

APPENDIX E

**Stormwater Code & SMP (including Erosion
Hazard Assessment)**

Erosion Hazard Assessment

What is an Erosion Hazard Assessment?

Generally, the most significant soil erosion and sediment pollution 'risk' applies during the construction stage of a development. In some cases however, the development may present a long term risk after completion.

The Erosion Hazard Assessment determines whether that risk is 'low' or 'high'. The assessment uses a point scoring system based on Council's requirements for stormwater management and Erosion and Sediment Control (ESC).

Explaining the Erosion Hazard Assessment form

Complete the table on the back of this form before you complete the certification below.

- **Site condition** – lists varying erosion-related factors to be assessed.
- **Points** – a range of values representing the significance of the erosion-related factors for each site condition. Note that the higher the points value, the more significant its potential erosion and/or pollution hazard.
- **Score** – your assessment. Allocate the appropriate point score for each site condition which best matches your development proposal. (Example: for the first site condition, you would write score 2 points if the average slope of disturbance area was 6%.)
- **Trigger score** – some site conditions have been allocated a trigger score. If your score for any of these site conditions is equal to or greater than the trigger score, the development proposal will usually be considered 'high risk'.
- **Certification** – only a person with suitable qualifications and experience in erosion and sediment control can certify that this form has been completed accurately and to Council's requirements. Refer to Council's *Applicants Guide to Managing Erosion and Sediment Control in the Development Application/Assessment Process* for the definition of a 'suitably qualified and experienced professional in erosion and sediment control'.
- **Additional information** – refer to the Erosion Hazard Assessment Technical Notes for more information about completing this assessment. Where you see a number in brackets like this [-] in the assessment table the number is referenced in the technical notes.

A 'low' risk score

Generally, if the *Erosion Hazard Assessment* produces a Total Score of less than 17 and no individual score is equal to or greater than its Trigger Score, the development proposal is considered to be 'low risk'.

A 'high' risk score

If the *Erosion Hazard Assessment* produces a Total Score of 17 or greater or any individual score is equal to or greater than its Trigger Score, the development proposal is considered to be 'high risk'. Applicants must lodge sufficient supporting information to demonstrate that the performance criteria of the relevant Code/s in the *City Plan 2000* can be achieved.

Certification – complete Assessment Table on back of this form first

Is Total Score equal to or greater than 17?

No Yes Refer to Council's *Applicants Guide to Managing Erosion and Sediment Control in the Development Application/Assessment Process*

Did you answer 'yes' to any Trigger-Score question?

No Yes Refer to Council's *Applicants Guide to Managing Erosion and Sediment Control in the Development Application/Assessment Process*

Application number

Site address

28 - 42 Ferny Road
WEST END

Prepared by Print name

T WOODWARD

Certified by Print name

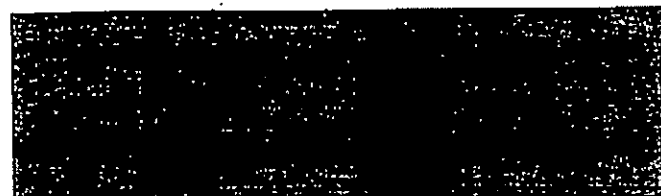
T. WOODWARD.

Business name

CHILTON WOODWARD.

