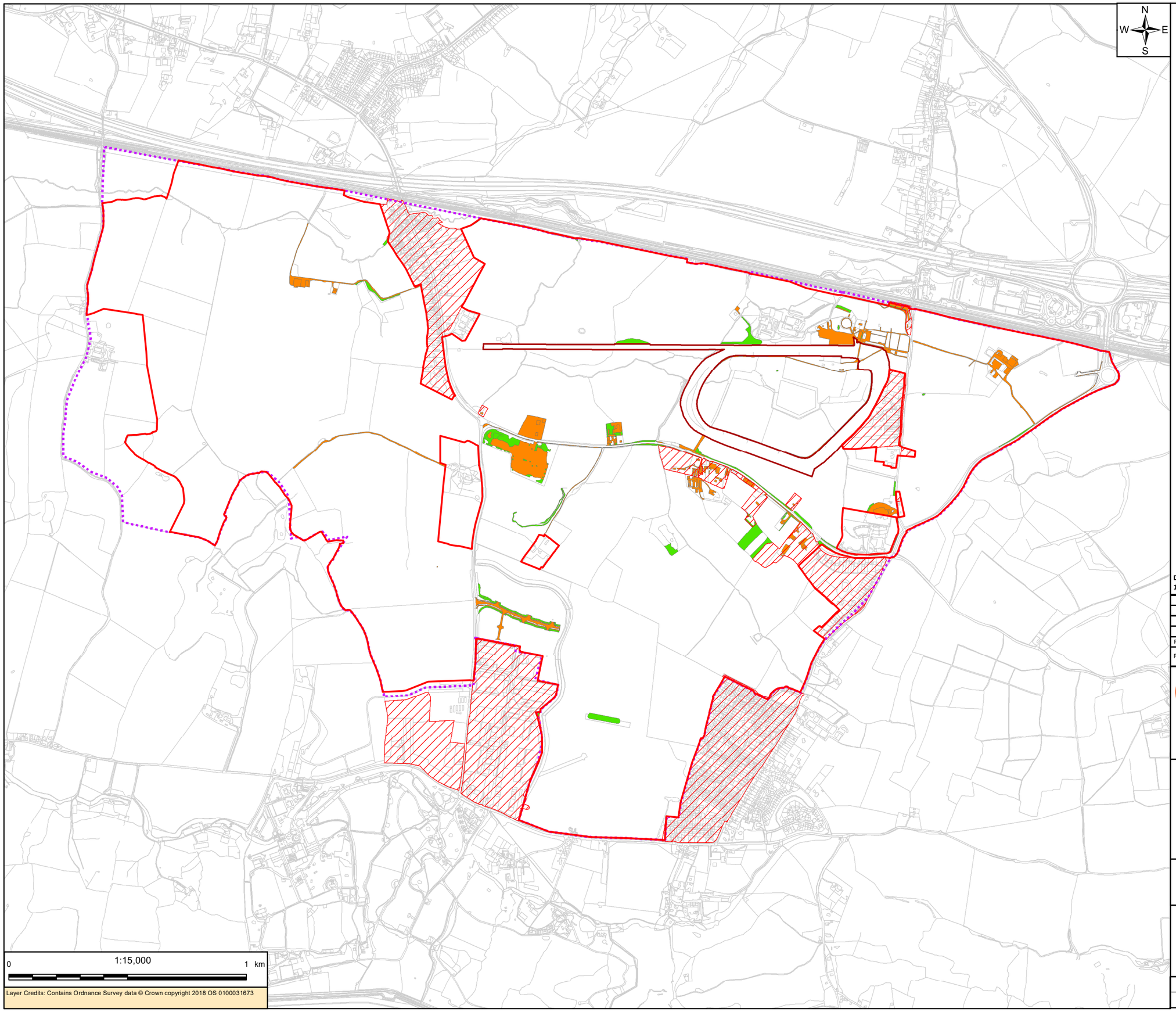
Arcadis House
34 York Way
London
N1 9AB

Folkestone & Hythe District Council

OTTERPOOL PARK

Existing Land Type - Within OPA Boundary

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



Legend

- Outline Planning Application Boundary
- Survey Area
- Area Not Fully Surveyed
- Racecourse
- Mixed Type – Greenfield
- Mixed Type – Urban

Drawing Number:
10029956-AUK-XX-XX-DR-CW-0022-P1

REV	Date	Description	Drawn	Check	Approv
P01	22-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 Mixed Land Type

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

Core Strategy Review Examination

Statement of Common Ground

Natural England and Folkestone & Hythe District Council

Document EB 13.95

APPENDIX F (2)

