| A L Daines & Partners   |  | Page 1  |
|---|--|---|
| 28 Castle Street  | Nethertown Rd, St Bees   |   |
| Carlisle  | Access road soakaway   |   |
| CA3 8TP   |  | Micro   |
| Date 17/08/2021 15:00   | Designed by SM   | Drainage                                      |
| File ACCESS TURNING HEAD.MDX  | Checked by   | Brainage                                      |
| Micro Drainage  | Network 2020.1   |   |
| STORM SEWER DES   | SIGN by the Modified Rational Method   |   |
| Des   | ign Criteria for Storm   |   |
| Pipe Sizes STA  | NDARD Manhole Sizes STANDARD   |   |
| Ma<br>Maximum Time o<br>Vo<br>Add Flo<br>Minim<br>Maxim<br>Min Design Dept<br>Min Vel for   | Model - England and Wales<br>Return Period (years) 100<br>M5-60 (mm) 16.000<br>Ratio R 0.274<br>ximum Rainfall (mm/hr) 50<br>f Concentration (mins) 30<br>Foul Sewage (l/s/ha) 0.000<br>lumetric Runoff Coeff. 1.000<br>PIMP (%) 100<br>w / Climate Change (%) 40<br>num Backdrop Height (m) 0.200<br>num Backdrop Height (m) 1.500<br>h for Optimisation (m) 1.200<br>Auto Design only (m/s) 1.00<br>for Optimisation (1:X) 500 |   |
| Design  | ed with Level Soffits  |   |
| <u>Simul</u>  | ation Criteria for Storm   |   |
| Volumetric Runoff Coeff<br>Areal Reduction Factor<br>Hot Start (mins)<br>Hot Start Level (mm)<br>Manhole Headloss Coeff (Global)<br>Foul Sewage per hectare (1/s) | 1.000 MADD Factor * 10m³/ha Stora<br>0 Inlet Coeffiecia<br>0 Flow per Person per Day (1/per/da<br>0.500 Run Time (min  | age 2.000<br>ent 0.800<br>ay) 0.000<br>ns) 60 |
| Number of Online Cont   | aphs O Number of Storage Structures 1<br>rols O Number of Time/Area Diagrams O<br>rols O Number of Real Time Controls O  |   |
| Syn   | thetic Rainfall Details  |   |
| Rainfall Model<br>Return Period (years)<br>Region Engla<br>M5-60 (mm)<br>Ratio R  | ( )<br>,   | imer<br>850<br>950<br>30                      |
| ©1  | 982-2020 Innovyze  |   |

|                             |   | Page 2    |
|-----------------------------|---|-----------|
| 8 Castle Street             | Nethertown Rd, St Bees  |           |
| Carlisle                    | Access road soakaway  |           |
| CA3 8TP                     |   | Micro     |
| Date 17/08/2021 15:00       | Designed by SM  | Drainage  |
| ile ACCESS TURNING HEAD.MDX | Checked by  | brainiage |
| /licro Drainage             | Network 2020.1  |           |
| <u>Stora</u>                | ge Structures for Storm   |           |
| Cellular Stora              | ge Manhole: S2, DS/PN: S1.001   |           |
|                             | Invert Level (m) 36.800<br>oefficient Base (m/hr) 0.06050<br>oefficient Side (m/hr) 0.06050<br>Safety Factor 2.0<br>Porosity 0.95 |           |
| Depth (m) Area (m²) Inf. Ar | ea (m²) Depth (m) Area (m²) Inf.  | Area (m²) |
| 0.000 33.0<br>0.400 33.0    | 33.0<br>44.2  | 44.2      |
|                             |   |           |
|                             |   |           |
|                             |   |           |

| A L Daines & Partners  |   | Page 3                  |
|--|---|-------------------------|
| 28 Castle Street   | Nethertown Rd, St Bees  |                         |
| Carlisle   | Access road soakaway  |                         |
| CA3 8TP  |   | Micro                   |
| Date 17/08/2021 15:00  | Designed by SM  | Drainage                |
| File ACCESS TURNING HEAD.MDX   | Checked by  | Diamage                 |
| Micro Drainage   | Network 2020.1  |                         |
| 1 year Return Period Summary of  | Critical Results by Maximum Level (Rank 1) fo   | or Storm                |
| Areal Reduction Factor<br>Hot Start (mins)<br>Hot Start Level (mm)<br>Manhole Headloss Coeff (Global)<br>Foul Sewage per hectare (l/s)<br>Number of Input Hydrog<br>Number of Online Con | 0 Inlet Coeffieci<br>0.500 Flow per Person per Day (l/per/d   | age 2.000<br>ent 0.800  |
| Rainfall Model   | <u>etic Rainfall Details</u><br>FSR Ratio R 0.274<br>Igland and Wales Cv (Summer) 0.850<br>16.000 Cv (Winter) 0.950 |                         |
| Margin for Flood Risk<br>Analy   | Warning (mm) 300.0 DVD Status OFF<br>ysis Timestep Fine Inertia Status OFF<br>DTS Status ON                         |                         |
