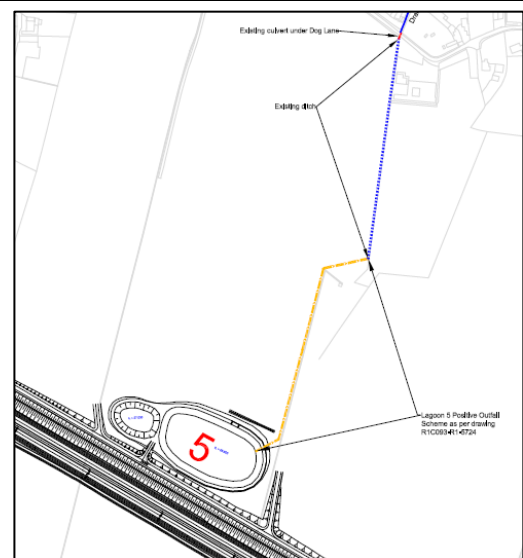
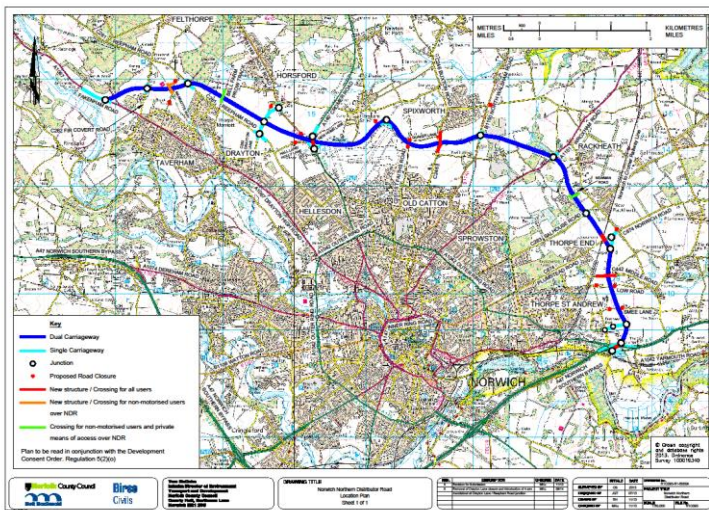


Norfolk County Council LLFA: Case Study

| | |
|---|---|
| <p>Site name: Broadland Northway (Norwich Distributer Road – A1270)</p> | <p>District: Broadland District Council</p> |
| <p>Site Description: Provision of new major road to the north of Norwich</p> | <p>Scheme Developer: Norfolk County Council</p> |
| <p>Local Flood Risk: Surface water flow paths identified and avoided by providing dry culverts. Opened up culverts and restored watercourse.</p> | <p>Greenfield or Brownfield Development: Greenfield</p> |
| <p>Summary of Design Constraints: Greenfield runoff from the larger catchment was considered and mitigation provided via interception and separate overland flow basins. High groundwater levels were encountered preventing infiltration in several areas, especially Lagoon 5, where an extension to an existing watercourse was created to enable appropriate discharge to the wider watercourse network. Additional water quality treatment considered in groundwater source protection zones 1, 2 and 3. Although cycle paths are close to the SuDS features general public access to the SuDS basins is not anticipated due to their size and location.</p> | <p>Summary of Surface Water Drainage: SuDS provided via, swales and piped networks, filter drains / trenches, attenuation and infiltration basins with pre-treatment forebays</p> <p>SuDS quantity benefit: included / not included SuDS quality benefit: included / not included SuDS amenity benefit: included / not included SuDS biodiversity benefit: included / not included</p> |

Plans



Photos



a) Runoff to swales adjacent the main carriageway



b) Linear drain where constraints precluded swales



c) Pollution prevention forebay (lined) and outlet to attenuation basin with penstock



d) Extended channel to an existing watercourse to allow discharge



e) Reinstated watercourse and overland flow route (just completed prior to vegetation getting established).

SuDS Standards achieved against relevant Non-Statutory Technical Standards for Sustainable Drainage systems

| Non-statutory technical standards section headings | How the proposal achieved these |
|---|---|
| Peak flow control S2 (Greenfield) | The proposal included consideration of pre development greenfield runoff rates with much of proposal utilising infiltration to shallow or deep soakaways. With discharge rates limited to these greenfield rates, post development runoff would not be increased. |
| Volume control S4 & S6 | The proposal indicated that the runoff rates would be sufficient to limit the post development runoff volumes to the equivalent pre development. 30% climate change was allowed for within the post development runoff volume storage levels (standard at time of proposal) |
| Flood Risk within the development S7, S8 & S9 | There are minor areas of ponding of water during a 3.33% AEP event, however this is limited to purpose grassed surface water channels and verges. |
| | Flooding is expected within the surface water channels and shallow depths on the carriageway during a 1% AEP flood event. Road users are expected to alter their driving during such an event. Overland flow routes have been managed separately from the drainage from the road e.g. via managed pathways or creation of specific interception basins. There are some infiltration basins which have greater than 24 hr drain down times and hence additional freeboard of a 10%AEP rainfall event has been allowed for at these locations. No properties or utility plant are affected by flooding. |
| | The design considered a rainfall event in excess of a 1%AEP plus climate change addition and showed that there will be minimal impact to people and property. The design included emergency spillways to formalise overflows if the storage within the basins was ever exceeded. |