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DRAINAGE PLANNING REPORT

Mixed use development
Estuary View
Wraik Hill
Whitstable

Client:-

George Wilson Developments Ltd.
P O Box 70
Whitstable
Kent
CT5 3RG

Project no:- 0014/012/12
Date:- November 2014

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- 1. Drawings - Schematic Drainage 0014/012/12/SKC01/P2 and SKC02/P2**
- 2. Surface Water Calculations**
- 3. Foul Water Calculations.**

1.0 Introduction

- 1.1 The site is located South of Seasalter near Whitstable, bounded to the South by the Thanet Way, to the West and North by the old Thanet Way, and to the East by The Chaucer Business Park.
- 1.2 The site has a total development area of approximately 5.34 Hectares of which 3.33 is currently partly developed and the further area to the East approximately 2.01 Hectares.
- 1.3 The drainage of the previously developed area comprises an attenuated surface water storage pond with a discharge rate limited to 7l/s and the foul to an offsite public sewer constructed under a S104 adoption agreement to serve the development. Capped spur connections were provided for possible future extension of the development area to the East.

2.0 Surface water

- 2.1 It is proposed to continue to utilise the existing outfall via the attenuated pond. The pond was initially sized to cater for the possible increase of the developed area but the flow rate limited to cater only for the initial development.
- 2.2 The outflow rate will be increased to the equivalent of the 4l/s/ha discharge rate limit required by Canterbury City Council to 21 l/s.
- 2.3 The proposed network has been analysed using micro drainage for the 100 year storm event +30% climate change. Calculations are included as Appendix 2. Additional Storage is incorporated within the proposed development beneath the car park area and is shown on drawing 0014/012/12/SKC02.
- 2.4 Four minor areas of surface flooding are indicated by the analysis for the 100 year storm event +30% climate change. Three areas A (1.18m³), B (3.63m³) and C (1.15m³) are contained against kerbs in car park areas and are shown on drawings SKC01 and SKC02. The fourth area D (3.14m³) is in a soft landscape area to the north of the existing medical centre and a short length of below ground 600mm dia pipe is to be incorporated to cater for the flood volume as shown on drawing SKC01.

3.0 Foul Water

- 3.1 The existing foul drainage falls to the south west corner of the existing development where the pipework connects to the existing public foul sewer in the Old Thanet Way.
- 3.2 The main runs of the existing foul drainage were all constructed in 150mm dia to provide the on site capacity for possible future development. The pipe runs have been reassessed to confirm capacity and the calculations are presented in Appendix 3.

APPENDIX 1

Drawings - Schematic Drainage 0014/012/12/SKC01/P2 and SKC02/P2

APPENDIX 2

Surface Water Calculations

EVS1 and S2 - Site areas

EVS3 and S4 - Micro drainage network schematics

EVS5 - Pond volume calculations

Micro Drainage pages 1-11

- Network details
- Manhole schedules
- Pipeline schedules
- Simulation criteria
- Online controls
- Storage Structures
- Summary of critical storms

0014 / 012 / 012

Project Title

ESTUARY VIEW

SURFACE WATER

SITE AREA - See sheet EUS2 for areas.

Phase 1. - Partially completed.

(not developed is ignore)

$$A1 = \frac{36}{2} \times 110 = 1980$$

$$A2 = \left(\frac{58+120}{2}\right) \times 63 = 5607$$

$$A3 = \left(\frac{120+148}{2}\right) \times 102 = 13668$$

$$A4 = \left(\frac{148+128}{2}\right) \times 102 = 14076$$

33351. m²

Phase 2. - Proposed.

