INTRODUCTION

The Town Lane site in Kew, Southport is to be developed with residential dwellings by David Wilson Homes. This surface water management plan has been prepared to provide a strategy to manage surface water and silt issues that may occur across the development area. This is intended as a working/live document to be reviewed and amended as the site progresses.

SITE PERSONNEL AND DOCUMENTATION

The following measures are to be implemented to increase awareness and bring existing site documentation up to date:

- Undertake additional detailed site-based awareness training (tool box talk) on surface water and silt management issues and protection, for all site groundworks staff
- Include a section relating to silt minimisation and protection within site induction folder
- Undertake weekly site audit and obtain support from the appointed environmental consultant if or when required.

SITE DESCRIPTION

The site is located in Kew, Southport, approximately centred at National Grid Reference 335077, 414877 and covers an area of approximately 19Ha. The site boundaries are defined by Boundary Brook to the south east and Birkdale Cop Road to the south west. To the north and north east are residential properties, and an area of unused grassland lies to the north.

The site has historically been used for landfill waste deposit, and has been recently remediated.

The site surface is generally flat at approximately 3.5m AOD.

Soils at the site comprise made ground with granular waste materials, and clay soils with silt and sand.

NEARBY SURFACE WATERS

The nearest surface water feature is Boundary Brook trending in a south west to north east direction and forming the south east boundary of the site.

PROPOSED DRAINAGE

The site drainage layout (Lees Roxburgh, drawing number: 02/04-06, dated September 2015) indicates that surface water drainage from the completed site will flow through:

- Concrete pipes and swale beds for surface water attenuation. Hydrobrakes will be fitted on the two outfalls to Boundary Brook, which are located at the east and south corners of the site.

Foul water will flow through two separate on site pumping stations to an off-site pumping station to the north west.

EXPECTED RUNOFF

Shallow soils at the site comprise granular made ground and clay with silt and sand. Where clay and cohesive made ground horizons are exposed at the surface it would be expected that infiltration will be limited, and water will pool. These soils have a high potential for silt generation.

The site topography is relatively flat and surface water runoff directions will depend on local ground levels. Water will pool in low points. Near to Boundary Brook surface flows into this watercourse are expected.

Groundwater is relatively shallow at the site and entry into excavations is expected. Rapid entry is likely in deeper excavations.

SENSITIVE RECEPTORS TO SILT

At this site, the receptors sensitive to silt include the following:

On-site:

- Road gullies and surface water drainage at the site
- Residents in completed properties within the site
- Swale beds

Off-site:

- Boundary Brook to the south east of the site

POTENTIAL PROTECTION MEASURES WITHIN ACTIVE DEVELOPMENT AREA

The following protection measures will be implemented during development works to reduce the risks of silty runoff leaving site.

Construction Phase

The following protection measures will be utilised during construction works:

1. The placement of gully protection (straw) in all gullies during construction, to be inspected and replaced/cleaned when necessary
2. Regular scraping and sweeping of roads at the site, with the option to increase sweeping when necessary, such as during bulk earth movement and / or inclement weather

3. The movement of plant on and off roads will be minimised to prevent the tracking of excess soil onto roads on site (planning of working day). As much as possible materials will be stored in locations that have stoned or surfaced access
4. The soft silt, clay and peat soils are not suitable to be even lightly trafficked. Where they are exposed at the surface they will be covered with a stone layer before they are subject to traffic. For off-road areas that are to be more frequently trafficked temporary timber trackways will be used
5. The installation of hardstanding areas to the front of all plots to enable 'clean' forklift access
6. Consideration given to the placement of silt fencing or soil bunds if needed to contain runoff from work areas, particularly when close to Boundary Brook
7. Use of settlement tank(s) when dewatering excavations, with discharge onto suitable areas a safe distance from any gullies and the brook.
8. Consideration to the placement of stockpiled materials (topsoil, subsoil and foundation arisings) within a designated area as far as practicably possible from the drains and gullies. If required the placement of a silt fence at the base of the stockpile to control runoff
9. The placement of topsoil and turf at the earliest opportunity to control surface run-off from completed areas
10. On site storage/availability sandbags and a submersible pump to enable deployment at short notice if required (i.e. during inclement weather) and to facilitate on-going maintenance of potential installations
11. General good housekeeping of the site

PROTECTION MEASURES WITHIN NON-ACTIVE DEVELOPMENT AREAS

The following protection measures will be implemented on non-active development areas of the site to protect the surface water system and watercourses:

