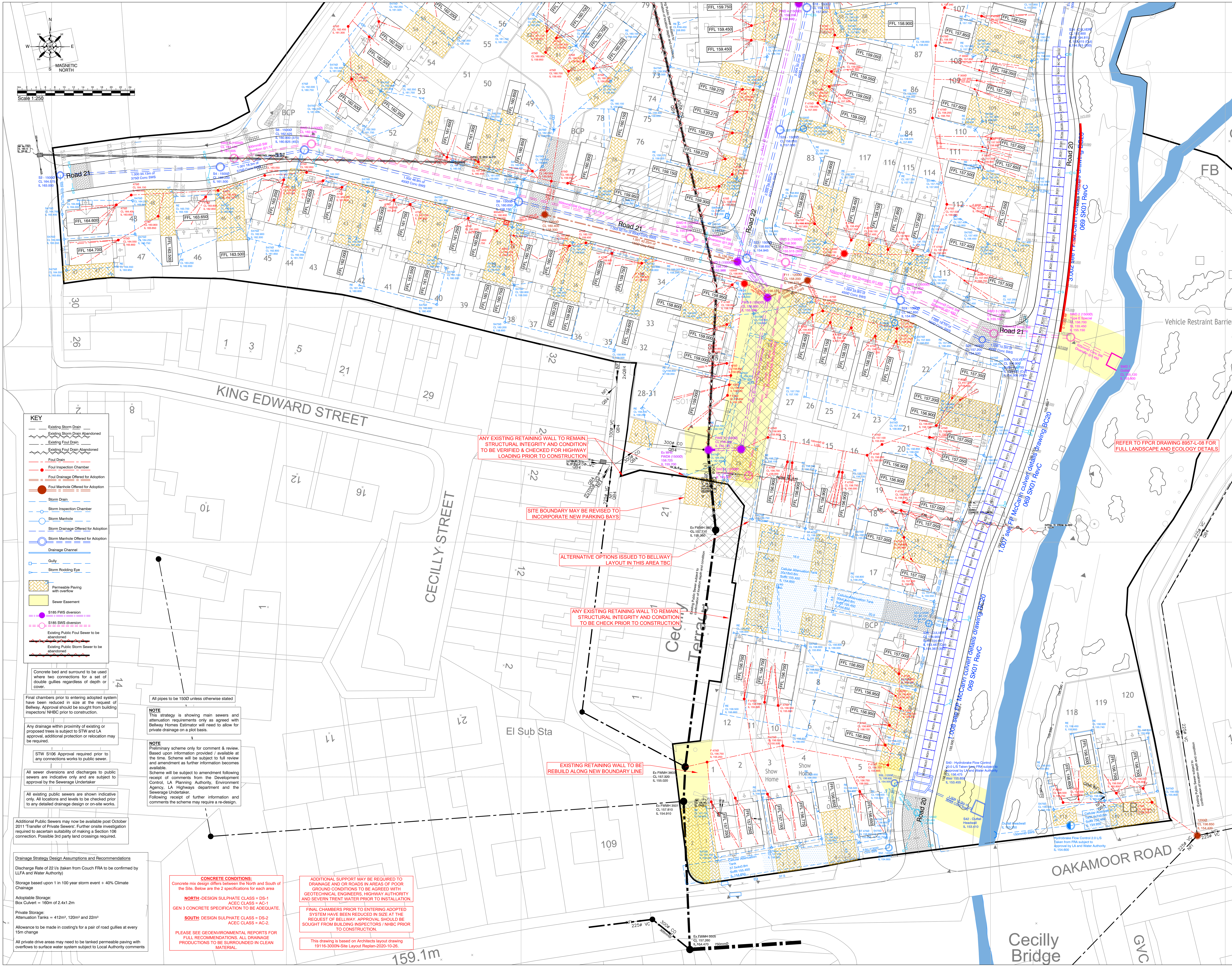


Concrete bed and surround to be used where two connections for a set of double gullies regardless of depth or cover.

Final chambers prior to entering adopted system have been reduced in size at the request of Bellway. Approval should be sought from building inspectors/ NHBC prior to construction.

Any drainage within proximity of existing or proposed trees is subject to STW and LA approval, additional protection or relocation may be required.

STW S106 Approval required prior to any connections works to public sewer.

All sewer diversions and discharges to public sewers are indicative only and are subject to approval by the Sewerage Undertaker

All existing public sewers are shown indicative only. All locations and levels to be checked prior to any detailed drainage design or on-site works.

Additional Public Sewers may now be available post October 2011 'Transfer of Private Sewers'. Further onsite investigation required to ascertain suitability of making a Section 106 connection. Possible 3rd party land crossings required.