$$A5 = \left(\frac{128+116}{2}\right) \times 112 = 13664$$

$$A6 = \left(\frac{78+37}{2}\right) \times 114 = 6555$$

$$A7 = \frac{8}{2} \times 60 = 240$$

$$\text{LESS } A8 = \frac{56 \times 12}{2} = -336$$

20123 m²

53474 m²

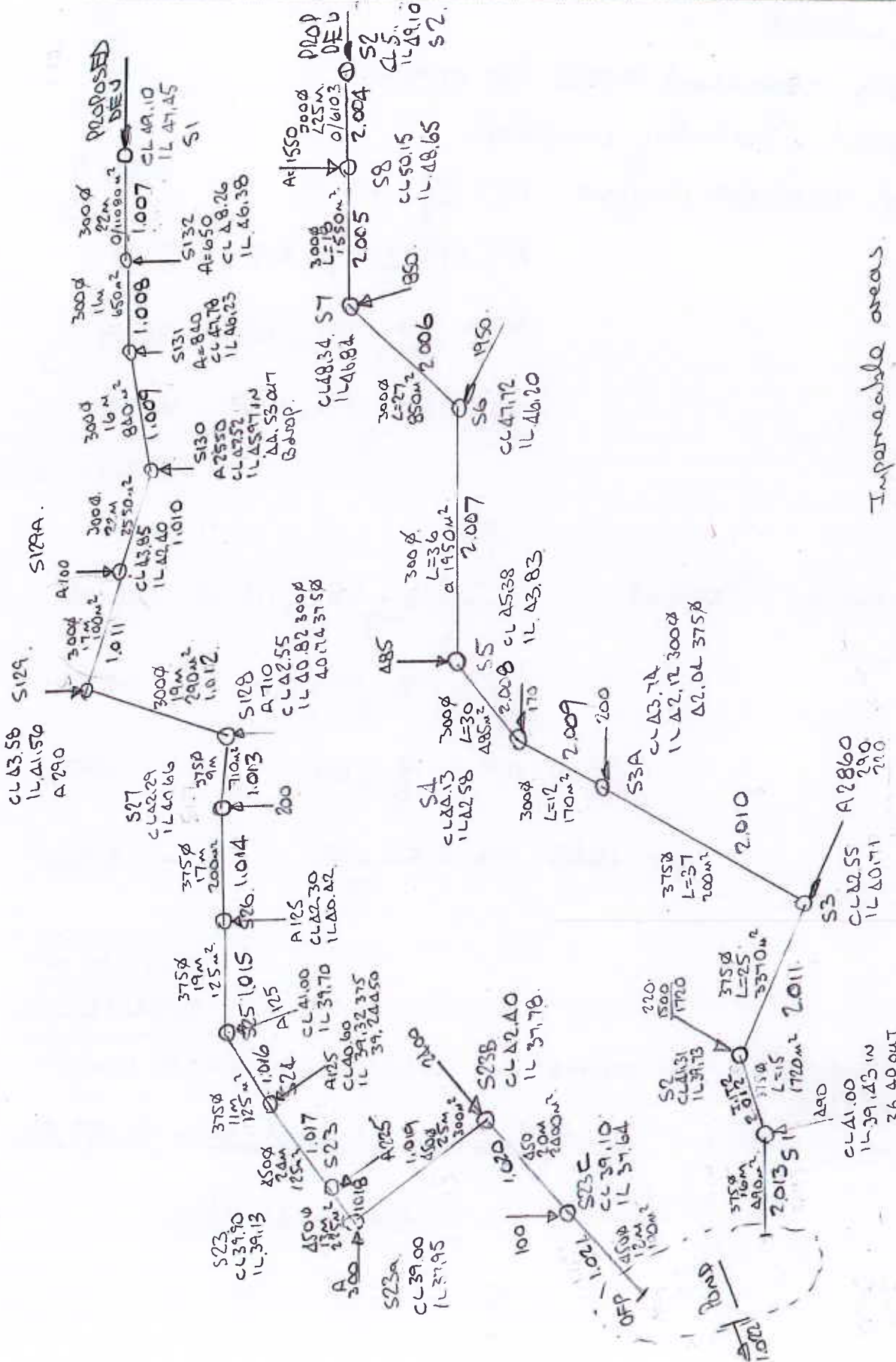
CANTERBURY CITY COUNCIL DISCHARGE RATE LIMIT
4.2 l/s/ha

