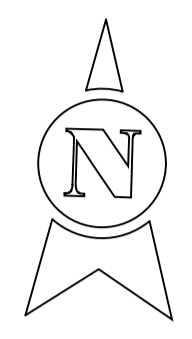
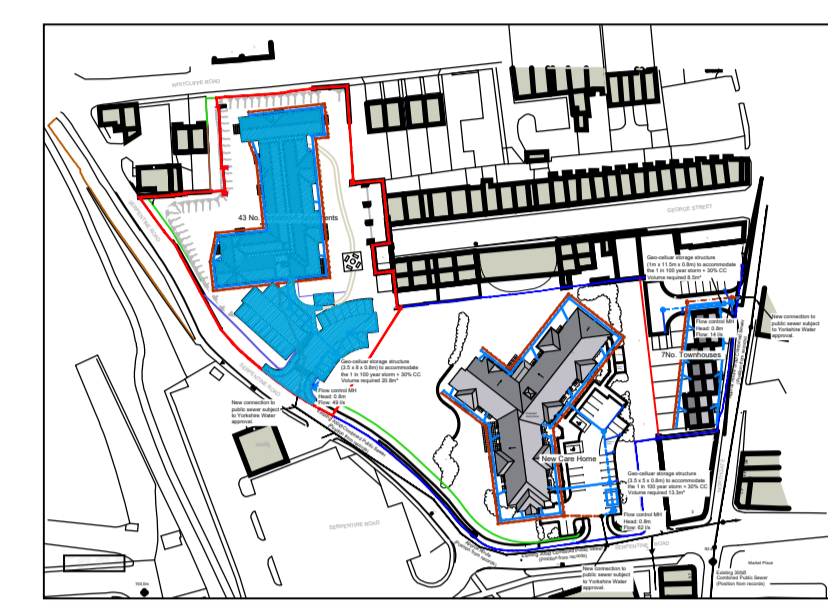
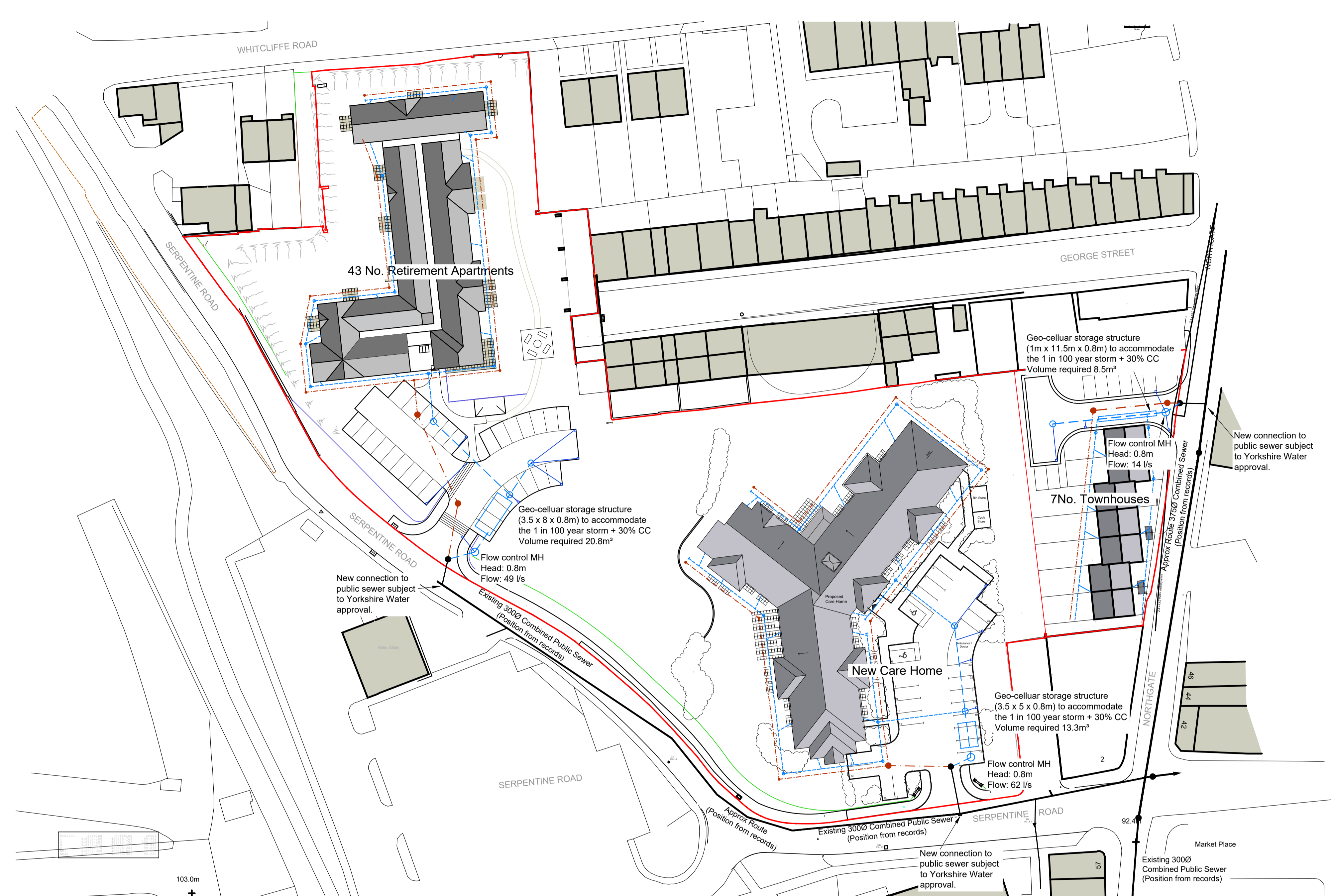