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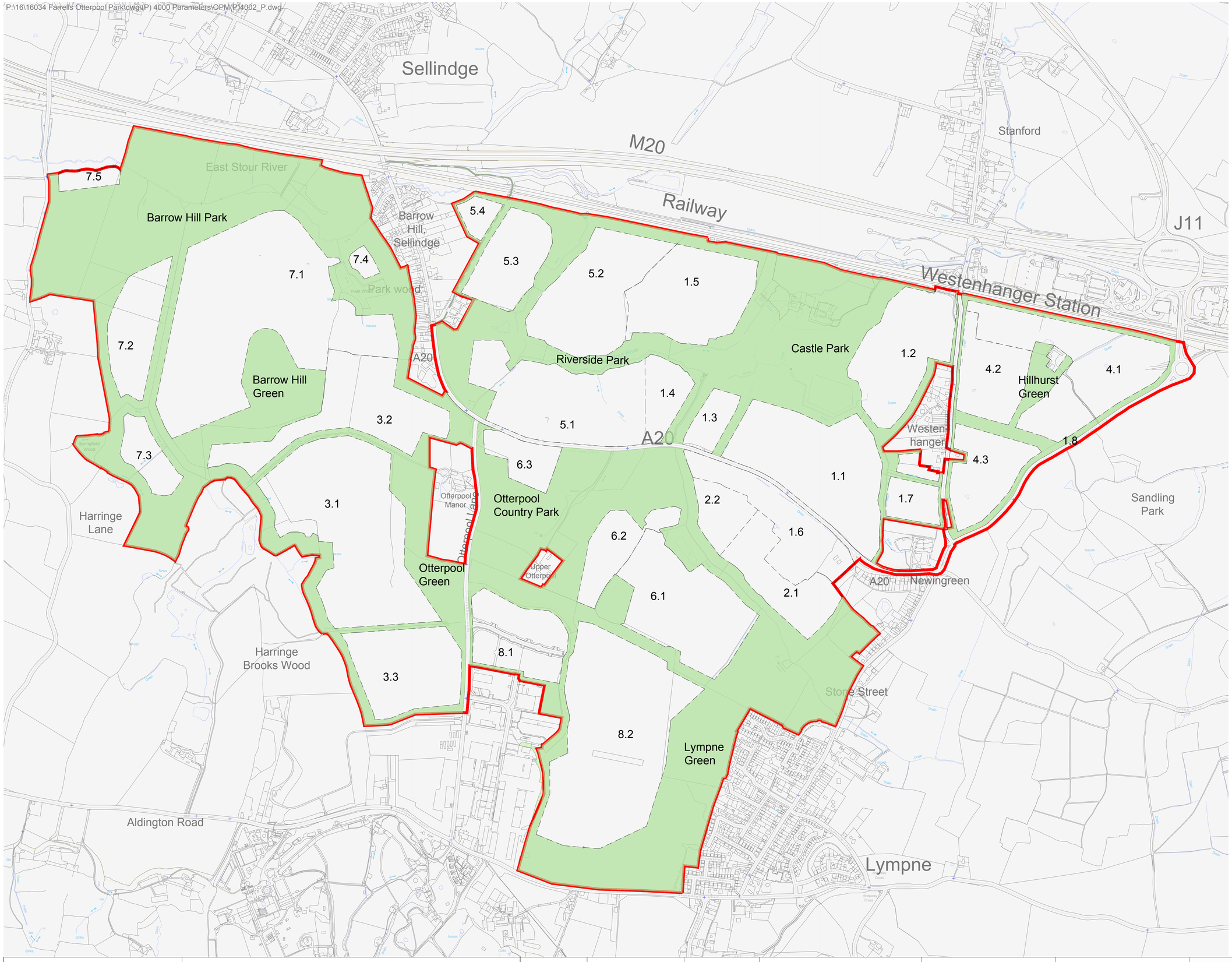
P:\16\16034 Farrells Otterpool Parkidwg\(P) 4000 Parameters\OPM(P)4002_P.dwg



Proposed

Proposed development areas

n.n Numbered key to development a parameter plans specification for explanation of limits and referen other planning documents.