1. Prevention of unnecessary movement of any plant within those areas of the site, as this will cause soil disturbance and silt mobilisation. Use of tape or barriers to restrict unnecessary access to areas of the site not undergoing development
2. Topsoil and vegetation to be left in place in areas not imminently due for development
3. Any exposed topsoil to be seeded at the earliest opportunity to control surface run-off from completed areas

MONITORING PROCEDURES AND RECORDS

The following monitoring procedures will be carried out regularly by the site team to enable continuous review of the measures listed above. A comprehensive record of the effectiveness of the system will be maintained to enable further review by any parties attending site:

4. Inspection of all gullies to monitor for silty runoff entering the road drainage network, with cleaning and maintenance of gully protection;
5. Maintenance, cleaning and replacement of any silt fences and silt matting as required.
6. Monitor the condition of roadways for mud and the potential for generation of silt

7. Monitoring the condition of the identified receptors at strategic locations on a weekly basis and daily during periods of heavy rainfall, as identified in Figure 2 (denoted with M).
8. Keeping a photographic log and the completion of a site audit form on a weekly basis, which will assist in documenting any changes on site and identifying any changes needed to the protection systems as the development progresses
9. Calls to the appointed Environmental Consultant (Richard Park 07917 425 168) should be made for additional advice and in the event of a breach of protective measures by silty runoff.

CONTACT DETAILS (to be used for support and advice)

RSK Environment Ltd	Richard Park	07917 425 168
RSK Environment Ltd	Nikolaos Misyris	07503 053 235

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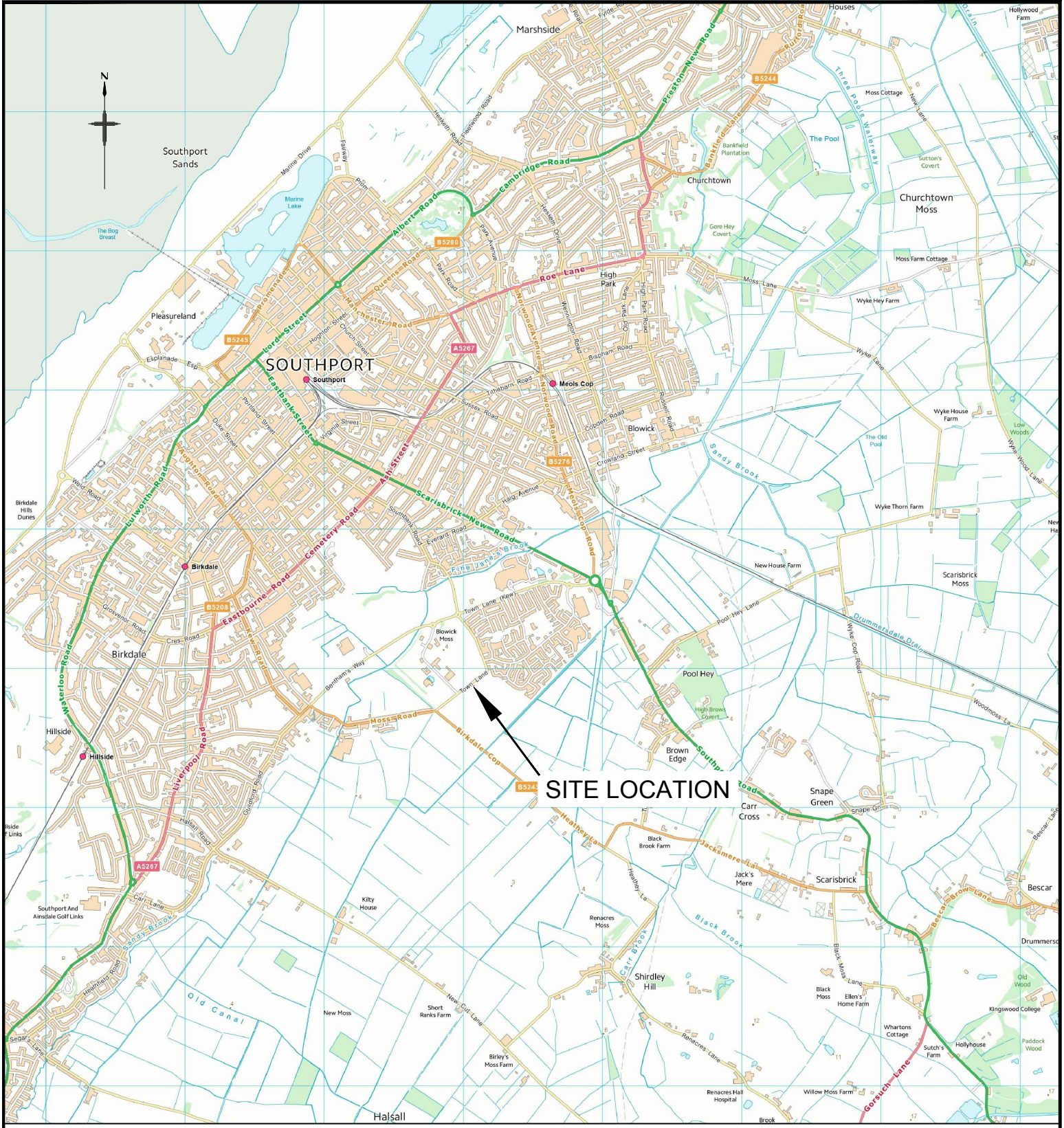
FIGURES