All pipes to be 150Ø unless otherwise stated

NOTE
This strategy is showing main sewers and attenuation requirements only as agreed with Bellway Homes Estimator will need to allow for private drainage on a plot basis.

NOTE
Preliminary scheme only for comment & review. Based upon information provided / available at the time. Scheme will be subject to full review and amendment as further information becomes available.
Scheme will be subject to amendment following receipt of comments from the Development Control, LA Planning Authority, Environment Agency, LA Highways department and the Sewerage Undertaker.
Following receipt of further information and comments the scheme may require a re-design.

Drainage Strategy Design Assumptions and Recommendations

Discharge Rate of 22 l/s (taken from Couch FRA to be confirmed by LLFA and Water Authority)

Storage based upon 1 in 100 year storm event + 40% Climate Chainage

Adoptable Storage:
Box Culvert = 160m of 2.4x1.2m

Private Storage:
Attenuation Tanks = 412m³, 120m³ and 22m³

Allowance to be made in costing's for a pair of road gullies at every 15m change

All private drive areas may need to be tanked permeable paving with overflows to surface water system subject to Local Authority comments

CONCRETE CONDITIONS:
Concrete mix design differs between the North and South of the Site. Below are the 2 specifications for each area

NORTH:-DESIGN SULPHATE CLASS = DS-1
ACEC CLASS = AC-1
GEN 3 CONCRETE SPECIFICATION TO BE ADEQUATE.

SOUTH: DESIGN SULPHATE CLASS = DS-2
ACEC CLASS = AC-2.

PLEASE SEE GEOENVIRONMENTAL REPORTS FOR FULL RECOMMENDATIONS. ALL DRAINAGE PRODUCTIONS TO BE SURROUNDED IN CLEAN MATERIAL.

ADDITIONAL SUPPORT MAY BE REQUIRED TO DRAINAGE AND OR ROADS IN AREAS OF POOR GROUND CONDITIONS TO BE AGREED WITH GEOTECHNICAL ENGINEERS, HIGHWAY AUTHORITY AND SEVERN TRENT WATER PRIOR TO INSTALLATION.

FINAL CHAMBERS PRIOR TO ENTERING ADOPTED SYSTEM HAVE BEEN REDUCED IN SIZE AT THE REQUEST OF BELLWAY. APPROVAL SHOULD BE SOUGHT FROM BUILDING INSPECTORS / NHBC PRIOR TO CONSTRUCTION.

This drawing is based on Architects layout drawing 19116-3000N-Site Layout Replan-2020-10-26.