**Notes:**  
1. This drawing is to be read in conjunction with all relevant Architects and Engineers Drawings.  
2. It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.

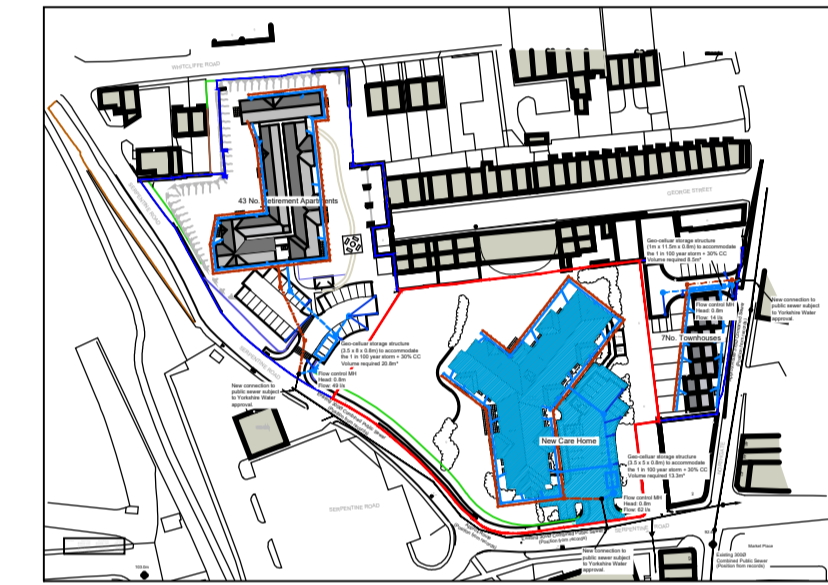


Approximate Direction of North



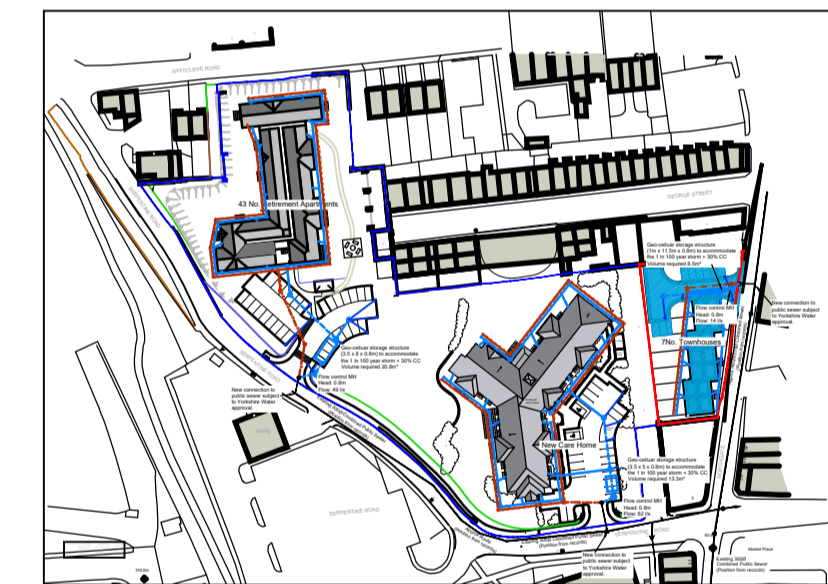
**Retirement Apartments**

Total Site Area = 1.357 ha  
Development Site Area = 0.538 ha  
Proposed Impermeable Area = 0.220 ha  
 $(\frac{0.438}{1.357}) \times 100 = 39.65 \rightarrow$  Say 39%  
39% of 125 l/s = 48.75  $\rightarrow$  Say **49 l/s**



**New Care Home**

Total Site Area = 1.357 ha  
Development Site Area = 0.692 ha  
Proposed Impermeable Area = 0.230 ha  
 $(\frac{0.692}{1.357}) \times 100 = 50.99 \rightarrow$  Say 50%  
50% of 125 l/s = 62.5  $\rightarrow$  Say **62 l/s**



**Townhouses**

Total Site Area = 1.357 ha  
Development Site Area = 0.146 ha  
Proposed Impermeable Area = 0.071 ha  
 $(\frac{0.146}{1.357}) \times 100 = 10.75 \rightarrow$  Say 11%  
11% of 125 l/s = 13.75  $\rightarrow$  Say **14 l/s**

**Drainage Strategy**

The site is located within flood zone 1 with a low risk of flooding from rivers or the sea and is less than 1 hectare, therefore a site specific flood risk assessment should not be required.

The existing site prior to demolition is classed as 'Brownfield' and is approximately 13,570m<sup>2</sup>. The site consisted of a number of buildings, car parks and hardpaved access yards.

It is recommended that a drainage survey is carried-out to establish a positive connection from the site to the Public Sewer. It is proposed to utilise an existing connection should levels permit. The flows generated from the new development flows will be restricted to that of the rate of surface water run-off of the existing site for the 1 in 1 year storm, betterment will be achieved by applying a 30% reduction to this.

