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|-----------------|------------------------------------------------|-----------------|-----------------|
| Client: | Dorchester Living | Calculation by: | Rafael Soto |
| Project: | Heyford Park – Western Development | Checked by: | Sean Mitchinson |
| Calculation No: | 04583-HYD-INF-XX-C-CA-Attenuation Volumes_0002 | Page No: | 1 |
| Date: | 13 April 2018 | Revision: | P03 |

| Ref | Calculations | Output | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | <p>Pre-development Runoff Calculation using Micro Drainage Rural Runoff Calculator</p> <p><i>Pre-development Runoff</i></p> <p><u>Input Parameters</u></p> <table border="1"> <thead> <tr> <th>Parameter</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>Return Period</td> <td>1 in 100 year</td> </tr> <tr> <td>Area</td> <td>1 ha (flow per hectare)</td> </tr> <tr> <td>SAAR</td> <td>693 (From Micro Drainage map)</td> </tr> <tr> <td>Soil</td> <td>0.45 (Based on Geotechnical Engineer's description of likely soils)</td> </tr> <tr> <td>Region</td> <td>5</td> </tr> </tbody> </table> <p><u>Output Parameters</u></p> <table border="1"> <thead> <tr> <th>Return Period</th> <th>Flow per impermeable hectare (l/s)</th> </tr> </thead> <tbody> <tr> <td>1 in 1 year</td> <td>3.8</td> </tr> <tr> <td>1 in 30 year</td> <td>10.4</td> </tr> <tr> <td>1 in 100 year</td> <td>15.5</td> </tr> <tr> <td>QBAR rate</td> <td>4.3</td> </tr> </tbody> </table> <p><u>Approximate attenuation volumes (m³) and discharge rates (l/s)</u></p> <table border="1"> <thead> <tr> <th>Phase</th> <th>Gross Area (ha)</th> <th>Impermeable Area @ 65% + 10% (ha)</th> <th>Impermeable Area @ 90% (ha)</th> <th>Discharge Rate (l/s)</th> <th>Design volumes (m³)</th> </tr> </thead> <tbody> <tr> <td>10</td> <td>3.5</td> <td>2.53</td> <td>-</td> <td>9.8</td> <td>1909</td> </tr> <tr> <td>11, 12 & 21</td> <td>8.817</td> <td>6.31</td> <td>-</td> <td>24.6</td> <td>4819</td> </tr> <tr> <td>13</td> <td>0.47</td> <td>0.34</td> <td>-</td> <td>1.3</td> <td>310</td> </tr> <tr> <td>16</td> <td>6.67</td> <td>4.77</td> <td>-</td> <td>18.7</td> <td>2996</td> </tr> <tr> <td>17</td> <td>2.4</td> <td>1.72</td> <td>-</td> <td>6.7</td> <td>1529</td> </tr> <tr> <td>23</td> <td>11.685</td> <td>8.35</td> <td>-</td> <td>32.7</td> <td>1909</td> </tr> <tr> <td>35</td> <td>2.02</td> <td>1.44</td> <td></td> <td>5.6</td> <td>997</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> | Parameter | Value | Return Period | 1 in 100 year | Area | 1 ha (flow per hectare) | SAAR | 693 (From Micro Drainage map) | Soil | 0.45 (Based on Geotechnical Engineer's description of likely soils) | Region | 5 | Return Period | Flow per impermeable hectare (l/s) | 1 in 1 year | 3.8 | 1 in 30 year | 10.4 | 1 in 100 year | 15.5 | QBAR rate | 4.3 | Phase | Gross Area (ha) | Impermeable Area @ 65% + 10% (ha) | Impermeable Area @ 90% (ha) | Discharge Rate (l/s) | Design volumes (m ³) | 10 | 3.5 | 2.53 | - | 9.8 | 1909 | 11, 12 & 21 | 8.817 | 6.31 | - | 24.6 | 4819 | 13 | 0.47 | 0.34 | - | 1.3 | 310 | 16 | 6.67 | 4.77 | - | 18.7 | 2996 | 17 | 2.4 | 1.72 | - | 6.7 | 1529 | 23 | 11.685 | 8.35 | - | 32.7 | 1909 | 35 | 2.02 | 1.44 | | 5.6 | 997 | | | | | | | |
| Parameter | Value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Return Period | 1 in 100 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area | 1 ha (flow per hectare) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SAAR | 693 (From Micro Drainage map) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Soil | 0.45 (Based on Geotechnical Engineer's description of likely soils) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Region | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Return Period | Flow per impermeable hectare (l/s) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 in 1 year | 3.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 in 30 year | 10.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 in 100 year | 15.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QBAR rate | 4.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Phase | Gross Area (ha) | Impermeable Area @ 65% + 10% (ha) | Impermeable Area @ 90% (ha) | Discharge Rate (l/s) | Design volumes (m ³) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 3.5 | 2.53 | - | 9.8 | 1909 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11, 12 & 21 | 8.817 | 6.31 | - | 24.6 | 4819 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 0.47 | 0.34 | - | 1.3 | 310 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 6.67 | 4.77 | - | 18.7 | 2996 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 2.4 | 1.72 | - | 6.7 | 1529 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | 11.685 | 8.35 | - | 32.7 | 1909 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 35 | 2.02 | 1.44 | | 5.6 | 997 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |