7.6 Tertiary and secondary streets

Tertiary and Secondary Streets provide access from the primary roads to the network of lanes, mews and courts beyond. They may often provide strategic routes for local drainage, collecting flows from branches following the neighbourhood layout.

Utilities in both Tertiary and Secondary Streets will typically be located within the footway, in which case drainage should typically be located within the carriageway. Main drainage may also be located in parking bays or the verge, where appropriate

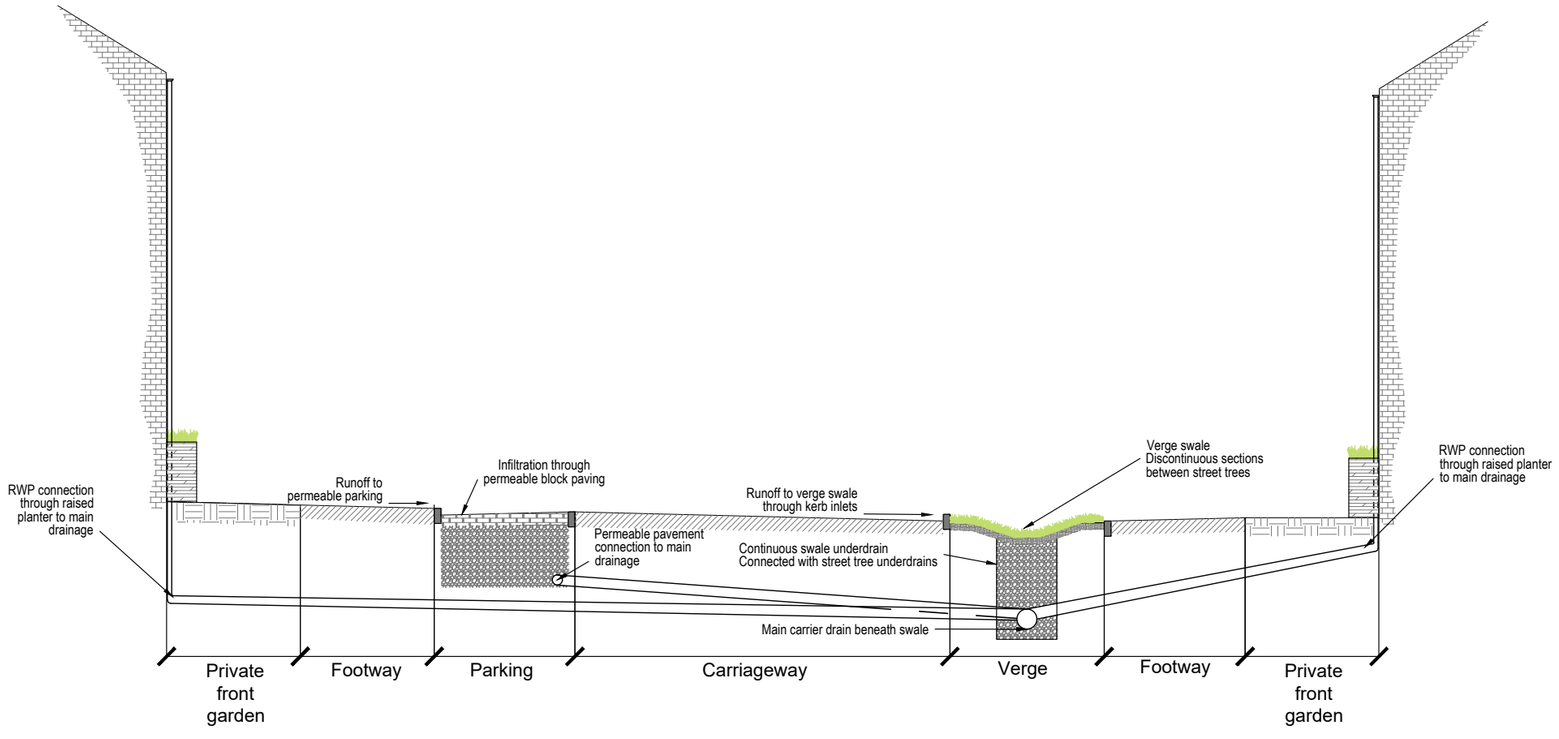

Figure 260: Tertiary street typical drainage section

Figure 259: Bioretention areas integrated with street trees separating parking bays (source: Susdrain)

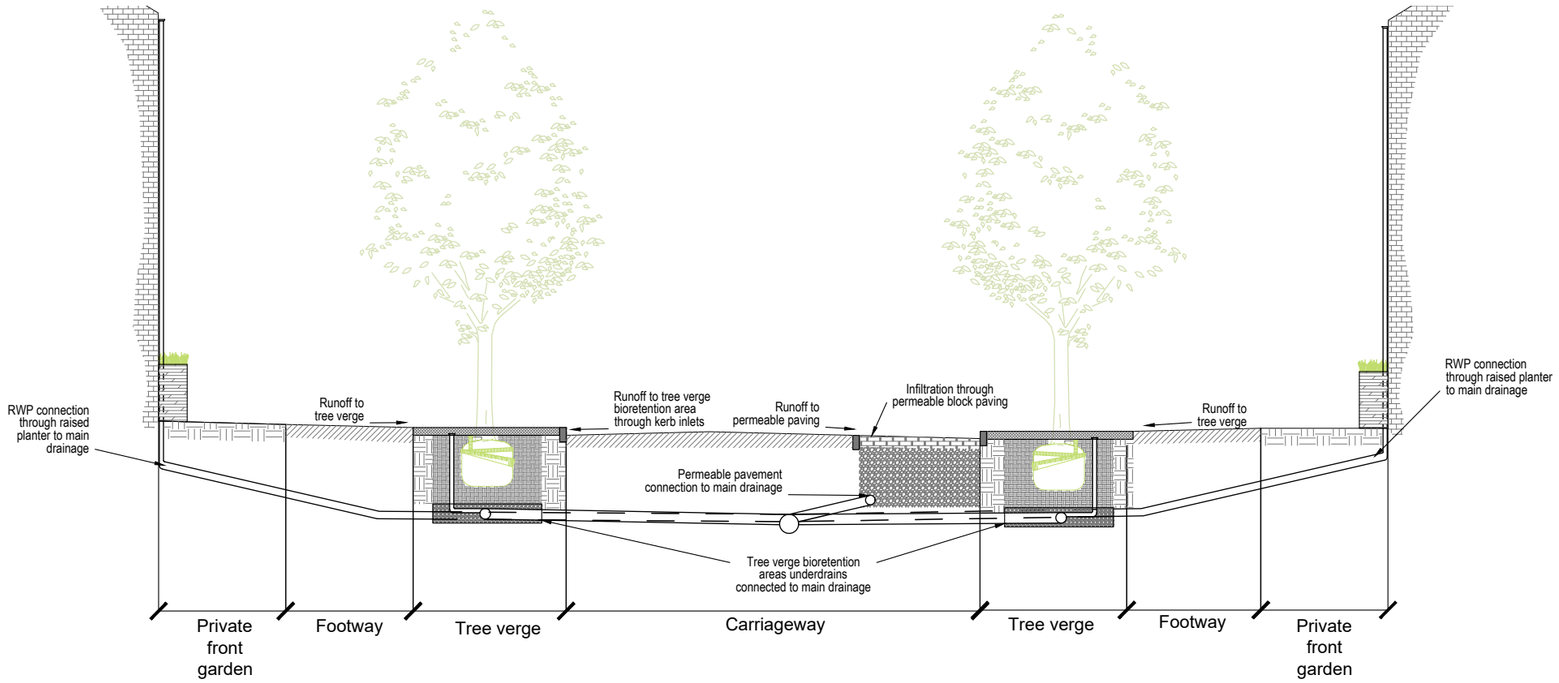

Figure 261: Secondary street typical drainage section

TERTIARY AND SECONDARY STREETS TYPICAL DRAINAGE FEATURES APPLICATIONS

DRAINAGE FEATURE	Property roofs	Property paved areas	Footway	Shared footway/ cycleway	Verge	Parking	Carriageway	Open space	Central courts
Runoff to adjoining street area				N/A				N/A	N/A
Water butts, raised planters				N/A				N/A	N/A
Direct pipe connection to main drainage				N/A				N/A	N/A
Trapped gully / channel drain & pipe connection to main drainage				N/A				N/A	N/A
Permeable paving				N/A				N/A	N/A
Surface channel or rill				N/A				N/A	N/A
Rain gardens				N/A				N/A	N/A
Tree pit bioretention areas				N/A				N/A	N/A
Larger bioretention areas				N/A				N/A	N/A
Dry swale				N/A				N/A	N/A
Wet swale				N/A				N/A	N/A
Filter drain: decorative aggregate surface				N/A				N/A	N/A
Filter drain: topsoil & planted surface				N/A				N/A	N/A
Small-scale detention basins				N/A				N/A	N/A
Small-scale ponds				N/A				N/A	N/A
Underground attenuation storage				N/A				N/A	N/A

NB: This table is not exhaustive, alternative drainage features or ranges of application may be appropriate on a site-specific basis.