Certifier's signature and date

M. J. Powell 29/09/05



Assessment Table

Site Condition	Points	Score	Trigger Score	BCC Use Only
[1] AVERAGE SIZE OF DISTURBANCE AREA <ul style="list-style-type: none"> less than 3% (3% = 33H:1V) 0 more than 3% but less than 5% (5% = 20H:1V) 1 more than 5% but less than 10% (10% = 10H:1V) 2 more than 10% but less than 15% (15% = 6.7H:1V) 4 more than 15% 6 		1	Score equal to or greater than 4? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>	
[2] SOIL CLASSIFICATION GROUP (AS1726) <ul style="list-style-type: none"> GW, GP, GM, GC 0 SW, SP, SM, SC, Pt 1 MH, CH, OH 2 ML, CL, OL, if imported fill will be used, or if soils untested 3 		3		
[3] EMERSON (DISPERSION) CLASS NUMBER <ul style="list-style-type: none"> Class 4, 6, 7, or 8 0 Class 5 2 Class 3 4 Class 1 or 2 6 		6	Score equal to or greater than 4? No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	
[4] DURATION OF SOIL DISTURBANCE <ul style="list-style-type: none"> less than 1 month 0 more than 1 month but less than 4 months 2 more than 4 months but less than 6 months 4 more than 6 months 6 		4	Score equal to or greater than 4? No <input type="checkbox"/> Yes <input checked="" type="checkbox"/>	
[5] AREA OF DISTURBANCE <ul style="list-style-type: none"> less than 1000 m² 0 more than 1000 m² but less than 5000 m² 1 more than 5000 m² but less than 1 ha 2 more than 1 ha but less than 4 ha 4 more than 4 ha 6 		1	Score equal to or greater than 4? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>	
[6] WATERWAY DISTURBANCE <ul style="list-style-type: none"> No disturbance to watercourse, open drain or channel 0 Involves disturbance of watercourse, open drain or channel 2 		0	Score equal to or greater than 2? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/>	
[7] REHABILITATION METHOD Percentage of area (relative to total disturbance) revegetated by seeding without mulching (ie. worst case revegetation method) <ul style="list-style-type: none"> less than 1% 0 more than 1% but less than 5% 1 more than 5% but less than 10% 2 more than 10% 4 		0		
[8] RECEIVING WATERS <ul style="list-style-type: none"> Open water body (eg. creek, river, bay) 0 Enclosed water body (eg. lake, boat harbour) 2 		0		
[9] SUBSOIL EXPOSURE <ul style="list-style-type: none"> No subsoil exposure except for service trenches 0 Subsoils are likely to be exposed 2 		2		
[10] EXTERNAL CATCHMENTS <ul style="list-style-type: none"> No external catchment 0 External catchment diverted around the soil disturbance 1 External catchment not diverted around the soil disturbance 2 		1		
[11] ROAD CONSTRUCTION <ul style="list-style-type: none"> No road construction 0 Involves road construction works 2 		0		
[12] pH OF SOILS TO BE REVEGETATED <ul style="list-style-type: none"> less than pH 5 1 more than pH 5 but less than pH 9 0 more than pH 9, or if pH testing not done at this stage 1 		1		

[13] Total Score =

19

Stormwater Management Code

PURPOSE

The purpose of this code is to:

- integrate planning, design and implementation of the two distinct components of stormwater management, i.e. water quantity and water quality
- prevent or minimise adverse social and environmental impacts on the City's waterways, overland flowpaths, constructed drainage network, Brisbane River and Moreton Bay from stormwater run-off originating from or passing through development
- achieve acceptable levels of stormwater run-off quality and quantity by applying water sensitive urban design principles in development proposals to maintain and/or enhance the environmental values of the City's waterways and catchments
- ensure that stormwater run-off originating from development is of such quality that environmental values of receiving waters are protected or enhanced
- provide an efficient and cost effective stormwater run-off management system, i.e. a drainage network and detention/retention storage that adequately protects people and the natural and built environments from an unacceptable level of flooding risk

PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS

GENERAL

Performance Criteria	Acceptable Solutions	Proposal
<p>P1 The planning of the stormwater management system must provide for the integrated management of stormwater in order to:</p> <ul style="list-style-type: none"> • minimise flooding • protect and enhance environmental values of receiving waters • maximise the use of water sensitive urban design principles • maximise the use of natural waterway corridors and natural channel design principles • maximise community benefit • minimise public safety risk 	<p>A1.1 The proposal complies with the Subdivision and Development Guidelines</p> <p>A1.2 A site Based Stormwater Management Plan (SBSMP) is prepared for all major and minor stormwater management measures. The SBSMP must provide for the following where applicable:</p> <ul style="list-style-type: none"> • an underground and/or open drain/overland flowpath network maximising the use of natural channel design and water sensitive urban design principles 	<p>All rooftop and stormwater from hard surface areas shall discharge to legal point of discharge – refer to attached sketch Hydraulic Services Drawing prepared for this site. The design incorporates pollution control devices.</p>

Stormwater Management Code

Performance Criteria	Acceptable Solutions	Proposal
	<ul style="list-style-type: none"> • make provision for detention/retention storage basins • an Erosion and Sediment Control (ESC) Program where required by Council's Erosion and Sediment Control Standard • retention of natural waterway corridors • public safety factors and risk management measures • an acceptable level of flood immunity <p>A1.3 The proposal complies with any Stormwater Management Plan (SMP), Local Stormwater Management Plan (LSMP), or Waterways Management Plan (WMP) prepared by Council.</p>	<p>No provision for on site detention/retention storage required.</p> <p>An erosion and sediment control complies with guidelines, best practices. Refer sketch plan.</p> <p>Overland flow path shall be maintained through the court yard. Public safety will not be affected by the proposal set in place with this redevelopment.</p>

