

SYDNEY OFFICE

Robert Bird Group Pty Ltd
ABN 67 010 580 248 ACN 010 580 248
Level 11, 151 Castlereagh Street, Sydney NSW 2000
PO Box A2309, Sydney South NSW 1235 Australia
p: +61 (0) 2 8246 3200 | f: +61 (0) 2 8246 3201
www.robertbird.com

Reference: CR:HR LTR/C 18312C

20th June 2019

Scentre Design and Construction Pty Ltd
GPO Box 4004
SYDNEY NSW 2001

Attention: Christopher Terkalas

Dear Jonathan

RE: STORMWATER DESIGN FOR PROPOSED WESTFIELD LIVERPOOL ENTERTAINMENT AND LEISURE PRECINCT

Robert Bird Group (RBG) have provided concept civil engineering design to Scentre Design and Construction for the above project at the existing Westfield Liverpool Shopping Centre. The development involves the partial demolition of existing structure and construction of new and refurbished retail, food and dining terraces, leisure and entertainment tenancies, landscaped public domain, modifications to cinema and mall areas.

Having reviewed the Liverpool City Council Development Control Plan 2008 – Part 1 (General Controls) Section 6 (Water Cycle Management), we note the following provisions:

- "On Site Detention (OSD) systems will not be required where the additional impervious surfaces (roof, driveway, paving) total is less than 30 sq.m in plan area."

We note that the proposed development does not involve any increase in impermeable area within the site compared with the pre-development state and therefore have not proposed to provide OSD.

We further note that the proposed development would not adversely affect the quality of the stormwater discharged to the road drainage network. This is a result of the proposed small increase in roof area resulting from a corresponding decrease in car parking and paved areas which are higher generators of pollutants. As such, the current proposals do not include any water quality treatment measures.

Refer to the Civil Drawing C-3-01 Revision 4.

Please do not hesitate to contact the undersigned if there are any queries about the above.

Yours faithfully

ROBERT BIRD GROUP PTY LTD

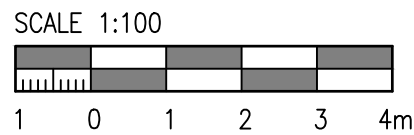
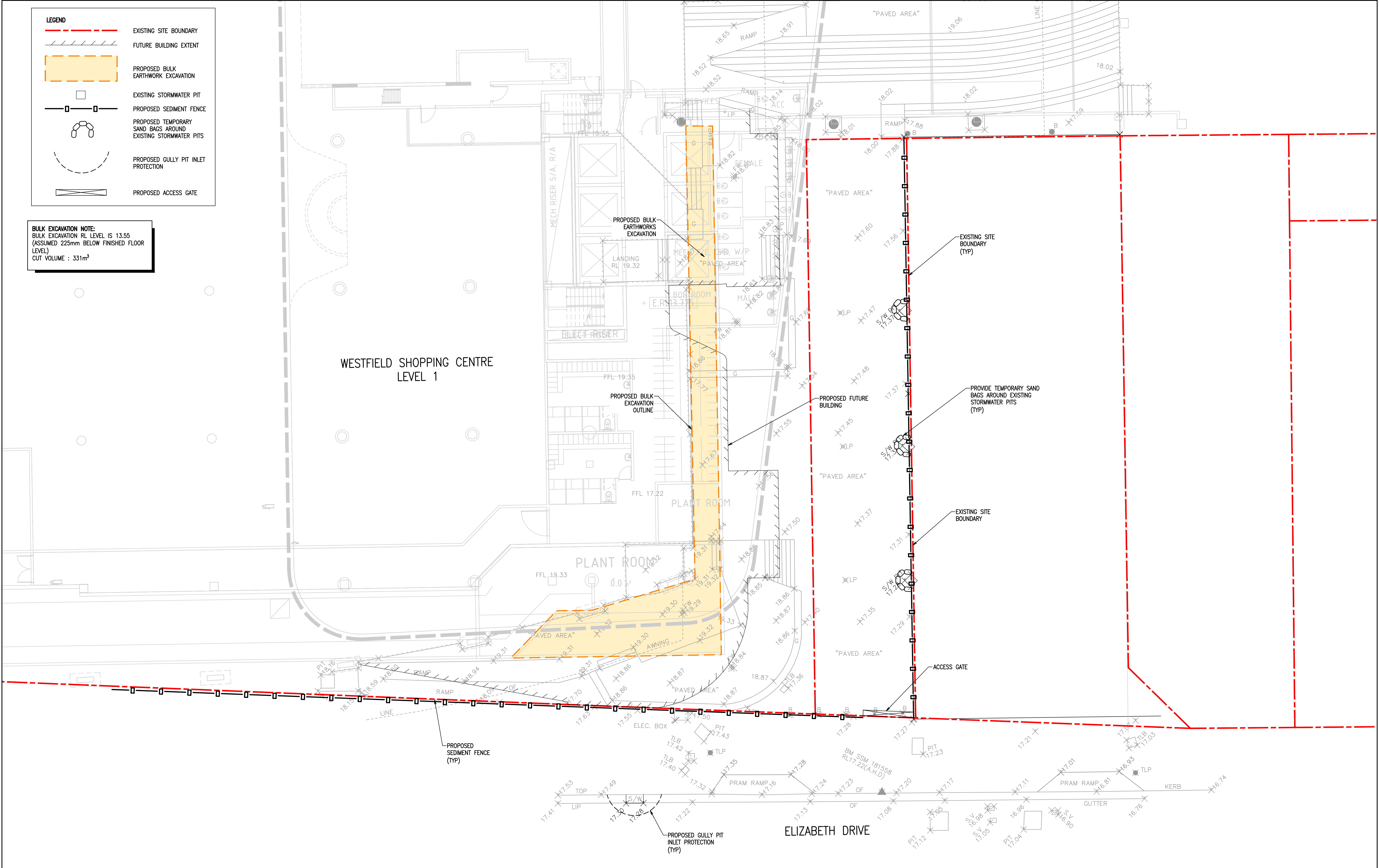


