

Appendix E.2
EMISSIONS TO SURFACE WATERS

IPPC Licence Application Westland Horticulture Ltd.

Project Ref: OES1182_01

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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Basin 1 (Clonsura)		
Source of Emission:	Surface Water Runoff from Peatlands		
Location :	Clonsura		
Grid Ref. (12 digit, 6E,6N):	241984E 277137N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:	_____ Not available _____ m ³ .sec ⁻¹ Dry Weather Flow _____ 0.68 _____ m ³ .sec ⁻¹ 95%ile flow		
Available waste assimilative capacity:	11.31 kg/day BOD, 3.11kg/Day PO ₄ (P), 690 kg/day Suspended Solids, 2.87 Kg/day Ammonia		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ 60 _____ min/hr _____ 24 _____ hr/day _____ 365 _____ day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N ^o :	Sedimentation Basin 2 (Clonsura)		
Source of Emission:	Surface Water Runoff From Peatlands		
Location :	Clonsura		
Grid Ref. (12 digit, 6E,6N):	241814E 277180N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		_____0.68_____m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	11.31 kg/day BOD, 3.14kg/Day PO ₄ (P), 690 kg/day Suspended Solids kg/day, 1.59Kg/day Ammonia		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____60_____min/hr _____24_____hr/day _____365_____day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Basin 3 (Clonsura)		
Source of Emission:	Surface Water Runoff From Peatlands		
Location :	Coole		
Grid Ref. (12 digit, 6E,6N):	241692E 276430N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:			_____m ³ .sec ⁻¹ Dry Weather Flow _____0.78_____m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	12.97 kg/day BOD, kg/day 3.57 PO ₄ (P), 791 kg/day Suspended Solids kg/day, 3.3Kg/day Ammonia		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (start-up /shutdown to be included):

Periods of Emission (avg)	_____60_____min/hr _____24_____hr/day _____365_____day/yr
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(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Basin 4 (Clonsura)		
Source of Emission:	Surface Water Runoff From Peatlands		
Location :	Clonsura		
Grid Ref. (12 digit, 6E,6N):	241240E 276794N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.78	m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	12.97 kg/day BOD, kg/Day 3.57 PO ₄ (P), 791 kg/day Suspended Solids kg/day, 3.3Kg/day Ammonia		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
	60 24 365

TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Basin 5 (Clonsura) (Proposed)		
Source of Emission:	Surface Water Runoff From Peatlands		
Location :	Clonsura		
Grid Ref. (12 digit, 6E,6N):	240985E 277194N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.68	m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	11.31 kg/day BOD, 3.11kg/Day PO ₄ (P), 690 kg/day Suspended Solids, 2.87 Kg/day Ammonia		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (start-up /shutdown to be included):

Periods of Emission (avg)	_____min/hr	_____hr/day	_____day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Basin 1 (Lower Coole)		
Source of Emission:	Surface Water Runoff From Peatlands		
Location :	Lower Coole		
Grid Ref. (12 digit, 6E,6N):	239538E 272733N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.83 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	13.34kg/day BOD, 3.81kg/day PO ₄ (P) , 3.30kg/day Ammonia, 842kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ min/hr _____ hr/day _____ day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Pond 2 (Mayne)		
Source of Emission:	Surface Water from Peatlands		
Location :	Mayne		
Grid Ref. (12 digit, 6E,6N):	239232E, 272241N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.83	_____m ³ .sec ⁻¹ 95%ile flow
Available waste assimilative capacity:	13.34kg/day BOD, 3.81kg/day PO ₄ (P) , 3.30kg/day Ammonia, 842kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. No:	Sedimentation Basin 3 (Mayne)		
Source of Emission:	Surface Runoff from Peatland		
Location :	Mayne		
Grid Ref. (12 digit, 6E,6N):	239239E 271813N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.931 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	15.48kg/day BOD, 4.28kg/day PO ₄ (P) , 3.7kg/day Ammonia, 944.75kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N°:	Sedimentation Pond 4 (Mayne)		
Source of Emission:	Surface Water Runoff from Peatlands		
Location :	Mayne		
Grid Ref. (12 digit, 6E,6N):	239439E, 271438N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.931 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	15.48kg/day BOD, 4.28kg/day PO ₄ (P) , 3.7kg/day Ammonia, 944.75kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____60_____min/hr _____24_____hr/day _____365_____day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. No:	Sedimentation Pond 5 (Ballinaloe)		
Source of Emission:	Surface Water Runoff from Peatlands		
Location :	Ballinaloe		
Grid Ref. (12 digit, 6E,6N):	239251E 271289N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.931 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	15.48kg/day BOD, 4.28kg/day PO ₄ (P) , 3.7kg/day Ammonia, 944.75kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____60_____min/hr _____24_____hr/day _____365_____day/yr
---------------------------	-----------------------------------------------------------

TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N ^o :	Sedimentation Basin 6 (Ballinealoe)		
Source of Emission:	Surface Water Runoff from Peatlands		
Location :	Ballinealoe		
Grid Ref. (12 digit, 6E,6N):	239819E 271194N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.931 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	15.48kg/day BOD, 4.28kg/day PO ₄ (P) , 3.7kg/day Ammonia, 944.75kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____ 60 _____ min/hr _____ 24 _____ hr/day _____ 365 _____ day/yr
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TABLE E.2(i): EMISSIONS TO SURFACE WATERS

(One page for each emission)

Emission Point:

Emission Point Ref. N ^o :	Sedimentation Basin 7 (Ballinealoe)		
Source of Emission:	Surface Water Runoff from Peatlands		
Location :	Ballinealoe		
Grid Ref. (12 digit, 6E,6N):	240350E 270715N		
Name of receiving waters:	River Inny		
Flow rate in receiving waters:		_____m ³ .sec ⁻¹ Dry Weather Flow	
		0.931 m ³ .sec ⁻¹ 95%ile flow	
Available waste assimilative capacity:	15.48kg/day BOD, 4.28kg/day PO ₄ (P) , 3.7kg/day Ammonia, 944.75kg/day Suspended Solids		

Emission Details:

(i) Volume to be emitted			
Normal/day	190m ³	Maximum/day	m ³
Maximum rate/hour	8m ³		

(ii) Period or periods during which emissions are made, or are to be made, including daily or seasonal variations (*start-up /shutdown to be included*):

Periods of Emission (avg)	_____min/hr _____hr/day _____day/yr
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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number :Sedimentation Basin 1 (Clonsura)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number :Sedimentation Basin 2 (Clonsura)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number :Sedimentation Basin 3 (Clonsura)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 4(Clonsura)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number :Sedimentation Basin 5 (Clonsura-Proposed)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 1 (Lower Coole)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 2 (Mayne)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 3 (Mayne)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 4 (Mayne)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 5 (Ballinaloe)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 6 (Ballinaloe)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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TABLE E.2(ii): EMISSIONS TO SURFACE WATERS - Characteristics of the emission (1 table per emission point)

Emission point reference number : Sedimentation Basin 7 (Ballinaloe)

Parameter	Prior to treatment				As discharged				% Efficiency
	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	Max. hourly average (mg/l)	Max. daily average (mg/l)	kg/day	kg/year	
<u>Suspended Solids</u>					<u>35</u>	<u>35</u>	<u>6.65</u>		

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Assimilative Capacity Calculations

Upstream Sedimentation Basins of Clonsura Harvesting Site	Available @ 50%ile (Kg/Day)	Available @ 95%ile (Kg/Day)	Required (Kg/Day)
BOD	74.67768	11.3098	8.5536
Orthophosphate	20.560608	3.1139	0.2851
Ammonia	19.008864	2.8788	1.7107
Suspended Solids	4556.30832	690.0422	19.9584

Downstream of Sedimentation Basins 1,2 & 5 @ Clonsura	Available @ 50%ile (Kg/Day)	Available @ 95%ile (Kg/Day)	Required (Kg/Day)
BOD	81.275832	4.4194	5.7024
Orthophosphate	24.4471392	3.2867	0.1901
Ammonia	21.1549536	1.5915	1.1405
Suspended Solids	5460.803568	771.5606	13.3056

Upstream Sedimentation of Coole Harvesting Site	Available @ 50%ile (Kg/Day)	Available @ 95%ile (Kg/Day)	Required (Kg/Day)
BOD	94.187016	13.80456	5.7024
Orthophosphate	26.0543304	3.818664	0.1901
Ammonia	22.5070272	3.298752	1.1405
Suspended Solids	5746.631184	842.25744	13.3056

Downstream of Sedimentation Basins 1&2 @ Coole	Available @ 50%ile (Kg/Day)	Available @ 95%ile (Kg/Day)	Required (Kg/Day)
BOD	101.091672	9.781992	14.2560
Orthophosphate	29.3516588	4.0932648	0.4752
Ammonia	24.3791424	2.5596864	2.8512
Suspended Solids	6502.519728	931.443408	33.2640

1. Emission Limit Values used for the parameters Suspended Solids, BOD, Orthophosphate and Ammonia were 35, 15, 0.5 and 3 respectively.
2. All calculations have taken account of assimilative capacity used by upstream discharges.