Stage 1

This stage calculates the change in phosphorous loading as a result of changes in the population of a site.

Step 1: The user should input the additional number of units that are proposed by the development. This is then multiplied by the occupancy rate per dwelling.

Step 2: The user has the option to select whether sewage from the proposed development will be handled by Wastewater treatment works or by Package treatment plants. The user must select one or the other, both options cannot be used.

Step 2a: If the proposed development is to use Wastewater Treatment Works (WwTW), then the user should select 'Yes' from the drop down box. Following this, the user should select the WwTW that the development will connect to.

Step 2b: If the proposed development is to use Package Treatment Plants (PTPs), then the user should select 'Yes' from the drop down box. Following this, the user should input the reduction efficiency of the package treatment plant. If the efficiency is unknown then the user should input a precautionary efficiency of 90%.

Stage 2

This stage calculates the phosphorous load from the current land use. Step 2: The user should input the area (hectares) of the current land uses that make up the total area of the development site. A GIS viewer can be used to identify the land uses on a coarse scale (https://gridreferencefinder.com/). However, if more detail is known about the site land uses then this should be manually inputted by the user.

Stage 3

This stage calculates the phosphorous load from the current land use.

Step 2: The user should input the proposed land uses that make up the total area of the development site. Any pre-determined on-site mitigation should also be inputted here.

Bespoke banking coefficients should be inputted for constructed wetland that can be evidenced

Stage 4

This stage provides a summary of the phosphorous loads calculated in stages 1-3 and presents the phosphorous budget for the proposed development.

A 20% precautionary buffer is included to account for uncertainties in the runoff coefficients used. The User has the option to change this buffer should this be appropriate.

Stage 5

This stage calculates the area and land uses of the mitigation site required for the proposed development to be phosphorous neutral, under current WwTW permit limits.

Step 4: The user has the option to select the amount of phosphorous load to be offset by the various land uses, which will then calculate the relevant area of land (Hectares) that needs to be changed.

Step 5: The user has the option to input the required area of land (hectares) to be mitigated until the project is phosphorous neutral, which will then calculate the equivalent phosphorous load for each land use.

The banking coefficients for wetlands uses a value of 8 kg/ha/yr for guidance purposes only. A site bespoke site-specific value will need to be calculated

Stage 6

This stage calculates the area and land uses of the mitigation site required for the proposed development to be phosphorous neutral, under AMP7 WwTW permit limits.

Step 4: The user has the option to select the amount of phosphorous load to be offset by the various land uses, which will then calculate the relevant area of land (Hectares) that needs to be changed.

Step 5: The user has the option to input the required area of land (hectares) to be mitigated until the project is phosphorous neutral, which will then calculate the equivalent phosphorous load for each land use.

Stage 7

This stage provides a summary in the differences in mitigation land use area between the current WwTW permit limits and the AMP7 WwTW permit limits

Land Use Definitions

The land uses presented in this tool followed the CORINE 2018 land use data. Definitions of key land uses are presented