COLIN ROPE
Senior Associate - Civil

LEGEND

- EXISTING SITE BOUNDARY
- FUTURE BUILDING EXTENT
- PROPOSED BULK EARTHWORKS EXCAVATION
- EXISTING STORMWATER PIT
- PROPOSED SEDIMENT FENCE
- PROPOSED TEMPORARY SAND BAGS AROUND EXISTING STORMWATER PITS
- PROPOSED GULLY PIT INLET PROTECTION
- PROPOSED ACCESS GATE

BULK EXCAVATION NOTE:
BULK EXCAVATION RL LEVEL IS 13.55
(ASSUMED 225mm BELOW FINISHED FLOOR LEVEL)
CUT VOLUME : 331m³



Rev	Revision Description	By	App	Date
1	FOR INFORMATION	SM	CR	11.09.18

Rev	Revision Description	By	App	Date
1	FOR INFORMATION	SM	CR	11.09.18

Disclaimer: Robert Bird Group Pty Ltd (RBG) and its related entities (RBE) do not warrant the accuracy, currency or completeness of any information or data supplied or transferred by electronic means. You are responsible for verifying that any information or data supplied or transferred by electronic means matches the information or data on the corresponding PDF or the version issued by RBG. RBG will not be liable for any loss or damage you or any other party incurs as a result of acting in reliance on any information or data supplied or transferred by electronic means and you release RBG from any liability for any loss or damage however caused which you or any other party may directly or indirectly suffer in connection with your access to or use of that information or data. Unless agreed otherwise by Robert Bird Group Pty Ltd (7867) ACN 010 580 248 in writing, intellectual property rights in any information or data supplied or transferred to you (including copyright in all text, graphics, logos, icons, sound recordings and software) are owned by, or licensed to, RBG. Other than for purposes authorized by RBG in writing, you must not copy, adapt, reproduce, store, publish or commercialise any information or data supplied or transferred by electronic means without RBG's prior written permission.

DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Structural, Civil & Construction Engineering Consultant

RobertBirdGroup

Robert Bird Group Pty Ltd
PO Box A2300
Sydney South, NSW 1235
Level 11, 151 Castlereagh St
Sydney NSW 2000

Ph: (02) 8246 3200
Fax: (02) 8246 3201
Email: sydney@robertbird.com.au
Web: www.robertbird.com
ACN 010 580 248

Client

SCENTRE GROUP

Owner and Operator of **Westfield** in Australia and New Zealand

LIVERPOOL

Title

EROSION AND SEDIMENT CONTROL PLAN

Project

**WESTFIELD LIVERPOOL
ELP - CIVIL WORKS**

Scale of A1
AS SHOWN
Date
11.09.18

Drawn
S.MANANDHAR
Designer
S.SAURA

Design Checker
C.ROPE
Approved
C.ROPE
Job Number
18312C
Revision
1

NOT FOR CONSTRUCTION

Drawing Number
C-1-01

GENERAL NOTES:

- A1. THIS SOIL AND WATER MANAGEMENT PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS RELATING TO THIS DEVELOPMENT.
- A2. CONTRACTORS WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE LANDCOM – MANAGING URBAN STORMWATER: SOIL AND CONSTRUCTION, 4th EDITION, MAR 2004.
- A3. REFER VEGETATION MANAGEMENT PLAN BY ECOLOGICAL FOR VEGETATION CLEARANCE AND RIPARIAN ZONE MANAGEMENT.
- A4. ALL SUBCONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN REDUCING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE AREAS.

SITE MAINTENANCE NOTES:

- SM1. THE CONTRACTOR SHALL INSPECT THE SITE AT LEAST WEEKLY AND AT THE CONCLUSION OF EVERY STORM EVENT TO:
- A) ENSURE THAT DRAINS OPERATE PROPERLY AND TO EFFECT AND NECESSARY REPAIRS.
- B) REMOVED SPILLED SAND OR OTHER MATERIALS FROM HAZARD AREAS, INCLUDING LANDS CLOSER THAN 5 METRES FROM AREAS OF LIKELY CONCENTRATED OR HIGH VELOCITY FLOWS ESPECIALLY WATERWAYS AND PAVED AREAS.
- C) REMOVED TRAPPED SEDIMENT WHENEVER THE DESIGN CAPACITY OF THAT STRUCTURES HAS BEEN EXCEEDED.
- D) ENSURE REHABILITATION LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD TO INITIATE UPGRADING OR REPAIR AS NECESSARY.
- E) CONSTRUCT ADDITIONAL EROSION AND OR SEDIMENT CONTROL WORKS THAT MIGHT BECOME NECESSARY TO ENSURE THE DESIRED PROTECTION IS GIVEN TO DOWNSLOPE LANDS AND WATERWAYS. MAKE ONGOING CHANGES TO THE PLAN WHERE IT PROVES INADEQUATE IN PRACTICE OR IS SUBJECT TO CHANGES IN CONDITIONS ON THE WORK–SITE OR ELSEWHERE IN THE CATCHMENT.
- F) MAINTAIN EROSION AND SEDIMENT CONTROL STRUCTURES IN A FULLY FUNCTIONING CONDITION UNTIL ALL EARTHWORK ACTIVITIES ARE COMPLETED AND THE SITE IS REHABILITATED.
- SM2. THE SITE SUPERINTENDENT WILL KEEP A LOGBOOK MAKING ENTRIES AT LEAST WEEKLY, IMMEDIATELY BEFORE FORECAST RAIN AND AFTER RAINFALL. ENTRIES WILL INCLUDE:
- A) THE VOLUME AND INTENSITY OF ANY RAINFALL EVENTS.
- B) THE CONDITION OF ANY SOIL AND WATER MANAGEMENT WORKS.
- C) THE CONDITION OF VEGETATION AND ANY NEED TO IRRIGATE.
- D) THE NEED FOR DUST PREVENTION STRATEGIES
- THE LOGBOOK WILL BE KEPT ON–SITE AND MADE AVAILABLE TO ANY AUTHORISED PERSON UPON REQUEST. IT WILL BE GIVEN TO THE SUPERINTENDENT AT THE CONCLUSION OF THE WORKS.