Proposed open space

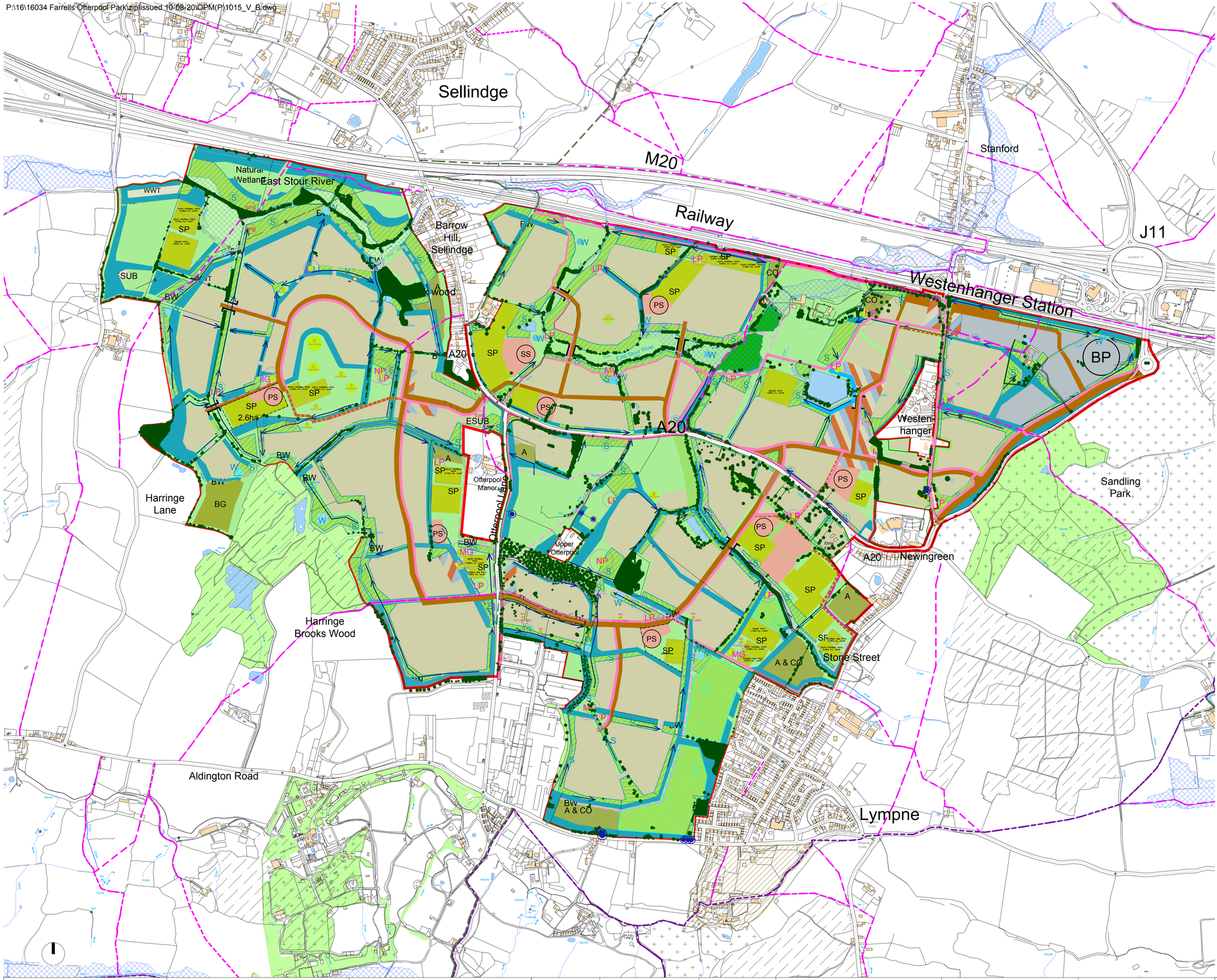
Application Red Line

0 250 500

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

P:\16\16034 Farrells Otterpool Park\zip\issued 10-08-20\OPM(P)1015_V_B.dwg



Existing

- Existing Communities & Buildings
- Existing Rivers, Streams and Ponds
- Existing Woods ouside 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
- BW Proposed Bridleway
- BG Proposed Burial Ground area
- A Proposed Allotments
- SP Proposed Sports Pitch areas
- NP MG LP Proposed Play areas
- BP Business development area
- SS Proposed Secondary School
- PS Proposed Primary School
- Mixed use Local Centres
- Proposed Business development area
- S Proposed SUDS Water Management Are
- Proposed SUDS Infiltration Areas
- Proposed Conveyance Swales
- FPS Proposed Foul Pump Station
- W Proposed Water Feature
- HB Location of Heritage Feature
- Advance Planting
- WWT Proposed Waste Water Treatment Infrastructure and Pipes
- Application Red Line

0 250 500

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: 09-04-20; rev Q: 23-04-20; rev R: 19-05-20; rev S: 05-06-20; 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

FARRELLS

Core Strategy Review Examination

Statement of Common Ground

Natural England and Folkestone & Hythe District Council

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APPENDIX F (3)

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Environment Agency KSLES area

Integrated Environment Planning Team

Response to query KSL 81610 LB dated 10 April 2018

Request for indicative discharge permit standards relating to new Otterpool Park Garden Town development sewage effluent

Response date 20 April 2018.

All results provided are indicative only and for assistance with Otterpool Park Framework Master planning process. The results provided are subject to review upon submission and determination of a permit application.

Options Tested

1. Effluent treated at existing Sellindge wwtw (Southern Water Services; SWS), discharging to Horton Priory Dyke (HPD) tributary of East Stour,
2. Effluent treated at new wwtw discharging to East Stour 1 km upstream of HPD confluence,
3. Effluent treated at new wwtw discharging to East Stour at HPD confluence.

Results for both 'Lower' and 'Upper' effluent volumes have been requested.

1. Sellindge wwtw. @ 608600 138200
   Targets used in modelling: Equivalent impact on the HPD as allowed by the current permit to ensure no deterioration and also a proposed PR19 phosphorus improvement scheme (achieve good status in East Stour).

   Dry weather flow (DWF) of current permit increased to accommodate flows from Otterpool development. Allowance made for headroom at Sellindge – based on current DWF and an estimate of long term (2045) 'committed to' growth at the WWTW. An accurate assessment should be requested from SWS. We have estimated headroom for the purposes of these calculations as 558 m3/day. Resulting Lower (Sellindge) DWF = 3877 m3/day; Upper DWF = 4508 m3/day

   Seasonal look up table BOD limits in current permit converted to annual for the purposes of these calculations. Permit: 8 mg/L summer, 15 mg/L winter. Converted to 12 mg/L annual.

2. New WWTW to East Stour upstream of HPD confluence. @ 609426 137712
   Targets: 3% deterioration from present quality in East Stour at this point.
   Lower (Otterpool) DWF = 2841 m3/day; Upper DWF = 3472 m3/day.
   Sellindge WWTW current permit unaltered.

3. New WWTW discharge to East Stour at HPD confluence. @ 608558 138047
   This option investigated due to very stringent standards resulting from option 2 above.
   Targets. Equivalent impact on the East Stour using the permitted impact of Sellindge WWTW as a baseline from which to ensure no deterioration.
   Proposed PR19 P scheme also used as baseline.
   Lower (Otterpool) DWF = 2841 m3/day; Upper DWF = 3472 m3/day.
   Sellindge WWTW current permit unaltered.

<u>Information sources used in modelling:</u>
Permitted DWF at Sellindge.
Estimate of Otterpool 'Lower' and 'Upper' DWF provided by Arcadis consulting.
Qm and Q95 in HPD and East Stour
Sellindge effluent quality monitoring point Ref E0001437.
Horton Priory Dyke monitoring point u/s Sellindge wwtw Ref E0001432; 'HORTON PRIORY DYKE RAILWAY BRIDGE'
East Stour monitoring point u/s HPD confluence Ref E0001424; 'EAST STOUR HARRINGE COURT'
Sellindge WWTW Ref E0001437; 'SELLINDGE SEWAGE TREATMENT WORKS FINAL EFFLUENT'

<u>Results:</u>

Results provided as Look Up Table/Upper Tier limits for BOD and Ammonia and mean limits for phosphorus. Upper Tier limits are standard Environment Agency 'read across' values.

	BOD mg/L		Ammonia mg/L		Phosphorus mg/L	
DWF	Lower	Upper	Lower	Upper	Lower	Upper
Sellindge wwtw	8/45	8/45	2/12	2/12	0.3	0.3
E Stour U/S	5/20	*	0.5/12	*	0.1	*
E Stour/HPD	8/45	7/44	2/12	2/12	0.3	0.3

* Not calculated due to very stringent limits calculated for lower DWF

Lower (Otterpool) DWF = 2841 m3/day; Upper DWF = 3472 m3/day. Note equivalent DWF at Sellindge would be 3877 (Lower) and 4508 (Upper) m3/day.