Land Use	Description

Urban	Development which encompasses the built form, gardens, pathing, roads, hardstanding's, parks and small areas of open space, ponds and SuDS. The phosphorous load results from sewer overflows and from drainage that picks up phosphorous on the urban land. Agricultural barns used for storage of materials, farming supplies and temporary livestock can be classified as Urban. However, barns used for a specific farming type (e.g. piggeries and chicken farms) should be classified under the relevant farming land use.
Mineral Workings and Quarries	n open or surface mineral working, usually for the extraction of building stone, as slate, limestone,
Allotment and City farms	Wholly or mainly cultivated for the production of vegetable or fruit crops for consumption by the tenant or local community. In some cases the land will also be used for ornamental plants and the keeping of hens or bees.
Sports and Leisure facilities	Facilities used for recreational purposes such as managed sports pitches, athletic fields, gymnasiums, swimming pools etc.
Transport tracks and ways	Encompasses large infrastructure such as motorways and significant rail infrastructure. Small scale roads and tracks are covered under the Urban land use
Transport terminals	A large scale facility where passengers and freight are assembled or
Cereals	Holdings on which cereals, combinable crops and set-aside account for more than two thirds of the total standard output.
Dairy	Holdings on which dairy cows account for more than two thirds of their total standard output.
Cropping	Holdings on which arable crops (including field scale vegetables) account for more than two thirds of the total standard output, excluding holdings classified as cereals; holdings on which a mixture of arable and horticultural crops account for more than two thirds of their total SO excluding holdings classified as horticulture and holdings on which arable crops account for more than one third of their total standard output and no other grouping accounts for more than one third.
Horticulture	Holdings on which fruit (including vineyards), hardy nursery stock, glasshouse flowers and vegetables, market garden scale vegetables, outdoor blubs and flowers and mushrooms account for more than two thirds of their total standard output.
Pig Farming	Holdings on which pigs account for more than two thirds of their total standard
Lowland grazing / Paddock	Holdings on which cattle, sheep and other grazing livestock account for more than two thirds of their total standard output except holdings classified as diary. A holding is classified as lowland if less than 50% of its total area is in the Less Favoured Area (LFA). A paddock is classified as a small enclosures used for grazing horses.
Mixed livestock	Holdings for which none of the other categories account for more than two thirds of total standard output. This category includes mixed pigs and poultry farms as wells as farms with a mixture of crops and livestock (which neither accounts for more than two thirds of standard output.
Poultry farming	Holdings on which poultry account for more than two thirds of their total standard
General Arable	Use this option if unsure of the breakdown of arable
Improved grass	Land used for grazing (other than arable land) where over one third of the sward comprises, singly or in a mixture, ryegrass, cocksfoot or timothy, or land that has been improved by management practices such as liming and top dressing, where there is not a significant presence of sensitive plants species indicative of native unimproved grassland.
Unimproved grass	Land used for grazing or mowing which is not normally treated with mineral fertiliser or lime and contains a significant presence of sensitive plant species indicative of native unimproved grassland.
Open Space / Greenfield	Greenfield areas that have not been in agricultural use for at least 10 years and are not subject to unmanaged recreational use.
Woodland	Tree-covered areas which either arose naturally or as a result of plantations. This includes conifer woodland, mixed woodlands and broad-leaved woodlands etc.
shrub / heathland / bracken / bog	Land that contains extensive areas of either shrubs, heath or bracken A bog refers to land that is a wetland area of muddy ground that can accumulate peat.
Freshwater marsh	on-tidal, non-forested marsh wetland that contains fresh water, and is continuously or frequently
Meadow / semi natural grassland	A meadow is a field habitat vegetated by grass and other non-woody plant that has an open character and is not grazed by livestock
Wetland	Land use specific to constructed wetland only and does not include ponds or SuDS.

Wastewater Permit Limits
Current WwTW permit limits Vs AMP7 WwTW permit limits

The Water industry is looking to update and bring in new final effluent phosphorous consent which should come in before 2025, as part of the Water Industry National Environment Programme (WINEP). The enhancements are required to meet more onerous environmental permit requirements. Many WwTW in Somerset do not currently have a permit limit. However, following plans by Wessex Water, a large number will operate to a new permit level under AMP7. Further information regarding AMP7 permit limits can be found in the following documents:

0501C Atkins Phosphorus removal technology review

Representation C3 WINEP - Phosphorus removal
Soil Drainage
Criteria

The drainage characteristics of soil has a control over the dominant flow pathways for pollutant losses and as such controls the loading of Phosphorous into surface water bodies. Therefore the runoff coefficients from various land uses are different in freely draining soil compared to impermeable soil. For impermeable soil under Arable land use, it is assumed that man made drainage systems would be in place, whereas rough grazing and woodland areas would not be drained. For free-draining soil, the majority of the flow would be to groundwater, and it is assumed that drainage would not be required. The user should use the Soilscapes tool (Cranfield soil and Agrifood insitute, 2020) to determine the dominant soil type on their site. Soilscapes can be found at http://www.landis.org.uk/soilscapes/index.cfm

The following table is used to identify the dominant drainage type of the proposed development from the soil type identified above. The drainage type should then inform Stage 2 of the calculator