Notes

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1. Due to a change in legislation on 1st October 2011, there could be formally private sewers which have transferred over to the responsibility of the Sewerage Undertaker. If such sewers are located on site during construction works, please contact Stewart and Harris so that a Section 185 Agreement can be prepared to divert these sewers.
2. The survey information used in the preparation of this drawing is not warranted. The contractor shall check all dimensions and levels on site.
3. This drawing must be read in conjunction with the site investigation report. Before work commences contractor should consult the engineer and the SI report regarding any contamination issues. All necessary health and Safety measures to be taken.
4. Before work commences, the contractor shall liaise with all Statutory Authorities to determine the exact location of all apparatus and take all precautions deemed necessary to locate, protect and where necessary divert such equipment.
5. This drawing is subject to approval by Local Authority, Building Control, Sewerage Undertaker and the Environment Agency. Any works undertaken prior to the granting of these approvals is carried out at risk to others.
6. Should any surplus excavated material require disposal off site, it should be taken to a suitably licensed landfill site.
7. The contractor shall check all dimensions and levels on site.
8. Setting out to be confirmed by the Architect.
9. Prior to commencing work on the drainage, all existing drains, sewers manholes and outfalls to remain shall be located, identified and a CCTV condition survey carried out. Where necessary, protection to the existing drainage infrastructure shall be provided.
10. All existing sewers and manholes abandoned due to the proposed works are to be either removed, and suitably backfilled or grouted up.
11. All external drainage works shall be constructed in accordance with civil engineering specification for the water industry and Sewers for Adoption 6th Edition for adoptable drainage, for private drainage in accordance with the Building regulations Part H and BS.EN 752.
12. All existing drainage levels, diameters & locations need to be checked on site prior to any drainage works, and any discrepancies need to be reported back to the Engineer.
13. Cover levels for manholes are approximate only and should be adjusted to match surrounding levels.
14. All manhole and drainage covers shall comply with BS.EN124. Manhole covers within block paved area and buildings shall be recessed. Cover strengths to be:- Class E600 in areas of heavy loading. Class D400 in heavy trafficked areas (roads, services yards). Class C250 Lightly trafficked areas (car parks). Class B125 in landscape and non trafficked areas (min. 100mm dp frame).
15. Drainage pipes 100mm Ø unless stated otherwise.
16. Pipes to be :- Vitrified clay to BS EN 295 or Concrete to BS 5911 or UPVC pipes to BS EN 1452 or Thermoplastic Structured wall pipes complying with WIS 4-35-01. BSi kitemarked. Class 8kM/m² nominal short term ring stiffness.
17. All pipes to be laid with soffits level, unless noted otherwise.
18. Where cover to pipes is less than 1200mm under carriageway - concrete bed and surround or concrete protection slab is required.
19. All pipes beneath buildings to be B&S in concrete. Where cover is less than 300mm the concrete is to be cast integrally with the floor slab.
20. Pipes Penetrating Walls. An opening is to be formed through walls to give pipes at least 50mm clearance all round. Brickwork over shall be supported by a lintel. Opening to be masked each side with rigid sheet material. Pipes embedded in walls shall have joints formed within 150mm of either wall face. Adjacent rocker pipes of max 600mm length with flexible joints shall continue the pipework.
21. Pipe runs near Buildings. If a trench is within 1m of a building it shall be filled with concrete up to the lowest level of the adjacent foundation. If a trench is greater than 1m from a building the trench shall be filled with concrete up to a level below the building equal to the distance from the building less 150mm.
22. Ventilation shall be provided at the head of the foul drainage runs.
23. For setting out of svp and rwp, see architects layout.
24. Threshold drainage is required where levels fall towards a building entrance. Architect to confirm if not required.
25. Yard Gully positions are indicative, should be adjusted on site to suit levels.
26. All gully positions to suit low points and to be trapped.
27. Road gullies shall be trapped 450Ø x 900mm deep with Class D 400 frame and grating to BS EN 124.
28. Drainage channel detailed design to be undertaken by manufactures. Alternative channels may be used, subject to Engineers approval.
29. All concrete to drainage, manholes bases, surrounds etc to be in accordance with the BRE special digest 1 - Concrete in aggressive ground. Refer to site investigation report for sulphate requirements.
30. All manholes, pipe trenches etc. to be backfilled with imported granular fill to Class 6F1-6F5 (Capping material) to (SHW) Table 6/1 & compacted in accordance with Table 6/4.
31. All pipelines shall be tested both before and after backfilling, using either air test or water test, in accordance with BS EN 1610.
32. Demarcation manholes and lateral drains need to be constructed in accordance with the Water UK/WRc "Sewers For Adoption 6th Edition".
33. All works to sewers/ manholes being offered for adoption or on existing public sewers should be in accordance with "Sewers for Adoption 6th Edition" and the Adopting Water Authority's recommendations
34. Requirement for Land Drains to be assessed on site by the Site Manager

REV	DATE	AMENDMENT	BY
P	21.01.21	Manholes F11, F5 and S12 cover levels amended to suit road level	CS
N	11.12.20	Note regarding ST1 bed and surround added. Private storm drainage discharging to S12 & S20 amended	CS
M	18.11.2020	Plot 4 FFL amended, drainage amended to suit	CS
L	26.10.20	Vehicle Restraint bollards added opposite road 21 junction. Plot 35-44 drainage amended to suit revised layout.	CS
K	21.10.20	Drainage amended as per Bellway value engineering review.	AM
J	17.09.20	Drainage amended as per Bellway design mark-up and value engineering review. Scale note removed.	CS
H	20.08.2020	Culvert levels amended slightly	AM
G	11.08.2020	Revised to Bellway Layout Rev 3000L drainage amended to suit	AM
F	11.05.2020	Revised to Bellway Layout Rev 3000E drainage amended to suit	DGW
E	25.02.2020	"Drawing Not to be Scaled" Note removed at Bellway Request	DGW
D	24.01.20	Revised to Bellway Layout Rev X received 22.01.20	DGW
C	03.01.20	Revised to STW S104 comments dated 31.12.19	DGW
B	23.10.19	Drainage detail added from model, numbers, size and materials etc	DGW
A	18.10.19	Layout revised to 1000S, Drainage revised to full design.	DGW

MUCKLOW & HARRIS
CONSULTING CIVIL & STRUCTURAL ENGINEERS

DRAWING STATUS: PRELIMINARY

CLIENT: Bellway

PROJECT: Oakamoor Road Cheadle

TITLE: Drainage Layout (Sheet 2 of 2)

DATE	DRAWN	
16.09.19	DGW	
SCALE: 1:250	SIZE: A0	CHECKED: AM
DRAWING NUMBER: 18155-203		REVISION: P