[redacted]

20 April 2018

Core Strategy Review Examination

Statement of Common Ground

Natural England and Folkestone & Hythe District Council

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APPENDIX F (4)

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Indicative nitrogen budget for new development - Scoping data

Client name	Folkstone and Hythe DC
Development name	Otterpool Park Garden Town
Development location (grid reference)	TR112 365 https://gridreferencefinder.com/
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

	Figures	Units	Data source	Guidance
Sewage treatment works that development drains to (if known)	Sellindge sewage works		Southern Water	
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 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	
Total Phosphorous proposed consent for this treatment works, if any, (if Know	0.3	mg/l	Environment Agency - this is indicative annual mean Total Phosphorous value for the proposed consent	
Total area of site	585.2	hectares	See Proposed Land Use Tab	
New Urban Area	297.5	hectares	See Proposed Land Use Tab	
Area of designated Suitable Alternative Natural Space (SANG)/open space	203.5	hectares	See Proposed Land Use Tab	
Area of Community Farm/Allotments	9.8	hectares	See Proposed Land Use Tab	
Current land use	A mixture of arable land, improved grassland & species poor semi-improved grassland (see the breakdown in Table 1 below		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	
nitrate loss from current site land use	**See Table 1 below**	kgN/ha/yr		

Table 1 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	
Cereals	319	27.3	0.36	
Lowland Grazing Livestock	119.1	12.2	0.24	
Racetrack	13.5	13.3	0.5	Average of urban & lowland grazing livestock loss rates used.
Hay Cut	18.9	5	0.14	Potentially higher than this
Other Grassland	68.3	5	0.14	
Mixed area - Urban	11.5	14.3	0.83	
Mixed area - Greenfield	4.5	5	0.14	
	554.8			

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

	Hectares
Remaining existing area within OPA boundary excluded from the NN Assessment (i.e. 10.6 ha retained existing roads & 19.8 ha retained buildings/waterbodies, bodies/woodland, hedgerows/ other ecological features)	30.4

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	110	l/p/d/ Natural England recommendation	
Step 3 confirm Waste water Treatment Works (WwTW)	**Sellindge sewage works**	Southern Water	
and permitted TN concentration	N/A	mg/l Southern Water	N/A, Subject to review in 2022.
Permitted Total Phosphate concentration	1	mg/l Southern Water	Current Sellndge Permit TP.
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	25	mg/l Southern Water/NE	N/A, Subject to review in 2022. The currently proposed design at Sellindge expect to achieve TN value of 25 mg/l as per SW advice received. However, a use of MBR could potentially further lower this TN figure if required.
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.3	mg/l Environment Agency	Proposed TP at Sellindge permit.
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			
Additional population	20400	Persons	
Wastewater volume generated by development	2244000	litres/day	
Receiving WwTW environmental permit for TN	25	mg/l TN	N/A, Subject to review in 2022. The currently proposed design at Sellindge expect to achieve TN value of 25 mg/l as per SW advice received. However, a use of MBR could potentially further lower this TN figure if required.
Receiving WwTW environmental permit for TP	0.3	mg/l TP	Used proposed EA TP permit level for Sellindge WwTW upgrade.
90% of the proposed consent TN limit	22.5	mg/l TN	Applied 90% correction for TN as a precautionary basis.
90% of the proposed consent TP limit	0.27	mg/l TP	
TN discharged after WwTW treatment	50490000	mg/TN/day	
TP discharged after WwTW treatment	605880.00	mg/TP/day	
Annual wastewater total nitrogen load	**18428.85**	kg/TN/yr	
Annual wastewater total phosphorous load	**221.15**	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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.50	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

Disclaimer:

This nutrient budget is provided in good faith, populated using the best available science and expert option 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 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	18428.9	221.1
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	18428.9	221.1
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	12967.8	326.3
Step 4 (= Step 3, i.e. N/P budget without buffer)	12967.8	326.3
Step 5 (Step 4*20%)	2593.6	65.3
Step 6 (Step 4 + Step 5)	**15561.4**	**391.6**

	15561.4	391.6
Nitrogen/Phosphorous Budget with 20% buffer (TN permit level is set to 25.0 mg/l in the absence of alternative values)		

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	90	l/p/d - Current Draft Policy SS8 target	
Step 3 confirm Waste water Treatment Works (WwTW)	**Sellindge sewage works**	Southern Water	
and permitted TN concentration	N/A	mg/l Southern Water	N/A, Subject to review in 2022.
Permitted Total Phosphate concentration	1	mg/l Southern Water	Current Sellndge Permit TP.
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	25	mg/l Southern Water/NE	N/A, Subject to review in 2022. The currently proposed design at Sellindge expect to achieve TN value of 25 mg/l as per SW advice received. However, a use of MBR could potentially further lower this TN figure if required.
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.3	mg/l Environment Agency	Proposed TP at Sellindge permit.
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			
Additional population	20400	Persons	
Wastewater volume generated by development	1836000	litres/day	
Receiving WwTW environmental permit for TN	25	mg/l TN	N/A, Subject to review in 2022. The currently proposed design at Sellindge expect to achieve TN value of 25 mg/l as per SW advice received. However, a use of MBR could potentially further lower this TN figure if required.
Receiving WwTW environmental permit for TP	0.3	mg/l TP	Used proposed EA TP permit level for Sellindge WwTW upgrade.
90% of the proposed consent TN limit	22.5	mg/l TN	Applied 90% correction for TN as a precautionary basis.
90% of the proposed consent TP limit	0.27	mg/l TP	
TN discharged after WwTW treatment	41310000	mg/TN/day	
TP discharged after WwTW treatment	495720.00	mg/TP/day	
Annual wastewater total nitrogen load	**15078.15**	kg/TN/yr	
Annual wastewater total phosphorous load	**180.94**	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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.50	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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This nutrient budget is provided in good faith, populated using the best available science and expert option 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 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	15078.2	180.9
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	15078.2	180.9
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	9617.1	286.1
Step 4 (= Step 3, i.e. N/P budget without buffer)	9617.1	286.1
Step 5 (Step 4*20%)	1923.4	57.2
Step 6 (Step 4 + Step 5)	**11540.5**	**343.3**
	11540.5	**343.3**
Nitrogen/Phosphorous Budget with 20% buffer (TN permit level is set to 25.0 mg/l in the absence of alternative values)		