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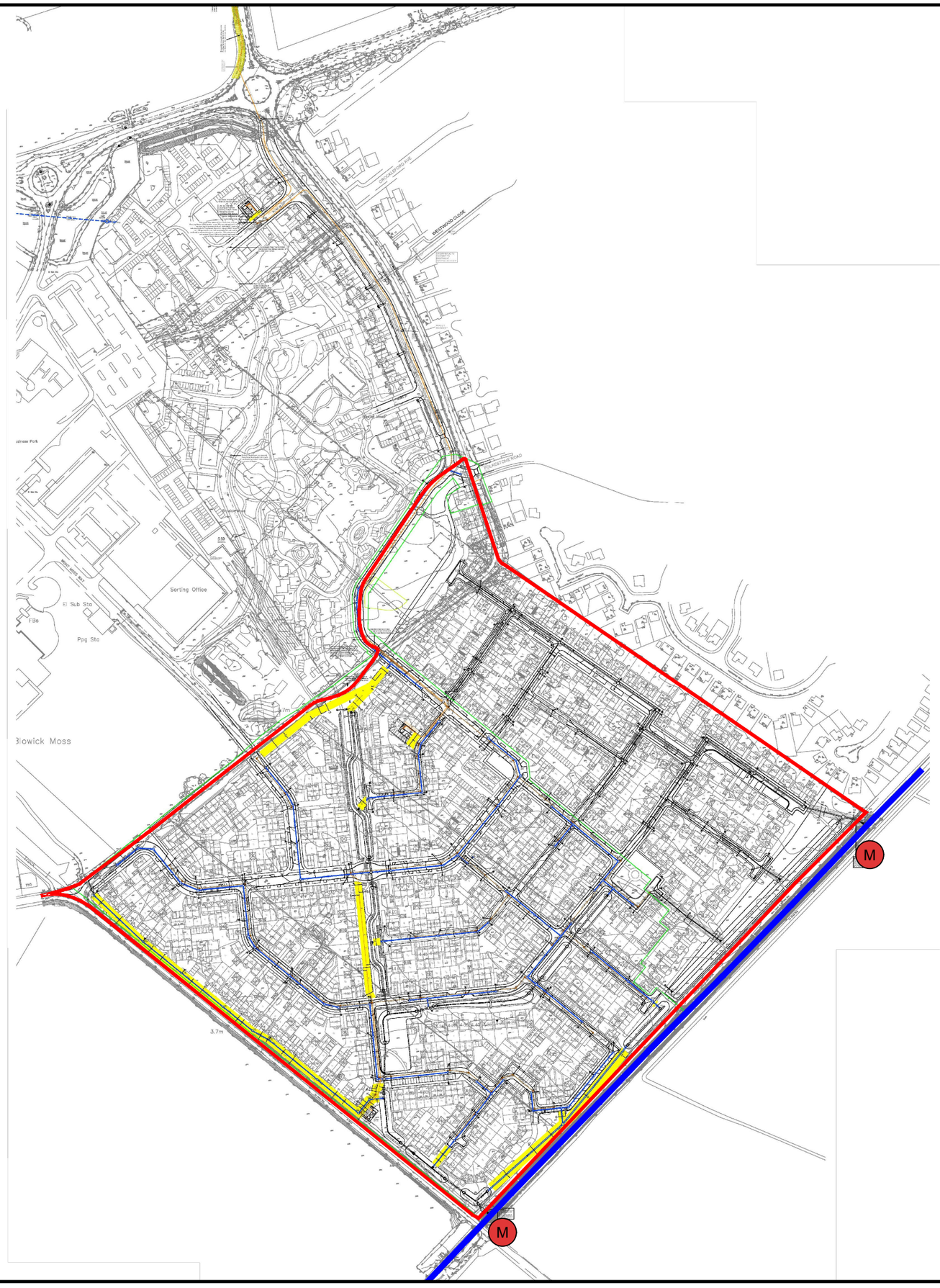
Project Title: TOWN LANE, KEW, SOUTHPORT