Free draining			Impermeable		
Colour	ID	Name	Colour	ID	Name
	3	Shallow lime-rich soils over chalk or limestone		1	Saltmarsh soils
	4	Sand dune soils		2	Shallow very acid peaty soils over rock
	5	Freely draining lime-rich loamy soils		8	Slightly acid loamy and clayey soils with impeded drainage
	6	Freely draining slightly acid loamy soils		9	Lime-rich loamy and clayey soils with impeded drainage
	7	Freely draining slightly acid but base-rich soils		15	Naturally wet very acid sandy and loamy soils
	10	Freely draining slightly acid sandy soils		16	Very acid loamy upland soils with a wet peaty surface
	11	Freely draining sandy Breckland soils		17	Slowly permeable seasonally wet acid loamy and clayey soils
	12	Freely draining floodplain soils		18	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils
	13	Freely draining acid loamy soils over rock		19	Slowly permeable wet very acid upland soils with a peaty surface
		Freely draining very acid sandy and loamy soils			Loamy and clayey floodplain soils with naturally high groundwater
				21	Loamy and clayey soils of coastal flats with naturally high groundwater
				22	Loamy soils with naturally high groundwater
				23	Loamy and sandy soils with naturally high groundwater and a peaty surface
				24	Restored soils mostly from quarry and opencast spoil
				25	Blanket bog peat soils
				26	Raised bog peat soils
				27	Fen peat soils

HaskoningDHV UK Ltd., a company of Royal HaskoningDHV
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Planning Application Reference No.	22/00259/OUT

Site address:	High St Sparkford

Site proposal:	Mixed use development comprising: 45 residential units & 60 bed care home. Trunk road service area Use PR19 rate of 1.0mg/l going forward and pro rata the units in the Phosphate Calculator V3.1 to achieve results. V3.1 Calculator says 5.0mg/l for Sparkford in error, therefore input 20% of all residential development units / care home beds.

Date:	24.05.22

Additional information:

Stage 1

Calculate Total Phosphorous (TP) in (Kg/year) derived from the development as a result of increased population

Note: This calculation should only include the additional units resulting from the proposed development, including any development that will result in overnight accommodation. For land not currently in residential use, this will be the total units proposed by the development. However, for land already in residential use, this should only be the increase in units.

1. Calculate the additional population	Value	Unit
Number of units as flats, care-home, residential institution proposed	12	dwellings
Number of houses proposed	9	dwellings
Average occupancy	2.4	persons/dwelling
Number of additional rooms above 6 residents (sui generis) for houses in multiple occupation		dwellings
Average occupancy	1.65	persons/dwelling
Number of rooms in a hotel or guest house proposed		dwellings
Average occupancy	1.65	persons/dwelling
Number of weeks open per year (1-52)		Weeks
Average occupancy rate (1-100)		%
Total population increase generated by the development	41	Persons

Note: The national average occupancy rate of 2.4 persons per dwelling is used for in this model. The number of proposed units should be evidenced. In the case of hotel and guest house average occupancy rates should also be evidenced. Developments that do not fall within these classifications such contact the council and bespoke calculations may be used.

Please select how the sewage from the proposed development will be handled, noting that a development must be handled by either wastewater treatment plants or package treatment, and cannot be handled by both.

Is sewage to be handled by wastewater treatment works?	Yes	Is sewage to be handled by Package Treatment plants?	No

TP budget that would exit the Wastewater Treatment Works (WwTW) after treatment

Note: If the sewage is to be treated by wastewater treatment plants then the user should select "Yes" in the list above. If package treatment plants are to be used instead, then the user should select "No" above.

This is the process of collecting wastewater from houses and guiding it, via the sewage network, to WwTW (also known as sewage works). The Phosphorous concentration of the influent is calculated by multiplying the number of people by the expected water usage per day. The Phosphorous concentration within the effluent is calculated by applying the discharge level of the appropriate WwTW. The Phosphorous loading is expressed in kg/year.

Calculate the wastewater volume generated	Value	Unit
Total population increase generated by the development	41	Persons

2b. TP budget for Package Treatment Plants (PTPs)

Note: If the sewage is to be treated by package treatment plants then the user should select "Yes" in the list above. If wastewater treatment plants are to be used instead, then the user should select "No" above.