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	110	l/p/d Natural England recommendation	
Step 3 confirm Waste water Treatment Works (WwTW)	**Onsite WwTW**	NAV	This calculation is alternative for onsite WwTW option.
and permitted TN concentration	N/A		This calculation is alternative for onsite WwTW option
Permitted Total Phosphate concentration	N/A		This calculation is alternative for onsite WwTW option
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	9	mg/l EA & Albion Water	N/A, TN is not specified - Used Albion Water's commercially achievable TN value
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.3	mg/l EA & Albion Water	Proposed TP for onsite WwTW (d/s outfall permit option - i.e. Albion Water's committed Tp)
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			
Additional population	20400	Persons	
Wastewater volume generated by development	2244000	litres/day	
Receiving WwTW environmental permit for TN	9	mg/l TN	N/A, Used Albion Water's commercially achievable TN value for onsite WwTW.
Receiving WwTW environmental permit for TP	0.3	mg/l TP	Proposed TP for onsite WwTW (d/s outfall permit option - i.e. Albion Water's committed Tp)
90% of the proposed consent TN limit	8.1	mg/l TN	Applied 90% correction for TN as a precautionary basis.
90% of the proposed consent TP limit	0.27	mg/l TP	
TN discharged after WwTW treatment	18176400	mg/TN/day	
TP discharged after WwTW treatment	605880.00	mg/TP/day	
Annual wastewater total nitrogen load	**6634.39**	kg/TN/yr	
Annual wastewater total phosphorous load	**221.15**	kgP/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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.50	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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Table 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
0	0	0	0	0.00	0.00
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	6634.4	221.1
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	6634.4	221.1
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	1173.3	326.3
Step 4 (= Step 3, i.e. N/P budget without buffer)	1173.3	326.3
Step 5 (Step 4*20%)	234.7	65.3
Step 6 (Step 4 + Step 5)	**1408.0**	**391.6**

	1408.0	**391.6**
Nitrogen/Phosphorous Budget with 20% buffer		

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	90	l/p/d - draft Policy SS8 target	Used reduced 90 l/p/d as per Policy SS4.
Step 3 confirm Waste water Treatment Works (WwTW)	**Onsite WwTW**	NAV	This calculation is alternative for onsite WwTW option.
and permitted TN concentration	N/A		This calculation is alternative for onsite WwTW option
Permitted Total Phosphate concentration	N/A		This calculation is alternative for onsite WwTW option
Proposed permitted Total Nitrogen concentration to accommodate Otterpool	9	mg/l Albion Water	N/A, TN is not specified - Used Albion Water's commercially achievable TN value
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.3	mg/l Albion Water	Proposed TP for onsite WwTW (d/s outfall permit option - i.e. Albion Water's committed Tp)
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			
Additional population	20400	Persons	
Wastewater volume generated by development	1836000	litres/day	
Receiving WwTW environmental permit for TN	9	mg/l TN	N/A, Used Albion Water's commercially achievable TN value for onsite WwTW.
Receiving WwTW environmental permit for TP	0.3	mg/l TP	Proposed TP for onsite WwTW (d/s outfall permit option - i.e. Albion Water's committed Tp)
90% of the proposed consent TN limit	8.1	mg/l TN	Applied 90% correction as a precautionary basis.
90% of the proposed consent TP limit	0.27	mg/l TP	
TN discharged after WwTW treatment	14871600	mg/TN/day	
TP discharged after WwTW treatment	495720.00	mg/TP/day	
Annual wastewater total nitrogen load	**5428.13**	kg/TN/yr	
Annual wastewater total phosphorous load	**180.94**	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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.50	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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Table 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	5428.1	180.9
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	5428.1	180.9
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	-32.9	286.1
Step 4 (= Step 3, i.e. N/P budget without buffer)	-32.9	286.1
Step 5 (Step 4*20%)	-6.6	57.2
Step 6 (Step 4 + Step 5)	**-39.5**	**343.3**

	-39.5	**343.3**
Nitrogen/Phosphorous Budget with 20% buffer		

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	110	l/p/d Natural England recommendation	
Step 3 confirm Waste water Treatment Works (WwTW)	**Onsite WwTW**	NAV	N/A - This calculation is alternative for onsite WwTW option.
and permitted TN concentration	N/A		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	ST Connect's UCAS certified TN value
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.1	mg/l Severn Trent Connect	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			
Additional population	20400	Persons	
Wastewater volume generated by development	2244000	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	14541120	mg/TN/day	
TP discharged after WwTW treatment	201960.00	mg/TP/day	
Annual wastewater total nitrogen load	**5307.51**	kg/TN/yr	
Annual wastewater total phosphorous load	**73.72**	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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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Table 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	5307.5	73.7
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	5307.5	73.7
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	-153.5	178.9
Step 4 (= Step 3, i.e. N/P budget without buffer)	-153.5	178.9
Step 5 (Step 4*20%)	-30.7	35.8
Step 6 (Step 4 + Step 5)	**-184.2**	**214.6**

	-184.2	**214.6**
Nitrogen/Phosphorous Budget with 20% buffer		

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate	2.4	Natural England recommendation	
Step 2 confirm water use (litres per person)	90	l/p/d - draft Policy SS8 target	Used reduced 90 l/p/d as per Policy SS4.
Step 3 confirm Waste water Treatment Works (WwTW)	**Onsite WwTW**	NAV	N/A - This calculation is alternative for onsite WwTW option.
and permitted TN concentration	N/A		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	ST Connect's UCAS certified TN value
Proposed permitted Total Phosphate concentration to accommodate Otterpool	0.1	mg/l Severn Trent Connect	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			
Additional population	20400	Persons	
Wastewater volume generated by development	1836000	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	11897280	mg/TN/day	
TP discharged after WwTW treatment	165240.00	mg/TP/day	
Annual wastewater total nitrogen load	**4342.51**	kg/TN/yr	
Annual wastewater total phosphorous load	**60.31**	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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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Table 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
0	0	0	0	0.00	0.00
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	4342.5	60.3
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	4342.5	60.3
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	-1118.5	165.5
Step 4 (= Step 3, i.e. N/P budget without buffer)	-1118.5	165.5
Step 5 (Step 4*20%)	-223.7	33.1
Step 6 (Step 4 + Step 5)	**-1342.2**	**198.6**

Nitrogen/Phosphorous Budget with 20% buffer	-1342.2	198.6

New development nitrogen budget

Client	Folkstone and Hythe DC
Development	Otterpool Park Garden Town
Number of residential dwellings	8500
Local Planning Authority	Folkstone and Hythe DC

Stage 1	Figures	Units/ Data source	Further information
Step 1 calculate additional population			
Occupancy rate			
Step 2 confirm water use (litres per person)			
Step 3 confirm Waste water Treatment Works (WwTW) and permitted TN concentration			
Permitted Total Phosphate concentration			
Proposed permitted Total Nitrogen concentration to accommodate Otterpool			
Proposed permitted Total Phosphate concentration to accommodate Otterpool			
Step 4 calculate Total Nitrogen (TN) in kg per annum that would exit the WwTW after treatment			
Additional population			
Wastewater volume generated by development			
Receiving WwTW environmental permit for TN			
Receiving WwTW environmental permit for TP			
90% of the proposed consent TN limit			
90% of the proposed consent TP limit			
TN discharged after WwTW treatment			
TP discharged after WwTW treatment			
Annual wastewater total nitrogen load			
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	
Total area of existing 'agricultural' and other land	554.8	hectares	Retained woodland, headgerows, riparian areas, standing water, buildings, roads etc. excluded. See Input Data Tab and Existing Land Use Tab for details.
Nitrate loss from current site land use	See Table 2	kgN/ha/yr	
Phosphate loss from current site land use	See Table 2	knP/ha/yr	
Total nitrate loss from current land use	**10963.55**	kgN/yr	See Table 2
Total Phosphate loss from current land use	**173.03**	kgP/yr	See Table 2

Stage 3	Figures	units/ Data source	Further information
New urban area	297.5314103	hectares/site layout	
Urban area nitrogen load	14.3	kgN/ha/yr	
Urban area phosphate load	0.83	kgP/ha/yr	
Nitrogen load from future urban area	4254.70	kgN/yr	
Phosphorous load from future urban area	246.95	kgP/yr	
New SANG/open space	203.50	ha	Excluded proposed mitigation areas (i.e. wetlands/ SuDS bio retention areas and woodland). See Input Data Tab and Proposed Land Use Tab for details.
SANG/open space nitrogen load	5	kgN/ha/yr	
SANG/open space phosphorous load	0.14	kgP/ha/yr	
Nitrogen Load from SANG/open space	1017.5	kgN/yr	
Phosphorous Load from SANG/open space	28.49	kgP/yr	
New Community Farm/Allotments area	9.80	ha	See Input Data Tab and Proposed Land Use Tab for details.
New Community Farm/Allotments nitrogen load	23.50	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	
Combined nitrogen load from future land uses	**5502.50**	kgN/yr	
Combined phosphorous load from future land uses	**278.19**	kgP/yr	

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Table 2 - Existing Land Types and Nutrient Loss Rates

		Average Nutrient Loss Rate		Estimated Nutrient loss	
Land Type	Hectares	Nitrate - Nitrogen (kg N/ha/yr)	Phosphorous (kg P/ha/yr)	Nitrate - nitrogen (kg N/yr)	Phosphorous (kg P/yr)
Cereals	319	27.3	0.36	8708.70	114.84
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	68.3	5	0.14	341.50	9.56
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
	554.8			**10963.55**	**173.03**

Stage 1 to Stage 3 Nutrient Loading Calcs Summary	TN (kgN/yr)	TP (kgP/yr)
Stage 1 - WwTW load	0.0	0.0
Stage 2 - existing agriculture landuse load	10963.5	173.0
Stage 3 - proposed development landuse load	5502.5	278.2

Stage 4 - Net Change in Nitrogen and Phosphorous Budget	TN (kgN/yr)	TP (kgP/yr)
Step 1 (Stage 1)	0.0	0.0
Step 2 (Stage 3 - Stage 2)	-5461.0	105.2
Step 3 (Step 1 + Step 2)	-5461.0	105.2
Step 4 (= Step 3, i.e. N/P budget without buffer)	-5461.0	105.2
Step 5 (Step 4*20%)	-1092.2	21.0
Step 6 (Step 4 + Step 5)	**-6553.3**	**126.2**

	-6553.3	**126.2**
Nitrogen/Phosphorous Budget with 20% buffer		

Nutrient Budget Summary - Without any new mitigation

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)
Southern Water - offsite Sellindge WwTW	15561	392	11541	343
Albion Water - onsite WwTW	1408	392	-39	343
Severn Trent Connect - onsite WwTW	-184	215	-1342	199
West Hythe WwTW	-6553	126	-6553	126

Nutrient Mitigation - Wetland Area Requirement Summary (i.e. assuming no other mitigation)

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)
Southern Water - offsite Sellindge WwTW	16.7	32.6	12.4	28.6
Albion Water - onsite WwTW	1.5	32.6	0.0	28.6
Severn Trent Connect - onsite WwTW	-0.2	17.9	-1.4	16.5
West Hythe WwTW	-7.0	10.5	-7.0	10.5

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

Nutrient Mitigation - Woodland Area Requirement Summary (i.e. assuming no other mitigation)

WwTW Option	PCC Rate - 110 l/p/d		PCC Rate - 90 l/p/d	
	TN Woodland Area (ha)	TP Woodland Area (ha)	TN Wetland Area (ha)	TP Wetland Area (ha)
Southern Water - offsite Sellindge WwTW	3112.3	19578.1	2308.1	17165.6
Albion Water - onsite WwTW	281.6	19578.1	-7.9	17165.6
Severn Trent Connect - onsite WwTW	-36.8	10732.3	-268.4	9928.1
West Hythe WwTW	-1310.7	6309.3	-1310.7	6309.3

Assumed Woodland TN removal rate *5 kg/ha/yr*
Assumed Woodland TP removal rate *0.02 kg/ha/yr*

Nutrient Budget Summary - After accounting for New Woodland Mitigation

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)
Southern Water - offsite Sellindge WwTW	15436	391	11416	343
Albion Water - onsite WwTW	1283	391	-164	343
Severn Trent Connect - onsite WwTW	-309	214	-1467	198
West Hythe WwTW	-6678	126	-6678	126

Nutrient Mitigation - Wetland Area Requirement Summary (i.e. after accounting for New Woodland Mitigation)