KEY		**Likely application**		**Limited application**		**Unlikely application**

7.7 Northern Arc Avenue

The Northern Arc Avenue is the primary spine road providing access through the centre of the Northern Arc, to the secondary and tertiary roads connecting the neighbourhoods.

The Northern Arc Avenue is divided into sections, each reflecting the character of the area. There are local differences and similarities between each section.

Properties fronting to the Northern Arc Avenue will be developed in conjunction with the neighbourhoods beyond. The properties' drainage should connect to the neighbourhood drainage system, rather than to the Northern Arc Avenue highway drainage system.

Two sections of the Northern Arc Avenue (Sections 2B and 4) are illustrated here The remaining Sections should adhere to the same design principles, as suited to the street layout.

Section 2B: Western Bridge to Central Neighbourhood

This section of the avenue is wide, fronted by continuous residential buildings on both sides.

Utilities will typically be located within the footway, in which case drainage should typically be located within the carriageway. Main drainage may also be located in parking bays or the tree verge, where appropriate.

Figure 262: Rain garden along the building edge (source: © DASonnenfeld commons.wikimedia.org (CC BY-SA 4.0))

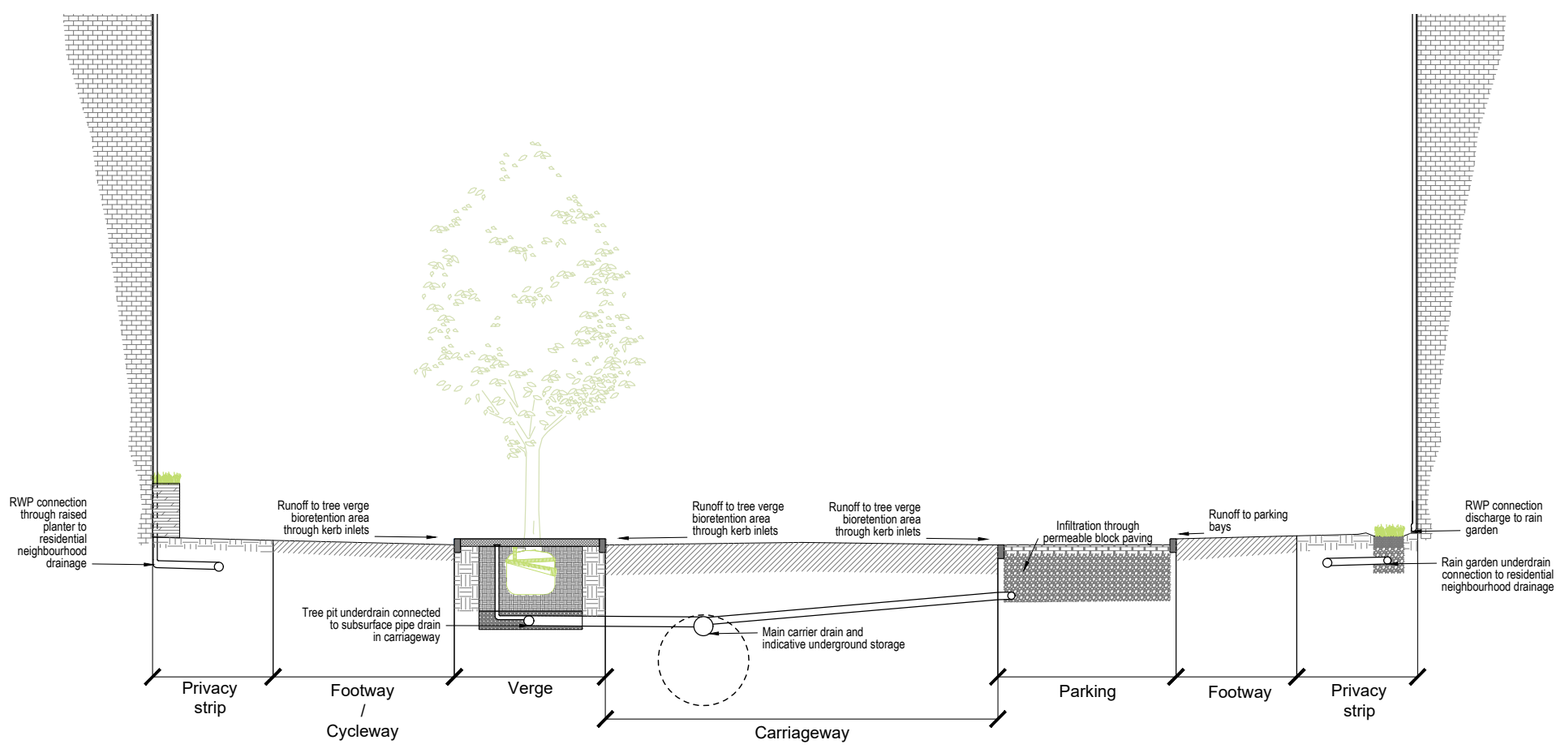

Figure 263: Northern Arc Avenue Section 2B typical section

Section 4: Cuckfield Road to Isaac's Lane

Whilst similar to Section 2B, the key feature of this section of the avenue is its integration with the Green Super Highway.

Utilities will typically be located within the footway, in which case drainage should typically be located within the carriageway. Main drainage may also be located in parking bays or the tree verge, where appropriate.

Figure 264: Swale (source: © Susdrain)