SEDIMENT CONTROL NOTES:

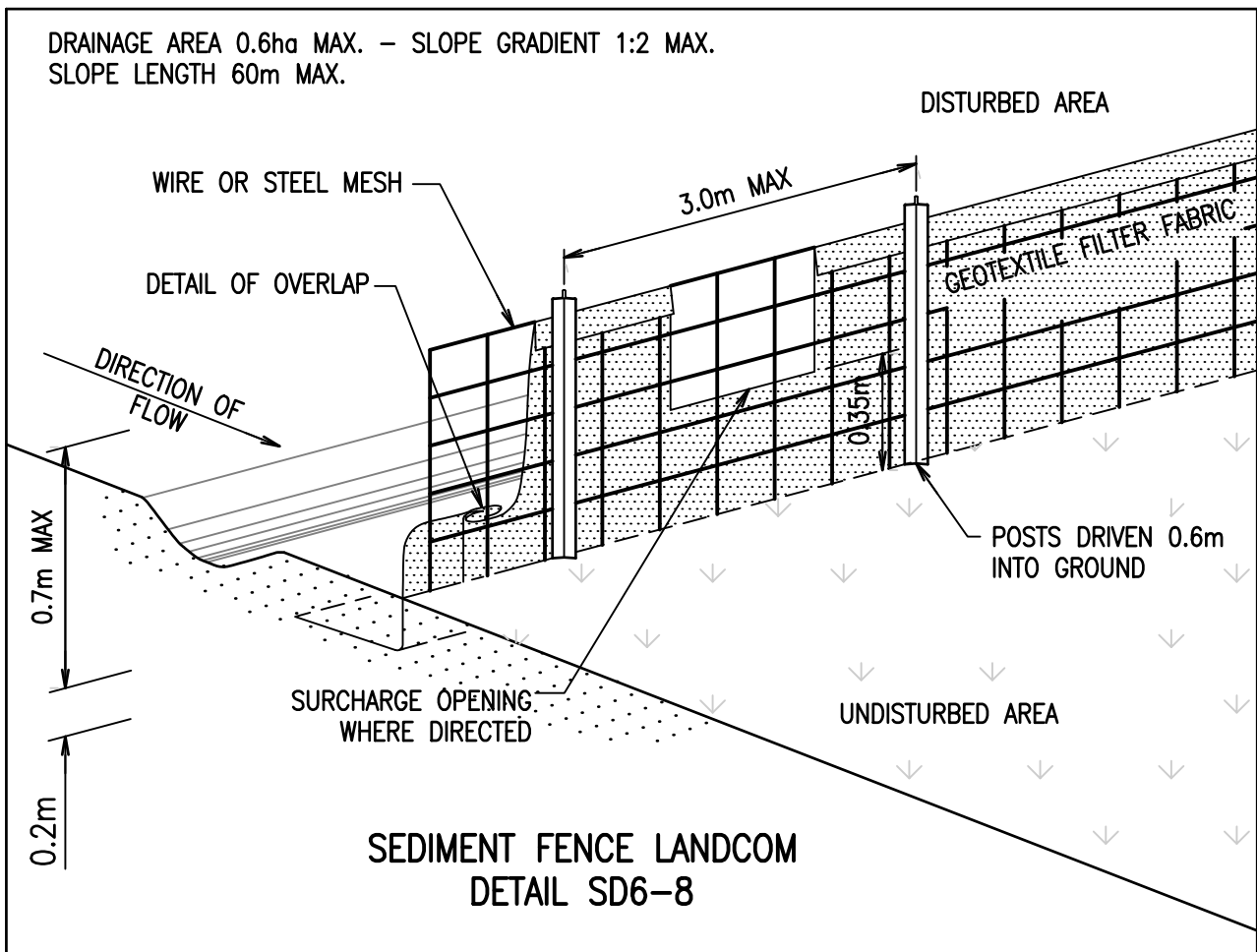
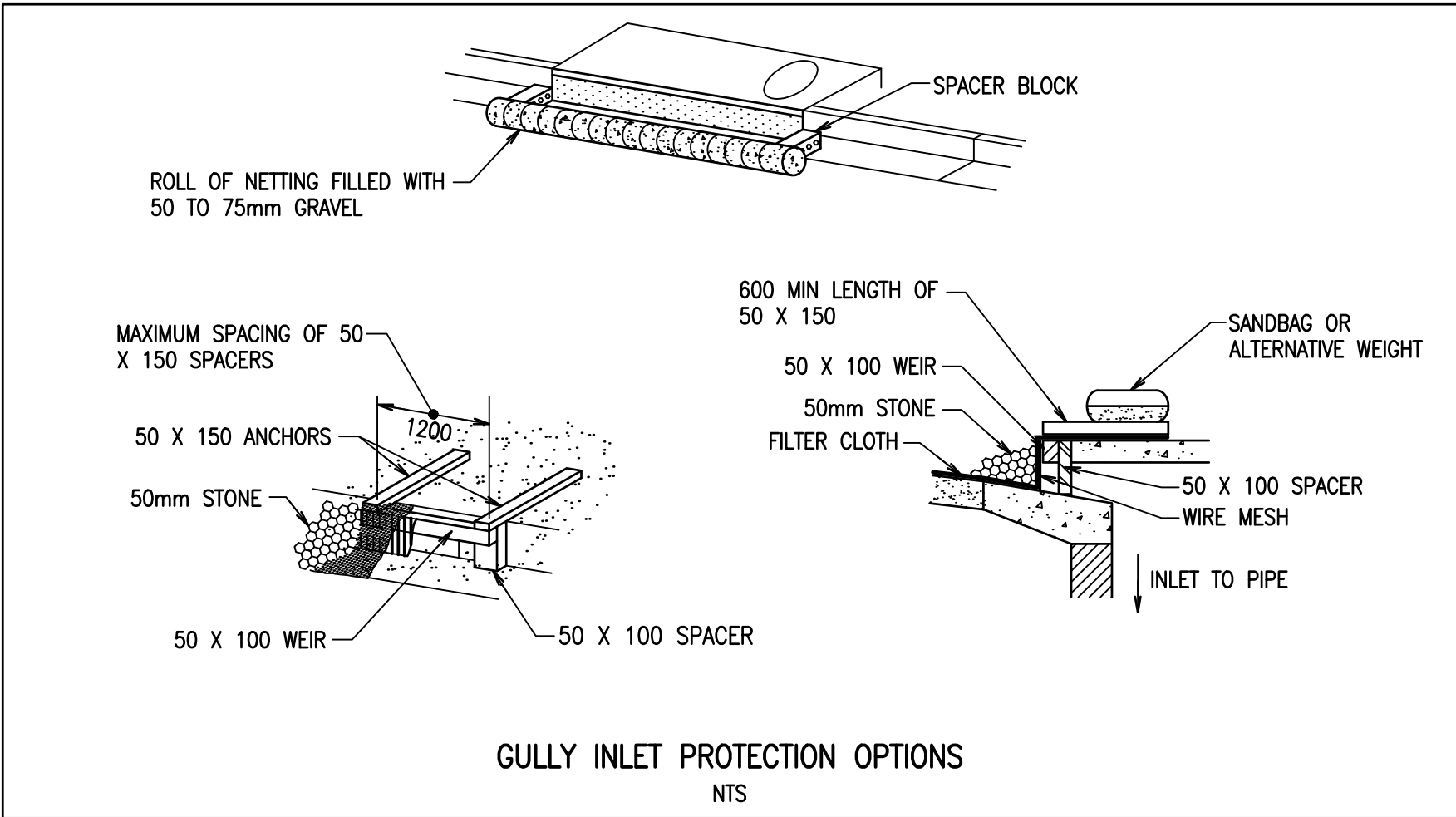
- SC1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
- SC2. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
- SC3. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
- SC4. STOCKPILES ARE NOT TO BE LOCATED WITHIN 5 METERS OF HAZARD AREAS INCLUDING AREAS OF HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS.
- SC5. WATER WILL BE PREVENTED FROM DIRECTLY ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR WATER HAS BEEN TREATED BY AN APPROVED DEVICE.
- SC6. TEMPORARY SEDIMENT TRAPS WILL REMAIN IN PLACE UNTIL AFTER THE LANDS THEY ARE PROTECTING ARE COMPLETELY REHABILITATED.
- SC7. ACCESS TO SITES SHOULD BE STABILIZED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL–WEATHER ENTRY/EXIT.