Yorkshire Water records indicate the presence of a 300mm Ø combined sewer situated in Serpentine Road. It is assumed that surface and foul water flows from the development will be allowed to discharge into this sewer subject to Yorkshire Water approval.

Reference to the 1:50,000 scale British Geological Survey (BGS) map shows the site is underlain with Sandstone Sedimentary Bedrock, there are no records of the with superficial deposits. However, we anticipate that soakaways will not be a viable option.

Form our assessment there are no suitable watercourses in the immediate vicinity of the site. As alternative methods of draining the site are not available, the most appropriate solution is to drain to the public sewer.

In accordance with current guidelines and good working practice flows generated from the new development flows will be restricted to the existing site 1 in 1 year storm surface water run-off -30%.

We have assessed the existing site area to be 1.365ha, we have assumed 95% of this is impermeable = 1.29ha.

**Surface Water run-off Wallingford Procedure**

$Q = 2.78 \times \text{Area (ha)} \times \text{Rainfall (mm/hr)}$   
 $Q = 2.78 \times 1.29 \times 50$   
 $Q = 179.31 \text{ l/s}$

Proposed Restricted rate = 179.31 l/s -30%  
**= 125 l/s**

This rate will proportioned between the 3 new developments based on area ratio.

**Proposed restricted flow rates;**

- Retirement Apartment Site 49 l/s
- Care Home Site 62 l/s
- Townhouses Site 14 l/s

A	STAGE 3 PLANNING ISSUE	11.05.17	AD
No.	Revision	Date	Drwn

Status **PLANNING**

Client  
**McCarthy & Stone**  
Later Life. Greater Life.

Project  
**Residential Development,  
Serpentine Road, Cleckheaton**

Drawing title  
**Drainage Strategy Layout**

Drawn	MN	Chkd	AD	Date	February 2017	Scale	As shown @ A1
TE Reference.	16353-C-50		Drig No.	NE- 2106-03-DE-001		Revision	A