Packaged wastewater treatment plants are pre-manufactured treatment facilities used to treat wastewater in smaller communities or on individual properties. This concept is defined as decentralized wastewater treatment. The Phosphorous influent is calculated by multiplying the number of people by the expected loading per person. The Phosphorous effluent is calculated by applying the PTP reduction efficiency. The Phosphorous loading is expressed in kg/year.

Calculate TP load prior to treatment	Value	Unit
Total population increase generated by the development	0	Persons

Water use per person	110	Litres/person/day	Average Phosphorous loading per person	0.99	Kg/person/year
Wastewater volume generated by the development	4554	Litres/day	Total Phosphorous prior to treatment	0.00	Kg/year

Confirm receiving WwTW and permit limit	Value	Unit
Select the WwTW the development will connect to	Sparkfor	
WwTW discharge [illegible]	5.00	mg/L

Note: Please use the drop down lists to select the WwTW that the proposed development will be connected to. If the WwTW is not known, then please select 'Unknown' from the drop down list.

Calculate TP load after treatment	Value	Unit
Receiving PTP reduction efficiency		%
Total Phosphorous discharge after PTP treatment	0.00	Kg/year

Note: The user mist input the reduction efficiency of the PTP. The efficiency of the PTP used must be evidenced. The evidence should include the test result documents from the lab (in English) and/ or measured effluent concentrations from real world applications. If the efficiency is unknown then a precautionary value of 90% can be used.

Calculate the TP discharged by the WwTW	Value	Unit
TP discharged by WwTW	22770	mg/day
TP discharged by WwTW	0.0228	Kg/day
Phosphorous loading from [illegible]	8.31	Kg/year

Calculate TP load from development wastewater with on-site PTP		
PTP Total Phosphorous load	0.00	Kg/year

3. Calculate the additional population	Value	Unit
Total Phosphorous load from additional population	8.31	Kg/year

Stage 2 Calculate existing (pre-development) TP from current land use of the development

Note: Where development sites include existing areas that are to be retained, these areas can be excluded from the calculations in both Stages 2 and 3.

1.	Total area of development site		Value	Unit Enter
	the total area of the development site	9.045		Hectares

2.	Identify current land uses of the development site	Value	Unit
	Identify the drainage type of the soil on site		
	Is the soil type free draining?	No	

Note: Identify the soil drainage type from the Viewer, and use the criteria table in the Help tab to identify if the soil is either permeable or impermeable

	Urban development		Hectares
	Mineral workings and quarries		Hectares
	Open space / Greenfield		Hectares
	Allotments and city farms		Hectares
	Sports and leisure facilities		Hectares
	Transport tracks and ways		Hectares
	Transport terminals		Hectares
	Cereals		Hectares
	Dairy		Hectares
	Cropping		Hectares
	Horticulture		Hectares
	Pig Farming		Hectares
	Lowland Grazing / paddock		Hectares
	Mixed livestock	8.070	Hectares
	Poultry Farming		Hectares
	General Arable		Hectares
	Improved grass		Hectares
	Unimproved grass		Hectares
	Woodland (e.g. conifer, mixed, broad-	0.975	leaved)
Hectares	shrub / heathland / bracken / bog		Hectares
	freshwater marsh		Hectares
	Meadow / semi natural grassland		Hectares
	Sum total of land uses	9.045	Hectares

Note: The sum total of land uses must equal the development site area - the box will colour red if the areas do not match.

3.	Calculate TP from current land usage	Value	Unit
	TP load from current land usage	4.08	Kg/year

Stage 3 Calculate TP for the proposed development

Note: This section should include all land uses within the proposed development. Where the proposed scheme is to create new wetlands, woodlands, nature reserves, etc. within the development site area, then this should be included within this section. Any offsite mitigation, proposed by either the developer or the Council should not be included below, and should instead be inputted in Stage 5 (if mitigation is required).