| Profi<br>Duration(s) (r<br>Return Period(s) (ye<br>Climate Change  | mins) 15, 30, 60, 120, 180, 240, 360<br>ears)   |                         |
| US/MH Return C<br>PN Name Storm Period C   |   | ,                       |
| S1.000 S1 15 Winter 1<br>S1.001 S2 240 Winter 1  | +0% 100/15 Summer<br>+0%  |                         |
| Water Surcharged Flood<br>US/MH Level Depth Volu<br>PN Name (m) (m) (m <sup>3</sup>  | me Flow / Overflow Time Flow  | Level<br>tatus Exceeded |
|  | 0000.282.50000.001080.0   | ОК<br>ОК                |
|  |   |                         |
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| A L Daines                   | & Part                       | ners  |   |   |  |   |  |   | Page 4                              |
|------------------------------|------------------------------|---|---|---|--|---|--|---|-------------------------------------|
| 28 Castle S                  | Street                       |   |   | Neth  | nertowr  | n Rd, St Be   | es   |   |                                     |
| Carlisle                     |                              |   | Acce  | ess roa   |  |   |  |   |                                     |
| CA3 8TP                      |                              |   |   |   |  |   |  |   | Micro                               |
| Date 17/08                   | /2021 ′                      | 15:00   |   | Des   | igned b  | by SM   |  |   | Drainago                            |
| File ACCESS TURNING HEAD.MDX |                              |   |   | Che   | cked b   | у   |  |   | Brainage                            |
| Micro Drair                  | nage                         |   |   | Netv  | vork 20  | )20.1   |  |   |                                     |
| Manho                        | Ar<br>le Hea<br>l Sewa<br>Ni | real Reduc<br>Hot Star<br>dloss Cod<br>ge per ho<br>umber of<br>Number of<br>Number of<br>Rainf | ction Facto<br>Start (mins<br>t Level (mins<br>eff (Globa<br>ectare (1/s<br>Input Hydr<br>f Online C<br>Offline C<br>Offline C<br>Syr<br>all Model<br>Region<br>(5-60 (mm)<br>c Flood Ris | Simulat<br>or 1.000<br>s) 0<br>m) 0<br>l) 0.500<br>s) 0.000<br>rographs<br>controls<br>controls<br>athetic F<br>England<br>sk Warni<br>alysis T | <u>ion Cr</u><br>Add<br>Flow<br>O Num<br>O Num<br><u>Rainfa</u><br>and W<br>16 | riteria<br>ditional F<br>MADD Fac<br>per Perso<br>ber of Sto<br>ber of Tim<br>ber of Rea<br><u>11 Details</u><br>FSR F<br>ales Cv (S<br>.000 Cv (W<br>) 300.0<br>p Fine I | n per Day (<br>nrage Struc<br>e/Area Dia<br>1 Time Con<br>1<br>tatio R 0.2<br>Summer) 0.8<br>Vinter) 0.9 | Total F:<br>ha Stora<br>peffiecie<br>l/per/da<br>tures 1<br>grams 0<br>trols 0<br>74<br>50<br>50<br>cus OFF | Low 0.000<br>age 2.000<br>ent 0.800 |
|                              |                              | Return  |   | (years)   | 15, 30   |   | nmer and Wi<br>, 180, 240,<br>1, 30,<br>0, 40  | 360<br>100  |                                     |
| PN                           | US/MH<br>Name                | Storm   |   | Climate<br>Change   |  | rst (X)<br>rcharge  | First (Y)<br>Flood   | First (Z<br>Overflow  | ·                                   |
| S1.000<br>S1.001             |                              | 15 Win<br>360 Win   |   |   |  | 15 Summer   |  |   |                                     |
| 51.001                       | 52                           | 300 WIN   | ter 30  | +40%  |  |   |  |   |                                     |
| PN                           | US/MH<br>Name                | Water S<br>Level<br>(m)   | urcharged<br>Depth<br>(m)   |   | Flow<br>Cap.   | / Overflow<br>(1/s)   | Half Drai<br>/ Time<br>(mins)  | n Pipe<br>Flow<br>(l/s)   | Status                              |
| S1.000<br>S1.001             |                              | 37.717<br>37.075  | -0.033<br>-0.675  | 0.000<br>0.000  | 0.9<br>0.0   |   | 30   |   | FLOOD RISK<br>OK                    |
|                              |                              |   |   |   | S/MH<br>Name B   | Level<br>Exceeded   |  |   |                                     |
|                              |                              |   |   | S1.000  | S1   |   |  |   |                                     |