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)
Southern Water - offsite Sellindge WwTW	16.6	32.6	12.3	28.6
Albion Water - onsite WwTW	1.4	32.6	-0.2	28.6
Severn Trent Connect - onsite WwTW	-0.3	17.8	-1.6	16.5
West Hythe WwTW	-7.2	10.5	-7.2	10.5

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

Nutrient Mitigation - Proposed Available Woodland Area Mitigation Summary

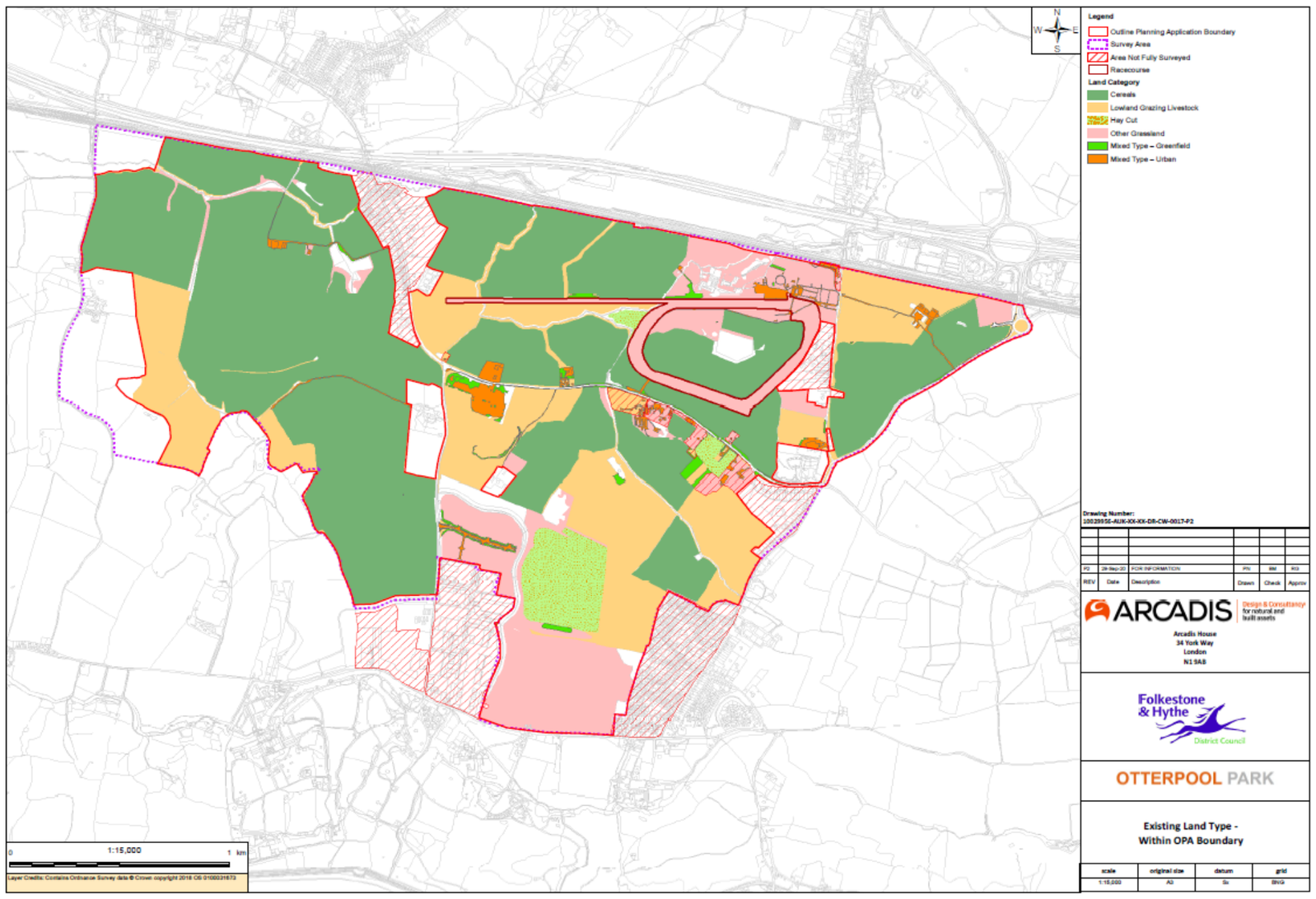
Total area of available woodland 25 ha
Total TN removal 125 kg/yr
Total TP removal 0.5 kg/yr

Assumed Woodland TN removal rate *5 kg/ha/yr*
Assumed Woodland TP removal rate *0.02 kg/ha/yr*

Nutrient Mitigation - Wetland Area Requirement Summary (i.e. after accounting for New Woodland Mitigation + 20% contingency allowance)

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)
Southern Water - offsite Sellindge WwTW	19.9	39.1	14.7	34.3
Albion Water - onsite WwTW	1.7	39.1	-0.2	34.3
Severn Trent Connect - onsite WwTW	N/A	21.4	N/A	19.8
West Hythe WwTW	N/A	12.6	N/A	12.6