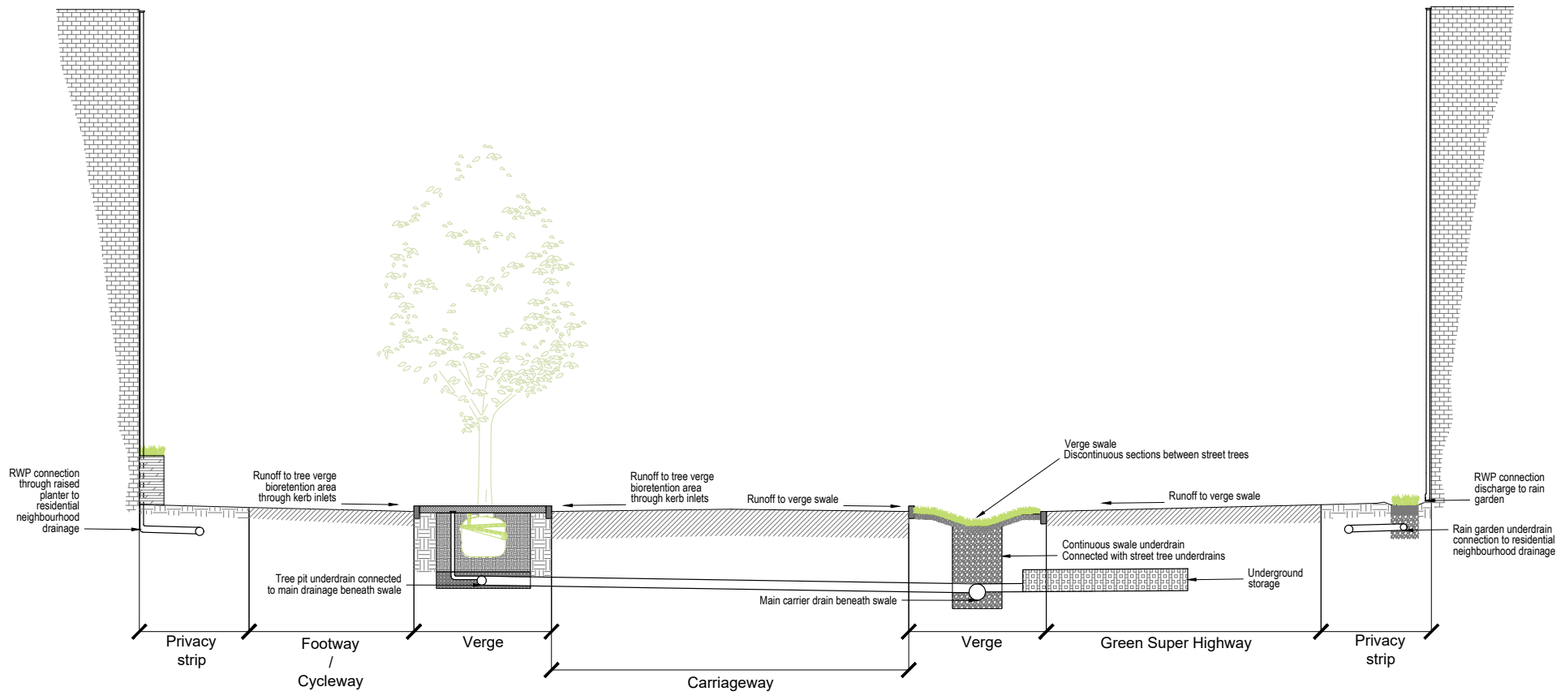

Figure 265: Northern Arc Avenue Section 4 typical section

TERTIARY AND SECONDARY STREETS TYPICAL DRAINAGE FEATURES APPLICATIONS

DRAINAGE FEATURE	Property roofs	Property paved areas	Footway	Shared footway/ cycleway	Verge	Parking	Carriageway	Open space	Central courts
Runoff to adjoining street area		N/A						N/A	N/A
Water butts, raised planters		N/A						N/A	N/A
Direct pipe connection to main drainage		N/A						N/A	N/A
Trapped gully / channel drain & pipe connection to main drainage		N/A						N/A	N/A
Permeable paving		N/A						N/A	N/A
Surface channel or rill		N/A						N/A	N/A
Rain gardens		N/A						N/A	N/A
Tree pit bioretention areas		N/A						N/A	N/A
Larger bioretention areas		N/A						N/A	N/A
Dry swale		N/A						N/A	N/A
Wet swale		N/A						N/A	N/A
Filter drain: decorative aggregate surface		N/A						N/A	N/A
Filter drain: topsoil & planted surface		N/A						N/A	N/A
Small-scale detention basins		N/A						N/A	N/A
Small-scale ponds		N/A						N/A	N/A
Underground attenuation storage		N/A						N/A	N/A

NB: This table is not exhaustive, alternative drainage features or ranges of application may be appropriate on a site-specific basis.

KEY		**Likely application**		**Limited application**		**Unlikely application**

7.8 Neighbourhood centres

Neighbourhood centres provide focal points within each neighbourhood, connected with the Northern Arc Avenue. The neighbourhood centres will incorporate parking, public transport infrastructure, tree planting, landscaping and open space, set within the public realm.

There are opportunities for SuDS to be integrated with the place-making, landscape and connectivity principles of neighbourhood centres.

Permeable paving should be utilised for parking or carriageway sections, where suitable. This will provide effective source control, and the permeable sub-base, sub-base replacement system or underground storage beneath the surface can provide attenuation also serving the surrounding neighbourhood drainage system.

Bioretention systems should be integrated with the tree planting and landscaping schemes. Where planting requires irrigation and, due to impermeable subsoils, underdrainage, these provisions can be combined with the neighbourhood drainage system. This can allow the bioretention systems to provide source control and attenuation.

Swales are unlikely to be a principal drainage feature within the neighbourhood centre hardscape. However, where landscaped open spaces, such as village greens, are provided, consideration should be given to the application of swales.