Drawing Title: SITE LOCATION PLAN

Drawn	Date	Checked	Date	Approved	Date	Project No.	Drawing File
HD	29.11.19	NM	29.11.19	RP	29.11.19	322658	322658-R1(00)D001A

Scale	Orig Size	Dimensions	Drawing No.	Rev.
NTS	A4	—	FIGURE 1	A



LEGEND:

- Site boundary
- Surface water feature (Boundary Brook)
- (M) To monitor condition of drainage flows from site and the water within Boundary Brook

N

NOTE:
Base plan 'Residential area adopted drainage layout full site (Phase A boundary) from David Wilson Homes, Dwg No. 02/14-06, dated Sep 2015, Rev F

REV	DATE	DESCRIPTION	BY	CHD.	APR.
A	29.11.19	FIRST ISSUE	HD	NM	RP

Dimensions	Projection	Scale	Orig Size
m		NTS	A3

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PROJECT
TOWN LANE, KEW, SOUTHPORT

TITLE
SURFACE WATER MANAGEMENT PLAN

JOB No.:	DRAWING FILE:
322658	322658-R01(00)D002A

BY:	DATE:	CONTRACT NO.		REV:
HD	29.11.19		FIGURE 2	A

Appendix A

Installation Examples

APPENDIX A

Example of installation of silt fencing, and attached example of manufacturers detail


Example of silt matting, and attached example of manufacturers detail


Example of installation of silt fencing, with straw bales if required at headwall.

Appendix B

Inspection & Monitoring

Environment Gully Inspection Sheet

Date:	Gully no:	Fit for purpose (yes/no)	No ? (if no, action required, clean/ replace ?)	Comment	Signature

SILT INSPECTION CHECKLIST –
SITE: KEW, SOUTHPORT

Name of person undertaking inspection:.....

Date:.....

Current weather conditions:.....

Description	Comments	Action	Initial
1) What is the current condition of the gully protection measures within the completed/un-adopted areas of the site? *Note any gullies requiring maintenance measures*			
2) What is the current condition of the gully protection measures within the active areas of the site? *Note any gullies requiring maintenance measures*			
3) Are site roads clean and relatively free of mud? Is the frequency of visits by the road sweeper adequate? *Consider whether additional visits should be scheduled.*			
4) Are there currently unsurfaced areas being trafficked which may be causing silt to enter the site drainage or stream? *Note if additional measures are required to reduce the runoff from these unsurfaced areas.*			
5) Are control measures in place to prevent silt runoff from unsurfaced areas and soil stockpiles? *Note if the control measures are adequate and whether the increased runoff requires an increase in the frequency of inspection of any control measures.*			
6) What is the current water condition of Boundary Brook? *Note any discolouration of the water or obvious sign of sediment within the water.*			

Description	Comments	Action	Initial
7) Is there any dewatering of excavations taking place on site? *Note what activities are taking part and their location. Note any control measures in place.*			
8) Is there any sign of silty runoff flowing over the site surface toward receptors? *Check around the steep slopes to the south east and toward the footpath in the north east. Look for both current silty water and for evidence of previously deposited silt.*			
9) What is the condition of water leaving site from the drainage outfalls in the south and east corners? *Check for any obvious signs of discolouration or sediment in the water. Also check for surface flows into the brook.*			
10) What is the condition of any silt control/containment measures installed? Are they still working effectively? *Check bunds and silt fences for ongoing effectiveness and signs of failure or weakness.*			
Notes and actions to be taken:			

Completed by	Name	Signature	Date
Site Manager			

Contact: RSK Richard Park – 07917 425168