

Condition 4 - Carriageways, footways etc to adoptable standards

There are a number of inconsistencies and lack of clarity on the drawings that need resolving:

1. The shared surface entrance into the development ties into a regular carriageway design of Phase 1 which will be 100mm lower. Therefore, a 100mm ramp in the carriageway needs to be included. *The ramp had been added and levels /profiles altered accordingly.*
2. The footway construction detail in the cross-sections (bituminous construction) is not to the CDDG specification and it is inconsistent with the key which says that it will be concrete block pavements (note that these paths adjacent to the carriageway are footways not footpaths). The proposed construction is not suitable for vehicles. *Noted and altered.*
3. The adopted footway has no detail / cross section *Noted and altered.*
4. The short linking footpath in front of Plot 12 should have 0.5m clearance strip at the south end as well as the north end marked with a change in material or pin kerb *Noted and altered, pavements added.*
5. The carriageway detail outside Plots 3,4,5 and 6 is very confusing and appears to have several kerb lines and other features with possible use of several paving types. It is unclear how this space will work in practice and the LHA are concerned about the number of materials used and maintenance complications. Please revisit this feature / layout to simplify the arrangement. *Deleted*
6. The adoption provision of service and clearance strips and verges is acceptable in principle but the extent appears to be inconsistent with the extent of the adopted carriageway. The LHA will only adopt the clearance strip / verge when it is adjacent to the adopted carriageway (i.e. see verges and strips to Plots 8-12 and 13-18). *Noted and altered.*

As well as clarifications listed above, there will need to be a separate S38 Technical Approval process to go through in due course. *Noted.*

7. **Lighting** - *Design by others, we have provided a drawing with the column positions altered and hard areas shown.*
 - There appears to have been a revision to the site layout since the lighting design was completed. I would suggest that a revised lighting design drawing is submitted only. It does not require a revised lighting calculation to be supplied.
 - The key on the site layout drawing does not appear to show any footways, just verges off the edge of carriageway. On the lighting layout drawing, any columns located in verges need to be a hardstanding and there may be more columns to be located in verges than is currently shown on the drawing. At all locations it does not necessarily need to be a concrete hardstanding as per the key. The LHA will accept block pavements to be used to be in keeping with the wider street scene.
 - Column LC05 looks like it is outside of the extents of adoption. Due to the position and orientation of plot 13 any relocation of this column would place it directly in front of windows. The applicant should relocate this column so that it is inside the proposed adopted extents or explore the possibility of extending the adopted carriageway so that it was parallel with the current proposed location of column.

- Since the layout was amended, LC02 and LC06 are proposed in an area's setback quite far from the carriageway edge. These could potentially be difficult for MEWP access to reach for maintenance and unlikely to be included in adoption. It needs to be brought forward a few metres onto the adopted verge.
- Depending on availability of electricity services, an option could be to relocate LC08 so that it moves across the road between the two garages of plots 6 and 7. This would remove it from directly in front of the house.

The streetlighting network has been altered as requested.

Condition 10 - Highway Surface Water Drainage System

This is suitable in principle, i.e drainage using gullies and carrier drains to the main system, but none of the highway drainage infrastructure is actually shown on the plans. Please provide plans showing the locations of the gullies and gully tails for adoption. *Added to drainage drawing AA7281 EW04B*

See observation below regarding the surface water SUDS design. If dry basins are used, it may be possible to drain the carriageway directly into these at certain locations over the edge rather than using gullies. i.e. in the two 'greens' or islands. *The 'Green' or island at the site entrance is near the highest point on the site; the contributing area would be relatively small. A basin at this point would be very small.*

The 'Green' to the west of the site is lower and has a larger catchment of road. The upstream piped network enters the area at a depth of 1.85m. It would be difficult to form a basin at this depth. Separation between the private and adoptable systems is also required here.

The infiltration feature for the adoptable drainage network to the east of the site is limited by space constraints and access to the pumpstation in the wooded POS area.

The final infiltration feature in the network is in open farmland where a basin could be used, however, the landowner does not wish to reduce the land use potential.

Condition 16 - Surface Water Drainage Scheme

The principle of the SW drainage system, i.e. a hybrid infiltration with a positive overflow to a watercourse is acceptable in principle. I note that the contributing area has been limited to the impermeable area only, based on the principle that the garden areas will be permeable. The Ground Investigation and infiltration does confirm that the underlying sub-soil has good infiltration coefficient and therefore it is likely that the soakaways at the correct depth will be successful. However, the garden area, depending on the quality and compactness of the topsoil, may not be so pervious and could result in surface water flow in extreme situations. I note and welcome there perimeter filter drain to deal with this scenario, but this does not extend to the far SW corner of the site. Please review the extent of the filter drain.

Land drain extents amended to the eastern and western boundaries with phase. Surface water flows from garden/ landscape areas have been attributed to the appropriate drainage networks assuming a 30% run-off coefficient.

I also note the reference to an infiltration blanket feature and infiltration basin in the maintenance plan but cannot see these on the drawings. Please clarify the proposed design.

These references had been deleted.

I note that the attenuation is provided by a series of underground infiltration / attenuation crates. Whilst I appreciate these do the same job as a basin, the LLFA consider these features less beneficial to bio-diversity, ecology and amenity. They could also be more difficult to maintain. Please state why the 'open' water features of swales and basins are not specified.

The client has expressed a firm preference for below ground features in the open farmland to the north primarily for grazing considerations. 'Open' water features and associated side slopes with inlets at the end of pipe runs will be difficult to accommodate in the limited available public open space while maintaining the primary function.

Having reviewed the drainage design calculations I am satisfied with the parameters and values adopted. I note that the necessary Climate Change and urban creep values have been included. I also note that the contributing area is less than a typical site, but taking into account the infiltration potential I am satisfied with this. I am also satisfied with the proposed discharge overflow rate from the site. This is much lower than for a clay site of the total site area (i.e 2 Ha) which I calculate as around 20 l/s. This reflects the proportion of surface water that will naturally infiltrate to ground. *The contributing areas were generated for the portions of the site covered by hard surfacing only. The area has now been increased to include 30% of the additional garden areas that are now assumed to be positively drained, giving a revised total contributing area of 1.2ha, resulting in an increase in QBar to 12.79l/s.*

However, In events > 1:100 years, there will be exceedance flows over the surface, especially from the flow control location. There is no plan or description how this exceedance flow is managed. Please provide an exceedance flow. *Exceedance flow routes added.*

Condition 18 - Sustainable Drainage Management and Maintenance Plan

The Plan lists the maintenance requirements / proposals for several surface water drainage components including soakaways, blankets and an infiltration basin. None of these features actually appear in the drainage drawings. Instead, the drawings show several underground storage tanks with infiltration.

Please clarify the design and provide a revised Maintenance Plan as well as any necessary drawings and documents. *Maintenance Plan clarified.*