



West Winch Housing Access Road

Environment Statement Chapter 11: Water Environment: Appendix 11.2: Drainage Network Water Quality Assessment: Annex A: Routine Runoff on Surface Water Quality Data

Author: WSP

Document Reference: NCC/3.11.02a

Version Number: 001

Date: November 2023



Contents

1 HEWRAT assessment of pollution impacts from routine runoff to surface waters4

Tables

Table 1.1 – Step one runoff quality parameters	5
Table 1.2 – Step two river impacts parameters	6
Table 1.3 – Step three mitigation parameters	7
Table 1.4 – Results.....	10
Table 1.5 – Cumulative Results.....	13



1 HEWRAT assessment of pollution impacts from routine runoff to surface waters

1.1.1 **Table 1.1 to Table 1.5** below provide a full summary of the input parameters and results for each individual outfall assessed.

Table 1.1 – Step one runoff quality parameters

Outfall Reference	Easting	Northing	Receiving watercourse	AADT DS 2042	Climatic Region	Rainfall Site
Outfall 1	563516	314776	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 2	563649	315076	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 3	562941	316167	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 4	563864	316301	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 5	564076	317396	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 6	564176	317268	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfall 7	563357	317980	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon
Outfalls 5 and 6	564176	317268	Unnamed field drain	34,583 (>10,000 – 50,000)	Warm Dry	Huntingdon

Table 1.2 – Step two river impacts parameters

Outfall Reference	Base Flow Index (BFI)	Hardness (mg CaCO₃/l)	Q95 Flow (m³/s)	Impermeable Area Drained to the Outfall (ha)	Permeable Area Drained to the Outfall (ha)	River Width (m)	Downstream Structure within 100m of Outfall?	Discharge in or within 1km U/S of a Designated Site?
Outfall 1	0.75	High >200	0.0001	1.93	0	8.4	No	No
Outfall 2	0.74	High >200	0.0001	2.93	0	5.2	No	No
Outfall 3	0.74	High >200	0.0001	0.87	0	8.4	No	No
Outfall 4	0.7	High >200	0.00247	3.20	0	8.4	No	No
Outfall 5	0.72	High >200	0.00101	1.64	0	8.2	No	No
Outfall 6	0.72	High >200	0.00101	2.38	0	8.2	No	No
Outfall 7	0.71	High >200	0.0001	3.54	0	11.4	Yes	No
Outfalls 5 and 6	0.72	High >200	0.00101	4.02	0	8.2	No	No

Table 1.3 – Step three mitigation parameters

Outfall Reference	Existing Measures	Treatment for solubles (%)	Discharge rate (l/s)	Settlement of Sediments (%)
Outfall 1	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	3.8	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)
Outfall 2	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	5.8	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)
Outfall 3	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	1.7	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)

Outfall Reference	Existing Measures	Treatment for solubles (%)	Discharge rate (l/s)	Settlement of Sediments (%)
Outfall 4	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	6.4	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)
Outfall 5	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	3.2	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)
Outfall 6	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	4.7	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)

Outfall Reference	Existing Measures	Treatment for solubles (%)	Discharge rate (l/s)	Settlement of Sediments (%)
Outfall 7	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	7.1	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)
Outfalls 5 and 6	N/A	65 Filter drain (45%) + Sediment Forebay (0%) + Basin (20% - 50% reduction from 40%)	7.9	100 Filter drain (60%) + Sediment Forebay (20% - 50% reduction from 40%) + Basin (25% - 50% reduction from 50%)

Table 1.4 – Results

Outfall Reference	Step	Soluble Pollutants: Acute impact assessment of Copper	EQS Assessment: Annual average concentration of copper (µg/l) due to road runoff	Soluble Pollutants: Acute impact assessment of Zinc	EQS Assessment: Annual average concentration of zinc (µg/l) due to road runoff	Sediments: Chronic impact assessment of Sediment	Cumulative Assessment Required?
Outfall 1	Tier 1 Step 2	Fail	2.41 (Fail)	Pass	5.41 (Pass)	Pass	No
Outfall 1	Tier 1 Step 3	Pass	0.85 (Pass)	Pass	1.93 (Pass)	Pass	No
Outfall 2	Tier 1 Step 2	Fail	2.65 (Fail)	Pass	5.94 (Pass)	Pass	No
Outfall 2	Tier 1 Step 3	Pass	0.93 (Pass)	Pass	2.12 (Pass)	Pass	No

Outfall Reference	Step	Soluble Pollutants: Acute impact assessment of Copper	EQS Assessment: Annual average concentration of copper (µg/l) due to road runoff	Soluble Pollutants: Acute impact assessment of Zinc	EQS Assessment: Annual average concentration of zinc (µg/l) due to road runoff	Sediments: Chronic impact assessment of Sediment	Cumulative Assessment Required?
Outfall 3	Tier 1 Step 2	Fail	1.81 (Fail)	Pass	4.13 (Pass)	Pass	No
Outfall 3	Tier 1 Step 3	Pass	0.64 (Pass)	Pass	1.48 (Pass)	Pass	No
Outfall 4	Tier 1 Step 2	Pass	0.63 (Pass)	Pass	1.53 (Pass)	Pass	No
Outfall 4	Tier 1 Step 3	Pass	0.22 (Pass)	Pass	0.56 (Pass)	Pass	No
Outfall 5	Tier 1 Step 2	Pass	0.73 (Pass)	Pass	1.76 (Pass)	Pass	Yes

Outfall Reference	Step	Soluble Pollutants: Acute impact assessment of Copper	EQS Assessment: Annual average concentration of copper (µg/l) due to road runoff	Soluble Pollutants: Acute impact assessment of Zinc	EQS Assessment: Annual average concentration of zinc (µg/l) due to road runoff	Sediments: Chronic impact assessment of Sediment	Cumulative Assessment Required?
Outfall 5	Tier 1 Step 3	Pass	0.26 (Pass)	Pass	0.64 (Pass)	Pass	Yes
Outfall 6	Tier 1 Step 2	Pass	0.93 (Pass)	Pass	2.21 (Pass)	Pass	Yes
Outfall 6	Tier 1 Step 3	Pass	0.34 (Pass)	Pass	0.84 (Pass)	Pass	Yes
Outfall 7	Tier 1 Step 2	Fail	2.77 (Fail)	Pass	6.18 (Pass)	Pass	No
Outfall 7	Tier 1 Step 3	Pass	0.97 (Pass)	Pass	2.20 (Pass)	Pass	No

Table 1.5 – Cumulative Results

Outfall Reference	Step	Soluble Pollutants: Acute impact assessment of Copper	EQS Assessment: Annual average concentration of copper (µg/l) due to road runoff	Soluble Pollutants: Acute impact assessment of Zinc	EQS Assessment: Annual average concentration of zinc (µg/l) due to road runoff	Sediments: Chronic impact assessment of Sediment
Outfalls 5 and 6	Tier 1 Step 2	Pass	1.26 (Fail)	Pass	2.93 (Pass)	Pass
Outfalls 5 and 6	Tier 1 Step 3	Fail	0.44 (pass)	Pass	1.06 (Pass)	Pass