

## Winchburgh - Alternative Foundation Solution

### Background

An enabling cut / fill earthworks has been performed on the various land parcels by Winchburgh by the landowner. The platforming of the site has to our knowledge undertaken in accordance with a general earthworks specification. As such house foundations require to bear on competent natural soils below the upfill placed by the landowner at varying depths across the site. In certain situations this can be at depths of 2-3m below the development platform level and requires the use of either trench fill concrete or piling.

GDL has been approached by a number of housebuilders at Winchburgh to provide an alternative solution to minimise the abnormal cost of house foundations. In this note we set out the process that has been adopted by Bellway Homes on two separate visits to site. A similar solution was also utilised on the Taylor Wimpey site however the earthworks was carried out at the outset by GDL avoiding the need for rework of material.



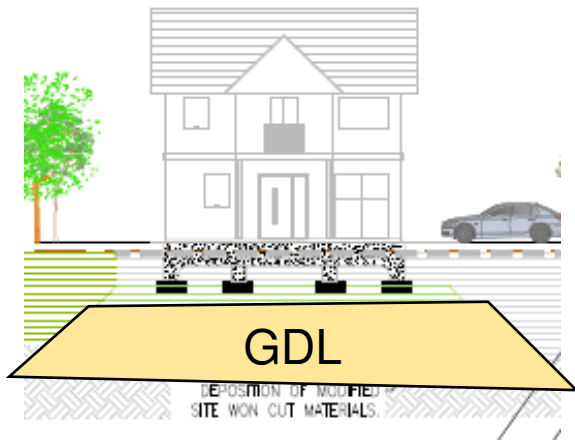
- Plots to be re-engineered by GDL in Green. Otherwise foundations would range in depth 2-3m.
- Orange plots where depth of general fill permits std foundations at depths of up to 1.5m

# CASE STUDY



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### Cost Benefit



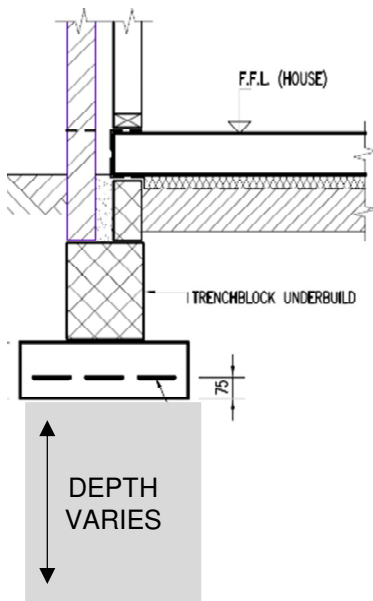
### GDL Solution

- Excavation to competent
- Modified fill
- Density driven fill

Typical depth 2.5m over footprint of 100m<sup>2</sup> = 250m<sup>3</sup> each plot.

All in rate £18m<sup>3</sup> inclusive of management / mobilisation on a £150k typical contract value.

**= £4,500 a plot**



### Mass fill Concrete

- Excess material generated
- Certainty issue
- Quality after a certain depth an issue

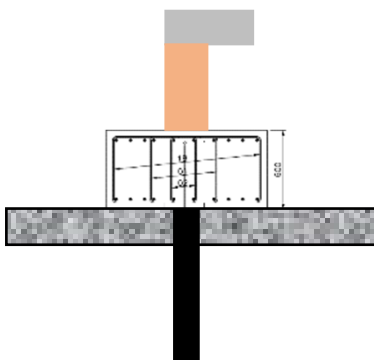
Potentially viable, base on 2.5m depth

Area top of foundation 24m<sup>2</sup> x 2.5m depth = 60m<sup>3</sup>

Exc £9m<sup>3</sup>  
 Disposal off-site £20m<sup>3</sup>  
 T/Fill Concrete £150  
 All in rate £179m<sup>3</sup>

£179 x 90m<sup>3</sup>

**= £10,740 a plot**



### Driven Piling & Ground Beams

The piling rig will require a thick stone piling platform, typically 500mm thick, which would cost around £1,500 per plot.

The cost of driven piling including ground beams = £12,000 - £15,000 per plot.

**= £13,500 – £16,500 a plot**

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### Process

1. Excavation of the general fill placed by others, through the footprint of the proposed house footprints in regularised strips. Including sacrament over front and back of plots. Together with made ground materials any weathered formation soils are excavated down to a competent natural foundation horizon which is effectively the same level as where trenchfill concrete would bear on.



2. Soils arising from the excavation are modified to render their moisture content acceptable for placement as engineered fill in accordance with a density driven specification.



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### Process

3. The treated material is replaced within the excavation in layers and compacted in accordance with the specification for engineered fill. The performance of the fill materials are tested through the process to validate the works. GDL takes on responsibility for design and validation of the solution to meet the requirements of NHBC / Premier Guarantee and the solution is fully warranted by GDL.



**A Cost Effective & Environmentally Friendly Alternative**

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