1.	Total area of development site		Value	Unit Total
	area of the development site	9.045		Hectares

2.	Identify proposed land uses of the development site	Value	Unit
	Urban development	3.184	Hectares
	Open Space / Greenfield	3.623	Hectares
	Woodland	1.283	Hectares
	Nature reserve		Hectares
	Heathland / Bog		Hectares
	Allotment		Hectares
	Meadow/semi-natural	0.000	grassland
	Hectares Sports and Leisure		facilities
			Hectares

Note: The sum total of land uses must equal the development site area inputted in stage 1 - the box will colour red if the areas do not match. Wetland refers to specific wetland off a watercourse - for more information refer to the land use definitions in the help tab.

3.	Designed Wetlands / SuDS		
	Wetland / SuDS	0.955	area
	Hectares Banking	8	coefficient
	Kg/ha/year		

Note: Please input the banking coefficient calculated for the designed wetland / SuDS. The calculated value should be justifiable.

	Sum total of land uses	9.045	Hectares

4.	Calculate TP from proposed land usage	Value	Unit
	TP load from proposed land usage	-4.46	Kg/year

5.	Calculation of gross P loading	Value	Unit
	Gross TP load from current and proposed land usage	-0.23	Kg/year

Note: this step is for illustrative purposes when iteratively creating mitigation land on-site

Stage 4 Calculate the net change in Phosphorous load from the proposed development

Note: This stage calculates the net change in total phosphorous load to the catchment from the proposed development. This is derived by calculating the difference between the total phosphorous load calculated for the proposed development (wastewater, urban area, open space etc.) and that for the existing land uses. The phosphorous budget for the site has been calculated under current and AMP7 WwTW permit levels.

		Current	AMP7		
1.	Identify the Phosphorous load from additional population Value Value Unit WwTW location	Sparkford			
	Phosphorous loading from additional population	8.31	7.48	Kg/year	
2.	Calculate net change in Phosphorous load from land use change Value Value Unit				
	TP proposed land use				
	Phosphorous load from land use change	-8.54	-8.54	Kg/year	
3.	Calculate phosphorous budget for the development site Value Value Unit				
	Phosphorous budget for the site	-0.23	-1.06	Kg/year	
4.	Calculate phosphorous budget precautionary buffer Value Value Unit				
	Buffer amount	20	20	%	
	Phosphorous precautionary buffer	0.00	0.00	Kg/year	
5.	Total phosphorous budget for the development site Value Value Unit				
	Total Phosphorous budget for the site	-0.23	-1.06	Kg/year	

Summary	
No. of dwellings	21
Current permit limit	5
AMP7 permit limit	4.5
TP current land use	4.08
	-4.46

Note: The figures used throughout this model are based on scientific research, evidence and modelled catchments and represent the best available evidence. However, it is important that a precautionary buffer is used that recognises the uncertainty with these figures and ensures, with reasonable certainty, that there will be no adverse effect on site integrity. As such, a 20% precautionary buffer is built into the calculation.

Current WwTW Permit levels

Development will be Phosphorous neutral - no mitigation will be required

AMP7 WwTW Permit levels

Development will be Phosphorous neutral - no mitigation will be required

Stage 5 Calculate the current TP banking for the proposed development

Note: This section is only required for projects that will generate additional phosphorous and as a result need to implement mitigation measures, in order to achieve phosphorous neutrality under the current WwTW permit limits.

		Value	Unit
1.	Total Phosphorous budget for the development site		
	Total phosphorous budget to be mitigated	-0.23	Kg/year

No

On-site mitigation

Note: If the mitigation is to be implemented on-site then the user should select "Yes" in the list above. If off-site mitigation is to be implemented instead, then the user should select "No" above.