ie ALLOWABLE DISCHARGE = 21.39 l/s

SATI 21 l/s

Project Title

ESTUARY UFEU. - SURFACE WATER

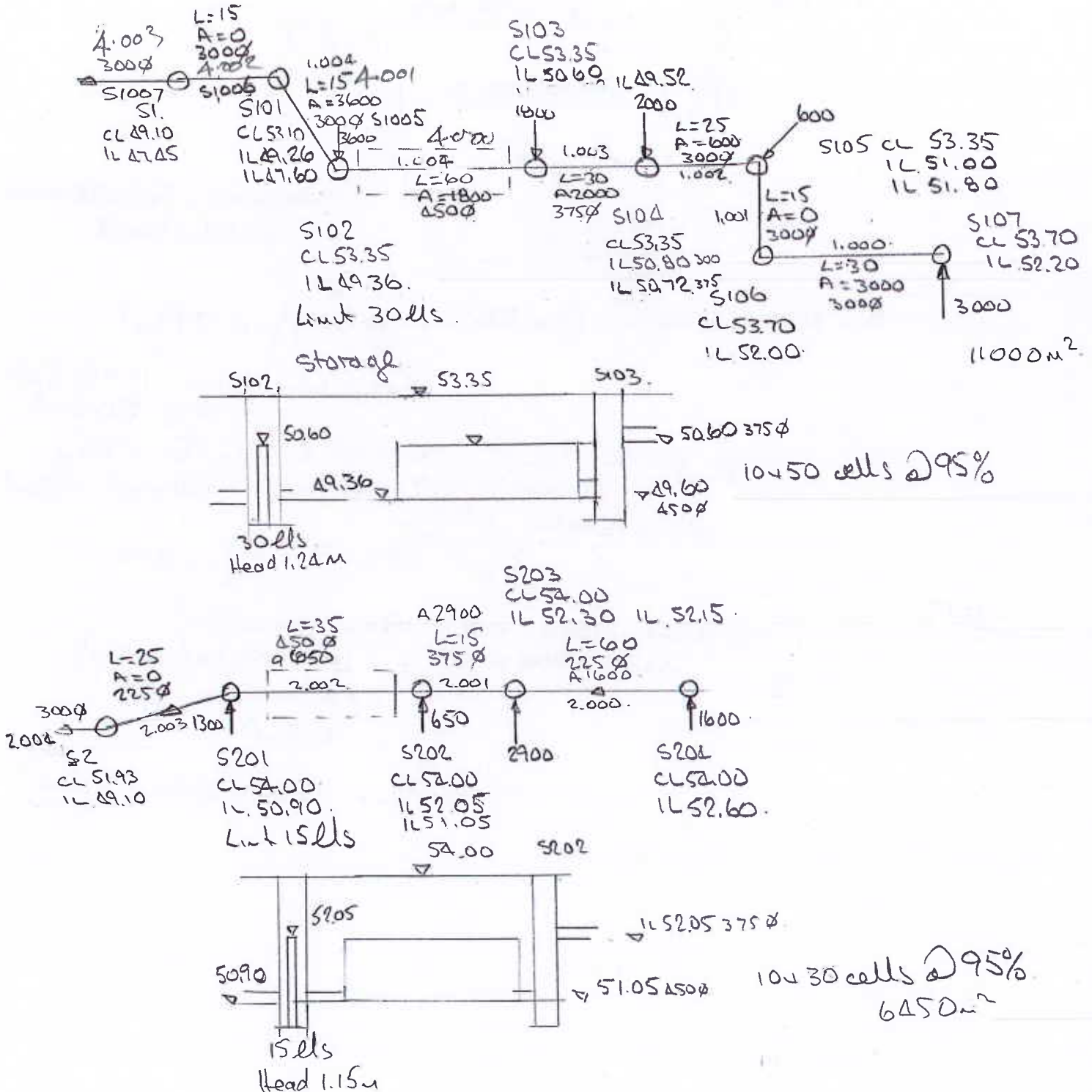


Imperviable areas
Previously developed = 8740 + 10785
= 19525 m²
Total developed = 19525 + 11080
= 30605 m²

Project Title

ESTUARY VIEW.

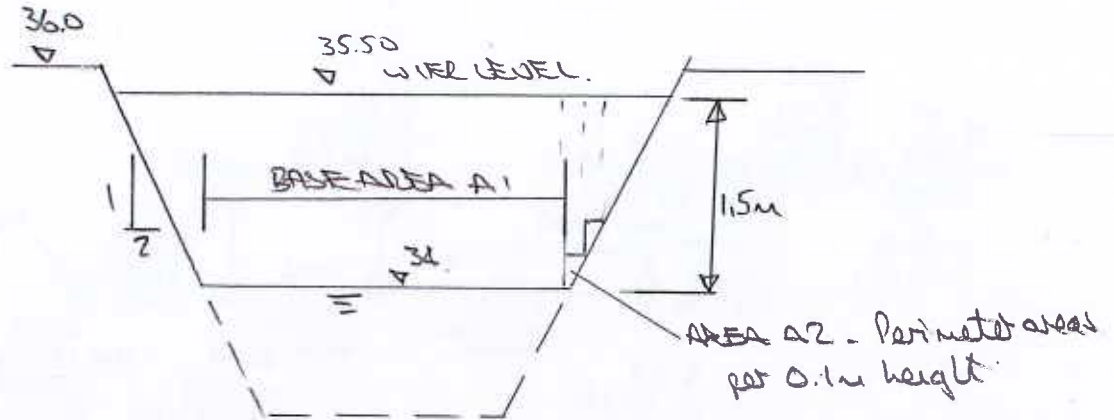
Proposed schematic network.



Project Title

ESTUARY JUELI - SURFACE WATER

POND VOLUME - PHASE I CONSTRUCTED



$$A1 \text{ BASE AREA} = (8 + 56) + \left(\frac{54}{2} + 13\right) = 799 \text{ m}^2$$

$$\text{ie vol} = 1.5 \times 799 = 1198.5 \text{ m}^3$$

say 1200 m³.