Conversely, rills constructed in aesthetic materials, such as granite setts, can act as a feature enhancing the street. Consideration should be given to the use of rills to convey surface water to strategic SuDS collection features, such as bioretention areas.

Figure 266: Bioretention area in a local centre (source: Susdrain)

Figure 267: Planted rill (source: © AECOM)

Monitoring & Change Process

08

8. Monitoring & Change Process

8.1 Monitoring

The build out of the Northern Arc will take many years and we know that technologies and lifestyles will change over that period, some perhaps dramatically as we embrace new ways of moving around and working. It is important therefore that regular monitoring takes place to determine key aspects of life at Northern Arc, these will include:

- Happiness / satisfaction of residents / workers
- What works well / what doesn't work well?
- Numbers of businesses / shops
- Population and household size / make-up
- Journey purpose – work / shop / school / leisure
- Journey mode – walk / cycle / public transport / car / car share / van
- Journey distance
- Journeys by day / week / month
- For work – internal trips, further afield, work from home etc.
- Car ownership and use
- Cycle ownership and use
- Parking numbers and use

The process of monitoring should be agreed with Homes England, WSCC and MSDC and may take the form of questionnaires, surveys, apps etc. The monitoring will need to be addressed not only to residents but other users of the community, for example: workers, schools, visitors and should aim to capture comments from the range of ages represented.

As a minimum monitoring should take place every 5 years in order to evaluate the situation at Northern Arc and how aspects of life there are working or changing and at what rate.

Conclusion

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9. Conclusion

The streets and places built from the Northern Arc Street Design and Adoption Manual will ultimately be judged by the people who come to live here.

The District and County Councils will also judge them in terms of the walkability they deliver, the health and safety of residents, the quality of environment and how they are maintained.

The intention from the start of this process though has always been to reset the bar for street design. There will no doubt be changes required to this document over the life of the Northern Arc as streets are constructed, used and evaluated and as technological changes come forward. However, the intention is also that street design techniques learnt here should be used elsewhere in the County and the Country in order to facilitate better placemaking.

Appendices

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