Identify current land use on-site mitigation area	Value		Unit
Average land use of the on-site mitigation area	0.45	No	Kg/ha/year

Specific land use of on-site mitigation area			
Urban development		No	Kg/ha/year
Mineral workings and quarries		No	Kg/ha/year
Open space / Greenfield		No	Kg/ha/year
Allotments and city farms		No	Kg/ha/year
Sports and leisure facilities		No	Kg/ha/year
Transport tracks and ways		No	Kg/ha/year
Transport terminals		No	Kg/ha/year
Cereals		No	Kg/ha/year
Dairy		No	Kg/ha/year
Cropping		No	Kg/ha/year
Horticulture		No	Kg/ha/year
Pig Farming		No	Kg/ha/year
Lowland Grazing		No	Kg/ha/year
Mixed Livestock	0.50	No	Kg/ha/year
Poultry Farming		No	Kg/ha/year
General Arable		No	Kg/ha/year
Improved grass		No	Kg/ha/year
Unimproved grass		No	Kg/ha/year
Woodland (e.g. conifer, mixed,	0.02	No	Kg/ha/year
shrub / heathland / bracken / bog		No	Kg/ha/year
freshwater marsh		No	Kg/ha/year
Meadow / semi natural grassland		No	Kg/ha/year

On-site mitigation land runoff coefficient	0.00	Off-site mitigation land runoff coefficient	0.00

mitigation land runoff coefficient

3. Identify proposed land uses for mitigation

	Value	Unit
Constructed wetland	-0.029	Hectares
Open Space / Greenfield	1.669	Hectares

Nature reserve	11.686	Hectares
Woodland	11.686	Hectares
Heathland / Bog	11.686	Hectares
Meadow/semi-natural grassland	1.169	Hectares

Designed Wetland banking coefficient

Banking coefficient	8	Kg/ha/year

Note: This section calculates the required area (hectares) needed for each land use type to individually mitigate the total excess phosphorous. This is included to provide context for the user when inputting required mitigation land uses in either section 4 and 5. Constructed wetland uses a generic runoff coefficient of -8 kg/ha/yr for guidance purposes only. Site-specific values will differ from this value and can be manually inputted above.

4. Identify proposed land uses for mitigation

	Value	Unit	Value	Unit
Constructed wetland		kg/year	0	Hectares
Open Space / Greenfield		kg/year	0	Hectares
Nature reserve		kg/year	0	Hectares
Woodland		kg/year	0	Hectares
Heathland / Bog		kg/year	0	Hectares
Meadow/semi-natural grassland		kg/year	0	Hectares
Sum total area needed to be created	-0.23	Kg/year	0.000	Hectares

Note: This section allows the user to input the required total phosphorous to be offset for the various land uses, with the equivalent area that would be required to be created. If the mitigation is to be implemented on-site then the actual area of mitigation land may differ from the value quoted due to the relative reduction in other land uses on-site. Therefore, for on-site mitigation these areas should be used a guide and but back into Stage 3 iteratively until the project is Phosphorous neutral.

5. Identify proposed land uses for mitigation

	Value	Unit	Value	Unit
Constructed wetland		hectares	0.00	kg/year
Open Space / Greenfield		hectares	0.00	kg/year
Nature reserve		hectares	0.00	kg/year
Woodland		hectares	0.00	kg/year
Heathland / Bog		hectares	0.00	kg/year
Meadow/semi-natural grassland		hectares	0.00	kg/year
Sum total area needed to be created	0.000	hectares	-0.23	Kg/year

Note: This section allows the user to input the required area for the various land uses to be created, with the equivalent total phosphorous to be offset in order for the development to be phosphorous neutral. The same applies as above regarding on-site mitigation.

Stage

Calculate the AMP7 TP banking for the proposed development 5

Note: This section is only required for projects that will generate additional phosphorous and as a result need to implement mitigation measures, in order to achieve phosphorous neutrality under the AMP7 WwTW permit limits.

1. Total Phosphorous budget for the development site

	Value	Unit
Total phosphorous budget to be mitigated	-1.06	Kg/year

No

On-site mitigation

Note: If the mitigation is to be implemented on-site then the user should select "Yes" in the list above. If off-site mitigation is to be implemented instead, then the user should select "No" above.