A2. Average perimeter length $60 + 35 + 40 + 15 = 150 \text{ m}$.
ie increase in area / 100m height = $150 \times 0.12 = 30 \text{ m}^2$

A2. c/s area

$$\text{area} = 0.1 \times \frac{0.2}{2} = 0.01 \text{ m}^2$$

$$\begin{aligned} \text{ie volume / 100m rise} &= 150 + 0.01 = 1.5 \text{ m}^3 \\ \text{+ height } 200 \text{m vol.} &= + (0.2 \times 150) \times (1.4 - 0.1) \\ &= (0.2 + 150 \times 10.5) \\ &= 315 \text{ m}^3 \end{aligned}$$

$$\text{TOTAL} = 1200 + 315 = \underline{\underline{1515 \text{ m}^3}}$$

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SURFACE WATER DRAINAGE AND MAINTENANCE PLAN

Proposed Mixed Use Development
Estuary View Retail Site
Whitstable
Kent

Client:-

Kimberley Developments Plc
33 St James Street
LONDON
SW1A 1HU

Project no:- 0014/012/12
Date:- September 2015
Revision 2

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- 1.0 Introduction**
- 2.0 Surface Water Drainage System Design**
- 3.0 Surface Water Drainage Elements**
- 4.0 Maintenance Requirements**

APPENDIX

- 1. Eastwood & Partners, External Drainage Layout drawing no 39179/061/B**

1.0 Introduction

This report is prepared to provide a Management and Maintenance Plan for the surface water drainage arrangements as required by the Canterbury City Council Planning Consent Ref CA/14/02399 dated 24th July 2015 Condition 27.

The site is located approximately 1km south of Whitstable town centre and is situated centrally within a parcel of land which is broadly rectangular in shape and bordered to the north and west by the Old Thanet Way, New Thanet Way to the south and Wraik Hill to the east.

The development is located directly adjoining the existing Estuary View Business Park to the west.

A drainage plan by Eastwood & Partners, External Drainage Layout drawing no. 39179/061/B is enclosed in Appendix 1.

2.0 Surface Water Drainage System Design

The drainage networks are gravity systems and will remain private. Two systems will connect with the adjoining existing surface water drainage which serves the Estuary View Business Park. The runoff from the existing Business Park discharges to a watercourse via a restricted outfall and associated storage pond.

The two systems will connect to the existing Business Park network at manholes referenced S1 and S2 on Eastwood & Partners drawing no. 39179/061/B enclosed in appendix 1. The discharge rate to these two manholes is limited to 30l/s and 15l/s respectively for the existing downstream system to cater for the designed storm event of 100 year+30% climate change.

The mix use development systems are also designed to cater for the 100 year+30% climate change storm event.

3.0 Surface Water Drainage Elements

The surface water systems comprise the following various elements:-

Pipework

All the pipework operates as a gravity system. Pipe diameters range from 100mm to 450mm diameter and comprise, plastic, clay or concrete material.

Gullies

The gullies include trapped sumps to capture silt and debris before flows enter the main pipework system. The gullies comprise plastic and precast concrete.

Channel drains

The channel drains are provided with sumps and trapped outlets to capture silt and debris before flows enter the main pipework system.

Manholes

Access to the pipework system is provided at various points with the incorporation of shallow polypropylene, precast concrete or brickwork chambers.

Catchpits

Access to the pipework system is provided upstream and downstream of the cellular storage facilities with catchpits. These chambers are precast concrete with sumps provided to capture silt and debris. The downstream catchpit contains the vortex flow control device used to limit the maximum discharge rate from the storage facility.

Cellular storage facilities

These are cellular multi crated facilities used to provide the required storage for the limited discharge rate. The crated storage contains a central perforated pipe to allow the water to disperse into the crates and to provide for maintenance access between the upstream and downstream catchpits.

4.0 Maintenance Requirements

The regular inspection and maintenance will be undertaken as part of the overall management of the development by the management company. A log will be kept of the dates of inspections, any maintenance work required with dates and works summary of maintenance undertaken.

The gravity systems should function without specific regular maintenance.

Inspection will be undertaken following which maintenance operations could be necessary. The inspection periods and possible maintenance requirements are identified below:-

Gullies, Channel drains and catchpits.

Annually inspect all traps and sumps and if debris build up noted clear shallow gullies manually and for deeper manholes and catchpits clear using a suction tanker.

Manholes and pipework

Inspect manholes annually. If water build up/blockages noted carry out jetting of pipework and CCTV survey to indentify any defects. Defects to be repaired as appropriate by suitably qualified contractors.

Vortex flow controls.

Inspect annually and operate any overflow flap. If not in working order contact manufacturer to undertake required remedial work.