|                              |                              |   |   | S1.000<br>S1.001  | S2   |   |  |   |                                     |
|                              |                              |   |   |   |  |   |  |   |                                     |
|                              |                              |   |   | ©1982-2   | 2020 In  | novyze  |  |   |                                     |

| A L Daines                    |                                   | ners   |   |  |   |  |   |   | Page 5                              |
|-------------------------------|-----------------------------------|--|---|--|---|--|---|---|-------------------------------------|
| 28 Castle S                   | Street                            |  |   |  |   | Rd, St Be  |   |   |                                     |
| Carlisle                      |                                   |  |   | Acce   | ess roac  | soakawa  | ау  |   |                                     |
| CA3 8TP                       |                                   |  |   |  |   |  |   |   | Micro                               |
| Date 17/08/                   | /2021 ^                           | 15:00  |   | Desi   | igned by  | SM   |   |   | Drainac                             |
| File ACCES                    | SS TUF                            | RNING HE   | AD.MDX  |  | cked by   |  |   |   | Brannar                             |
| Micro Drain                   | age                               |  |   | Netv   | vork 202  | 20.1   |   |   |                                     |
| Manho                         | Ar<br>le Hea<br>l Sewa<br>Nu<br>! | real Reduc<br>Hot S<br>Hot Start<br>dloss Coe<br>ge per he<br>umber of :<br>Number of<br>Number of<br>Rainfa<br>Mainfa | tion Facto<br>tart (mins<br>Level (mr<br>ff (Globa<br>ctare (1/s<br>Input Hydr<br>f Online C<br>Offline C<br>Offline C<br>Syr<br>all Model<br>Region<br>5-60 (mm)<br>Flood Ris<br>Ans | Simulat<br>or 1.000<br>s) 0<br>n) 0<br>l) 0.500<br>s) 0.000<br>cographs<br>controls<br>controls<br>thetic F<br>England<br>sk Warni<br>alysis T<br>DTS<br>file(s) | ion Cri<br>Addi<br>Flow p<br>O Numb<br>O Numb<br>Numb<br>and Wa<br>16.0<br>ng (mm)<br>imestep<br>Status | teria<br>tional F<br>MADD Fac<br>er of Sto<br>er of Sto<br>er of Rea<br>I Details<br>FSR I<br>Les Cv (\<br>300.0<br>Fine I<br>ON<br>Su | on per Day<br>orage Struc<br>me/Area Dia<br>al Time Cor | Total F:<br>/ha Stora<br>coeffiecie<br>(1/per/da<br>ctures 1<br>agrams 0<br>ntrols 0<br>274<br>850<br>950<br>tus OFF<br>tus OFF | Low 0.000<br>age 2.000<br>ent 0.800 |
| PN                            | US/MH<br>Name                     | Return P<br>Cl   | eriod(s)<br>imate Chan<br><b>Return</b>   | (years)  | Firs  | st (X)   | 1, 30<br>0, 4   | , 100<br>0, 40  | ) Overflow<br>Act.                  |
|                               |                                   |  |   | -  |   | -  | 11000   | 00011100  |                                     |
| <mark>S1.000</mark><br>S1.001 | <mark>81</mark><br>82             | 15 Wint<br>360 Wint  |   | +40%   |   | 5 Summer   |   |   |                                     |
| PN                            | US/MH<br>Name                     | Water Su<br>Level<br>(m)   | urcharged<br>Depth<br>(m)   |  | Flow /<br>Cap.  | Overflor<br>(1/s)  | Half Dra<br>w Time<br>(mins)                            | in Pipe<br>Flow<br>(l/s)  | Status                              |
| S1.000                        |                                   | 37.762   | 0.012   | 0.000  | 1.20  |  | -   |   | FLOOD RISK                          |
| S1.001                        | 52                                | 37.184   | -0.566  | 0.000  | 0.00  |  | 3   | 30 0.0  | OK                                  |
|                               |                                   |  |   |  | S/MH<br>Name Ex<br>S1<br>S2   | Level<br>ceeded  |   |   |                                     |
|                               |                                   |  |   | ©1982-2  | 2020 Inn  | ovyze  |   |   |                                     |