LAND DISTURBANCE NOTES:

- LD1. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METERS THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON–SITE. ALL SITE WORKERS WILL CLEARLY RECOGNIZE THOSE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH A BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
- LD2. ENTRY TO LANDS NOT REQUIRED FOR CONSTRUCTION OR ACCESS IS PROHIBITED EXCEPT FOR ESSENTIAL THINNING OF PLANT GROWTH.
- LD3. WORKS ARE TO PROCEED IN THE FOLLOWING SEQUENCE:
- A) INSTALL ALL BARRIER AND SEDIMENT FENCING WHERE SHOWN ON THE PLAN.
- B) CONSTRUCT THE STABILISED SITE ACCESS.
- C) CONSTRUCT DIVERSION DRAINS AS REQUIRED.
- D) INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS.
- E) INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON–SITE DROP INLET PITS.
- F) CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS SHOWN ON THE PLAN.
- G) UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE.
- H) GRADE LOT AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
- I) REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
- LD4. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.

WASTE CONTROL NOTES:

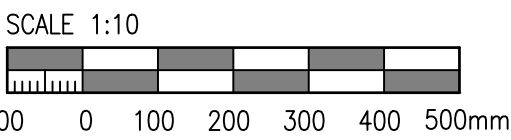
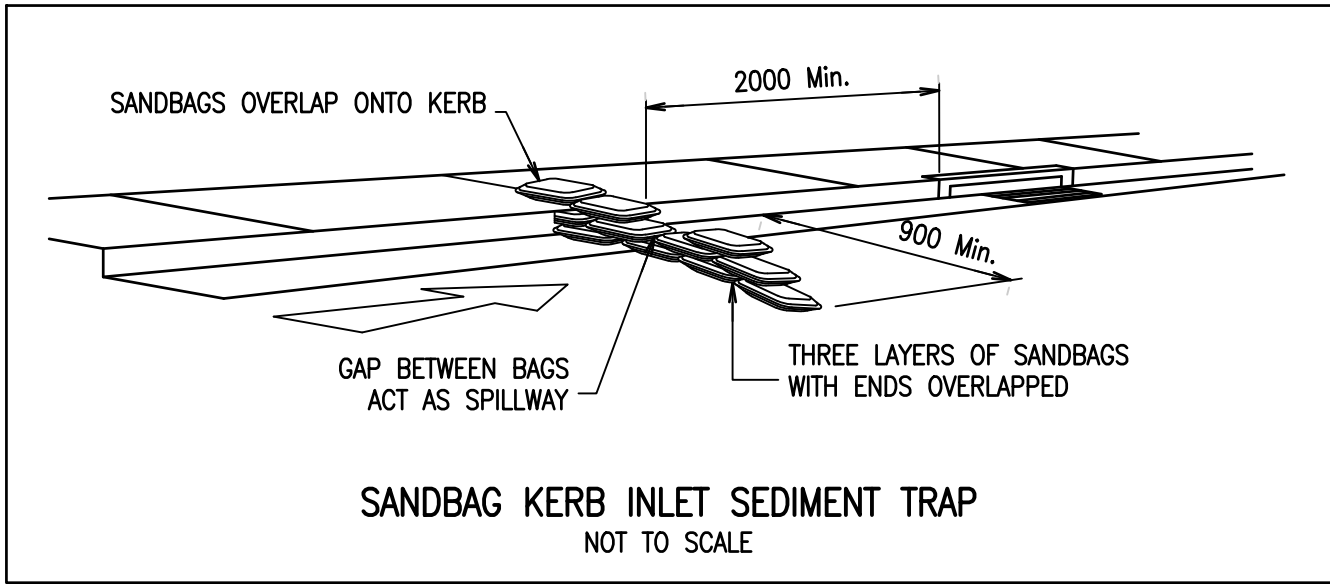
- WC1. ACCEPTABLE BINS WILL BE PROVIDED FOR ANY CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHING, LIGHTWEIGHT WASTE MATERIALS AND LITTER. CLEARANCE SERVICES WILL BE PROVIDED AT LEAST WEEKLY. DISPOSAL OF WASTE WILL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.
- WC2. ALL POSSIBLE POLLUTANT MATERIALS ARE TO BE STORED WELL CLEAR OF ANY POORLY DRAINED AREAS, FLOW PRONE AREAS, STREAMBANKS, CHANNELS AND STORMWATER DRAINAGE AREAS. STORE SUCH MATERIALS IN A DESIGNATED AREA UNDER COVER WHERE POSSIBLE AND WITHIN CONTAINMENT BUNDS.
- WC3. ALL SITE STAFF AND SUBCONTRACTORS ARE TO BE INFORMED OF THEIR OBLIGATION TO USE WASTE CONTROL FACILITIES PROVIDED.
- WC4. ANY DE–WATERING ACTIVITIES ARE TO BE CLOSELY MONITORED TO ENSURE THAT WATER IS NOT POLLUTED BY SEDIMENT, TOXIC MATERIALS OR PETROLEUM PRODUCTS.
- WC5. PROVIDE DESIGNATED VEHICULAR WASHDOWN AND MAINTENANCE AREAS WHICH ARE TO HAVE CONTAINMENT BUNDS.