Identify current land use on-site mitigation area	Value		Unit
Average land use of the on-site mitigation area	0.45	No	Kg/ha/year

Specific land use of on-site mitigation area			
Urban development		No	Kg/ha/year
Mineral workings and quarries		No	Kg/ha/year
Open space / Greenfield		No	Kg/ha/year
Allotments and city farms		No	Kg/ha/year
Sports and leisure facilities		No	Kg/ha/year
Transport tracks and ways		No	Kg/ha/year
Transport terminals		No	Kg/ha/year
Cereals		No	Kg/ha/year
Dairy		No	Kg/ha/year
Cropping		No	Kg/ha/year
Horticulture		No	Kg/ha/year
Pig Farming		No	Kg/ha/year
Lowland Grazing		No	Kg/ha/year
Mixed Livestock	0.50	No	Kg/ha/year
Poultry Farming		No	Kg/ha/year
General Arable		No	Kg/ha/year
Improved grass		No	Kg/ha/year
Unimproved grass		No	Kg/ha/year
Woodland (e.g. conifer, mixed,	0.02	No	Kg/ha/year
shrub / heathland / bracken / bog		No	Kg/ha/year
freshwater marsh		No	Kg/ha/year
Meadow / semi natural grassland		No	Kg/ha/year

On-site mitigation land runoff coefficient	0.00	Off-site mitigation land runoff coefficient	0.00

mitigation land runoff coefficient

3. Identify proposed land uses for mitigation

	Value	Unit
Constructed wetland	-0.133	Hectares
Open Space / Greenfield	7.606	Hectares

Nature reserve	53.241	Hectares
Woodland	53.241	Hectares
Heathland / Bog	53.241	Hectares
Meadow/semi-natural grassland	5.324	Hectares

Designed Wetland banking coefficient

Banking coefficient	8	Kg/ha/year

Note: This section calculates the required area (hectares) needed for each land use type to individually mitigate the total excess phosphorous. This is included to provide context for the user when inputting required mitigation land uses in either section 4 and 5. Constructed wetland uses a generic runoff coefficient of -8 kg/ha/yr for guidance purposes only. Site-specific values will differ from this value and can be manually inputted above.

4. Identify proposed land uses for mitigation

	Value	Unit	Value	Unit
Constructed wetland		kg/year	0	Hectares
Open Space / Greenfield		kg/year	0	Hectares
Nature reserve		kg/year	0	Hectares
Woodland		kg/year	0	Hectares
Heathland / Bog		kg/year	0	Hectares
Meadow/semi-natural grassland	0	kg/year		Hectares
Sum total area needed to be created	-1.06	Kg/year	0.000	Hectares

Note: This section allows the user to input the required total phosphorous to be offset for the various land uses, with the equivalent area that would be required to be created. If the mitigation is to be implemented on-site then the actual area of mitigation land may differ from the value quoted due to the relative reduction in other land uses on-site. Therefore, for on-site mitigation these areas should be used a guide and but back into Stage 3 iteratively until the project is Phosphorous neutral.

5. Identify proposed land uses for mitigation

	Value	Unit	Value	Unit
Constructed wetland		hectares	0.00	kg/year
Open Space / Greenfield		hectares	0.00	kg/year
Nature reserve		hectares	0.00	kg/year
Woodland		hectares	0.00	kg/year
Heathland / Bog		hectares	0.00	kg/year
Meadow/semi-natural grassland		hectares	0.00	kg/year
Sum total area needed to be created	0.000	hectares	-1.06	Kg/year

Note: This section allows the user to input the required area for the various land uses to be created, with the equivalent total phosphorous to be offset in order for the development to be phosphorous neutral. The same applies as above regarding on-site mitigation.

Difference in mitigation land uses between current WwTW permit limits and AMP7 WwTW permit limits

Stage 7

1. Total Area of proposed mitigation land uses	Current WwTW	AMP7 WwTW	Difference	
	Value	Value	Value	Units
Constructed wetland	0.000	0.000	0.000	Hectares
Open Space / SANG (<0.5 ha)	0.000	0.000	0.000	Hectares
Nature reserve	0.000	0.000	0.000	Hectares Woodland
	0.000	0.000	0.000	Hectares
Heathland / Bog	0.000	0.000	0.000	Hectares
Meadow/semi-natural grassland	0.000	0.000	0.000	Hectares
Sum total area needed to be created	0.000	0.000	0.000	Hectares

Note: This section demonstrates to the user the amount of mitigation land that is no longer required for the project to be 'Phosphorous Neutral' following implementation of the AMP7 WwTW permit limits