

**London Borough of Enfield
(Meridian Water Strategic
Infrastructure Works)
Compulsory Purchase Order 2020**

**Summary Proof of Evidence - Joe
Nunan**

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1 Qualifications and Experience

1.1 Joe Nunan

1.1.1 My name is Joe Nunan. I am a Chartered Civil Engineer with a degree B.Eng (Hons) in Civil Engineering.

1.1.2 I am an Associate Director within Arup's Infrastructure Group based in London and responsible for leading a range of engineering projects in support of new developments.

1.1.3 I have worked as a civil engineer for 30 years and have been a Member of the Institution of Civil Engineers for twenty-three years. I have wide experience in leading the design of complex civil engineering infrastructure for major urban developments and the associated interfaces and discussions with affected statutory and other bodies. My work includes involvement through the whole design process from site assessments to construction and handover.

1.1.4 I led the civil engineering team developing the proposals for the consented Meridian Water Strategic Infrastructure Works ('SIW') as well as the 'Meridian Water Phase Two' planning application, which related to the development of Zones 4 and 5 and a part of Zone 2 (as shown on the plan at Core Document 7) for up to 284,600 sqm (GEA) of residential led mixed use development ('Phase Two'). The SIW design included developing the flood mitigation, drainage, earthworks/remediation, utility and roads/bridges strategies including identifying associated land requirements to implement these strategies.

2 Summary

2.1 Relevant Background

2.1.1 My evidence, presented on behalf of the London Borough of Enfield ('Council') has been prepared to summarise the engineering aspects of the SIW and consequential requirement for land identified within the London Borough of Enfield (Meridian Water Strategic Infrastructure Works) Compulsory Purchase Order 2020 ('the Order').

2.1.2 The site is currently affected by flooding, contamination, poor access and inadequate utility provision. In order to address these issues a range of engineering interventions are proposed and these are collectively known as the SIW.

2.2 Strategic Infrastructure Works (SIW)

2.2.1 The site is crossed by a number of watercourses including the Pymmes Brook, the Salmons Brook and the Canal, whilst the eastern boundary is formed by the River Lee. These watercourses cause flooding across large parts of Meridian Water which has resulted in the Environment Agency ('EA') designating much of the land as Flood Zone 2 or 3.

2.2.2 In order to mitigate the flooding and enable development to be brought forward a flood mitigation strategy, agreed with the EA, has been developed which includes providing areas of flood compensation and raising site levels. The flood mitigation strategy has been hydraulically modelled, using baseline models agreed with EA, to demonstrate that there are no unacceptable detrimental impacts as a result of the strategy.

2.2.3 The Pymmes Brook is a channelised watercourse formed in a concrete trough. The concrete structure limits the ecological value of the brook and through the Thames River Basin Management Plan the guidance is to naturalise these types of watercourse where possible. The development at Meridian Water offers an opportunity to replace a section of the Pymmes Brook structure with a park incorporating a natural section of the brook.

- 2.2.4 A number of options were considered and reviewed with the EA, before a preferred option was identified. The naturalisation option proposed as part of the SIW enables the creation of flood compensation, which forms part of the wider mitigation strategy, and rainwater attenuation prior to discharge to the brooks, which will support the future development.
- 2.2.5 The naturalisation results in slightly higher maximum flood levels within the section of the brook. These can be contained within the site by increasing the height of the existing flood wall adjacent to the IKEA Store. This work is included within the SIW.
- 2.2.6 The Meridian Water development will require a reduction in the rate of surface water run-off from the site as set out in the London Plan, which also provides a drainage hierarchy. At Meridian Water the EA have identified that infiltration drainage systems are not preferred due to historical ground contamination and the requirement to avoid creating pathways to the underlying aquifer. The preferred drainage strategy is to discharge surface water to the watercourses across the site.
- 2.2.7 Through discussion with the Lead Local Flood Authority, attenuation volumes and discharge rates from the site to the watercourses were agreed. These were based on attenuating on site for up to the 1 in 10 year rainfall event. This is less onerous than the normal requirement, but ensures that the site is not discharging to the watercourses at the same time that the peak flows from the upstream catchment reaches the site. This achieves a better balance of flows and avoids increasing the peak flow.
- 2.2.8 The drainage system will comprise a series of features including permeable paving, raingardens, swales and attenuation ponds in order to retain run-off up to the 1 in 10 year event. These features are distributed through the roads, public realm and parks included within the SIW.
- 2.2.9 Areas of the site are subject to past industrial uses that have left a legacy of contaminated ground. To construct the flood compensation basins and naturalisation it is necessary to excavate into the existing ground, and to create development platforms out of the flooding it is necessary to raise site levels. The earthworks strategy forming part of

the SIW is to reuse as much of the excavated material as possible within those areas of the site where levels need to be raised.

- 2.2.10 Excavated material which is contaminated will be remediated on site where possible as part of the remediation strategy and where this is not practical it will be taken offsite for specialist treatment or disposal.
- 2.2.11 The earthworks are also used to set the proposed site levels to facilitate with the proposed bridges over the watercourse. Four new bridges are proposed, three to create the new Central Spine Road and one under Leaside Link Road. The bridge levels are set to provide minimum clearances, 600mm to the maximum flood level for the brooks (as agreed with EA) and 2.7m to the Canal Towpath (as agreed with the Canal and River Trust). The site levels have been developed so that they link to the proposed bridge levels with accessible gradients and accommodate the proposed road layout.
- 2.2.12 The two road corridors provide the connections across the site, they will also include the drainage corridors and features identified above and provide routes for the new utility services.
- 2.2.13 In addition to these two roads, new and improved roads are also included to maintain access to the businesses south of Anthony Way, to maintain access from Argon Way to Glover Drive and to provide new access routes to the IKEA Store car parking and service yard.
- 2.2.14 The bridge designs have also been developed to provide routes that allow new utility services to be installed across the watercourses and to link the different zones within Meridian Water.
- 2.2.15 The utility services on site are legacy from the previous uses and they are not of suitable capacity to support the development proposals. Therefore new utility infrastructure is proposed as part of the SIW, these will include electricity, telecoms, potable water, sewers etc. These services are planned to be incorporated within the primary road corridors and both the roads and the bridges have been designed to have appropriate space to accommodate the utilities. Initial discussions have been held with Statutory Undertakers to understand the impact on their existing networks and to establish what upgrades will be required. The installation of the new utility services will be part of the SIW.

2.3 Conclusions

- 2.3.1 The SIW identified above provide a coordinated set of engineering interventions which will facilitate the Meridian Water development. These interventions are considered, address the issues on site that currently prevent development and are interdependent for successful delivery. Without these interventions the regeneration of Meridian Water, including the development of Phase Two of the Scheme and the other development phases which will come forward subsequently, could not be delivered.
- 2.3.2 The plots identified within the Order are required to bring forward the engineering interventions which form the SIW.