INSTALLATION

1. EXCAVATE A TRENCH 200mm DEEP.
2. DRIVE POSTS 500–700mm INTO GROUND AT A MAXIMUM SPACING OF 3.0m CENTRES.
3. PLACE AND FIX SUPPORT MESH (F52) TO POST.
4. LAY BIDIM GEOTEXTILE (SF 2000) AGAINST THE SUPPORT MESH AND FIX BY TIE WIRE, STAPLES OR HOG RINGS.
5. PLACE BIDIM IN TRENCH AND BACKFILL WITH SOIL.

NOTE:
POSITION OF SEDIMENT FENCE AS DIRECTED BY SUPERINTENDENT. FENCE TO REMAIN IN PLACE UNTIL EXCAVATION IS BELOW FOOTPATH LEVEL. PROVIDE 2mx2m TURFED AREA ON DOWNSTREAM SIDE OF FENCE AT SURCHARGE OPENINGS.



Rev	Revision Description	By	App	Date
1	FOR INFORMATION	SM	CR	11.09.18

Rev	Revision Description	By	App	Date

Disclaimer: Robert Bird Group Pty Ltd ACN 010 580 248 and its related entities (RBG) do not warrant the accuracy, currency or completeness of any information or data they supply or transfer by electronic means. You are responsible for verifying that any information or data supplied or transferred by electronic means matches the information or data on the corresponding PDF or DWG version issued by RBG. RBG will not be liable for any loss or damage you or any other party incurs as a result of acting in reliance on any information or data supplied or transferred by electronic means and you release RBG from any liability for any loss or damage however caused which you or any other party may directly or indirectly suffer in connection with your access to or use of that information or data.

Unless agreed otherwise by Robert Bird Group Pty Ltd (7897) ACN 010 580 248 in writing, intellectual property rights in any information or data supplied or transferred to you (including copyright in all text, graphics, logos, icons, sound recordings and software) are owned by, or licensed to, RBG. Other than for purposes authorized by RBG in writing, you must not copy, adapt, reproduce, store, publish or commercialise any information or data supplied or transferred by electronic means without RBG's prior written permission.

DO NOT SCALE DRAWINGS, USE FIGURED DIMENSIONS
REFER TO GENERAL NOTES UNLESS NOTED OTHERWISE

Structural, Civil & Construction
Engineering Consultant

RobertBirdGroup

SYDNEY OFFICE
Robert Bird Group Pty Ltd
PO Box A2309
Sydney South, NSW 1235
Level 11, 151 Castlereagh St
Sydney NSW 2000

Ph: (02) 8246 3200
Fax: (02) 8246 3201
Email: sydney@robertbird.com.au
Web: www.robertbird.com
ACN 010 580 248

Client

SCENTRE GROUP
Owner and Operator of **Westfield** in Australia and New Zealand

LIVERPOOL

Title
EROSION AND SEDIMENT CONTROL DETAILS

Project
WESTFIELD LIVERPOOL ELP – CIVIL WORKS

Scale at A1
AS SHOWN
Date
11.09.18

Drawn
S.MANANDHAR
Designer
S.SAARA

Design Checker
C.ROPE
Approved
C.ROPE
Job Number
18312C

NOT FOR CONSTRUCTION

Drawing Number
C–1–10

Revision
1