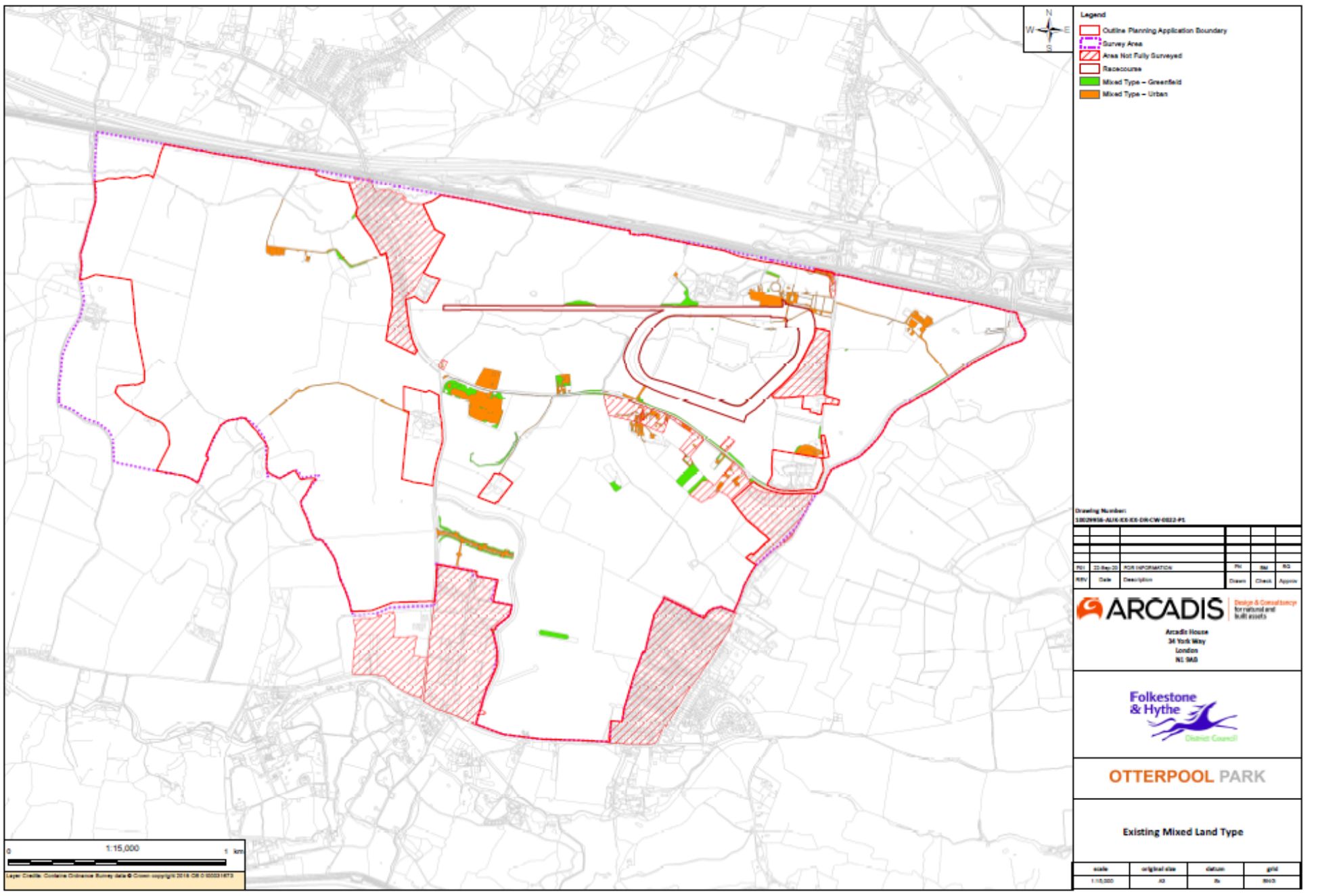
Assumed Wetland TN removal rate *93 g/m2/yr* 930 kg/ha/yr
Assumed Wetland TP removal rate *1.2 g/m2/yr* 12 kg/ha/yr



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
Grand Total	**5548194.8**	**554.8**

Racetrack area deducted from "Other Grassland" area

Outline Planning Application Boundary	**5852198.5**	**585.2**
Remaining existing area within OPA boundary excluded from the NN Assessment (i.e. 10.6 ha retained existing roads & 19.8 ha retained buildings/waterbodies, bodies/woodland, hedgerows/ other ecological		**30.4**



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**	

Otterpool Park Phase Areas and housing numbers

28/09/2020 Farrells

phase	Phase Urban areas ha	Approx. phase houses (no.)	Phase urban area sub-totals	Phase houses sub totals
1.1	18.94	599		
1.2	12.93	409		
1.3	2.80	88	34.67	1096
1.4	4.10	101		
1.5	13.43	331	17.53	432
1.6	9.98	281	9.98	281
1.7	3.77	166	3.77	166
2.1	8.05	139		
2.2	3.98	68	12.03	207
3.1	25.86	630		
3.2	14.58	355	40.44	985
3.3	11.62	487	11.62	487
3.4	1.45	32	1.45	32
4.1	17.58	295		
4.2	7.33	123		
4.3	7.66	129	32.56	547
5.1	17.72	638		
5.2	14.53	523		
5.3	7.67	276		
5.4	1.62	58	41.54	1495
6.1	15.66	338		
6.2	5.64	122	21.30	460
6.3	3.75	298	3.75	298
7.1	38.68	880		
7.2	7.73	176		
7.3	3.68	84		
7.4	0.83	19		
7.5	1.58	36	52.51	1194
8.1	8.86	319	8.86	319
8.2	30.73	501	30.73	501
Total Urban	322.73			
Total Landscape open	251.9			
Total existing roads	10.59			
Total OPA	585.22	8500	322.73	8500

PROPOSED LAND USE AREA SUMMARY FOR NUTRIENT LOADING CALCS

	Ha	Ha	
Excluded Retained Existing Land			
Existing roads	*10.6*		
Existing vegetation/waterbodies/ ecological features	*19.8*	*30.4*	
Excluded Mitigation Land			
Wetlands	*19*		
Woodland	*25*	*44*	
Community Farm/Allotment Land	**9.8**		
Remaining Total SANG	**203.5**		Increased SANG area by 25.1 to account for other SuDS in development parcels
Total Urban Area	**297.5**		Reduced urban area by 25.1 to account for other SuDS in development parcels
Total OPA Area Check	**585.2**		

Wetland Ref.	Wetland Area (ha)	Comments
A	11.8	Receives WwTW discharge, also includes an allowance for future 1500 homes in overall Otterpool Park Framework Masterplan
B	2.2	Receives storm discharge
C	2	Receives storm/river discharge
D	2.2	Receives storm/river discharge
E	0.7	Receives storm/river discharge, can be linked with Wetland D
F	1	Receives storm/river discharge, can be linked with Wetland E
G	0.7	Receives storm discharge
H	0.7	Receives storm discharge, can be linked with Wetland G
I	1.8	Receives storm discharge, allowance for future 1500 homes Framework Masterplan
TOTAL Area (ha)	**23.1**	
TOTAL Volume (m3)	**115,500**	Assuming 0.5m average water depth
TOTAL Volume (m3)	**57,750**	Assuming 0.25m average water depth