FLOODING

Performance Criteria	Acceptable Solutions	Proposal
<p>P1 The proposed stormwater management system or site works must not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site</p>	<p>The proposal meets the requirements of Council's Subdivision and Development Guidelines and does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report (as part of a SBSMP) identifying potential flooding impacts on upstream, downstream or adjacent properties</p>	<p>The site complies with acceptable flood levels for this site.</p>

Stormwater Management Code

Performance Criteria	Acceptable Solutions	Proposal
<p>P2 The drainage network must provide capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage</p>	<p>A2.1 The design demonstrates that a drainage network will be provided that will comply with Council's Subdivision and Development Guidelines</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by identifying the conceptual drainage requirements for the proposal in a SBSMP</p> <p>A2.2 The design allows sufficient area to provide for a drainage network that will comply with Council's Subdivision and Development Guidelines</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report (as part of a SBSMP) identifying the area required to accommodate the drainage network</p>	<p>The drainage network complies with the Subdivision and Development Guidelines. Refer to Hydraulic Services sketch design.</p>
<p>P3 Development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level</p>	<p>A3.1 All development is located above minimum flood immunity levels in accordance with Council's Subdivision and Development Guidelines</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a SBSMP)</p> <p>A3.2 Road access is provided in accordance with the flood immunity levels identified in Council's Subdivision and Development Guidelines</p>	<p>The floor levels comply with minimum levels as set out in the Subdivision and Development Guidelines.</p> <p>Flood free access is provided to this development as set out in the Subdivision and Development Guidelines.</p>

Stormwater Management Code

Performance Criteria	Acceptable Solutions	Proposal
<p>P4 Any channel works that are part of the development, major drainage works or flood mitigation works must maintain and/or enhance their environmental values of the waterway corridor or drainage corridor</p>	<p>Note: Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels</p> <p>A4 Design and construction of channel works incorporate water sensitive urban design and natural channel design features which will comply with:</p> <ul style="list-style-type: none"> • Council's Subdivision and Development Guidelines, and • Where applicable any SMP, LSMP or WMP prepared by Council <p>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any channel works (as part of a SBSMP)</p>	<p>This acceptable solution is not applicable as no channel drainage works will be incorporated with in this development.</p>
<p>P5 Erosion treatment works along waterway banks and associated drainage structures must maintain or enhance the environmental values of waterways</p>	<p>A5 Design and construction of erosion treatment features incorporate natural channel design features which will comply with:</p> <ul style="list-style-type: none"> • Council's Subdivision and Development Guidelines, and • Council's Urban Creek Erosion - Guidelines for Selecting Remedial Works <p>Note:</p>	<p>Best practice management of erosion minimisation techniques will be adopted, in accordance with attached sketch design.</p>

Stormwater Management Code

Performance Criteria		Acceptable Solutions	Proposal
P6	Bridges and culverts provided for flood immunity to minimise traffic disruption must improve public safety and allow for fauna movement and recreation corridors where these needs are identified	A6 The design complies with Council's Subdivision and Development Guidelines Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any bridge or culvert works (as part of a SBSMP)	This acceptable solution is not applicable, as the proposal does not include bridges and culverts.
P7	The design and construction of detention and retention storage features must: <ul style="list-style-type: none"> • achieve acceptable impacts on environmental values • provide for recreational use where possible • achieve acceptable risk to public safety and property 	A7 The design complies with Council's Subdivision and Development Guidelines and where applicable any SMP, LSMP or WMP prepared by Council. Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any detention and retention storage features (as part of a SBSMP)	This acceptable solution is not applicable, as the proposed development does not include the construction of detention/retention storage features.

WATER QUALITY AND DRAINAGE

Performance Criteria		Acceptable Solutions	Proposal
P1	Water quality impacts must be minimised using best practice techniques	A1.1 The design provides for stormwater quality best management practices that are sufficient to treat the target pollutants and will comply with Council's Subdivision and Development Guidelines Note: Compliance with this acceptable solution can	Water quality best management practices utilizing landscaped areas and low maintenance systems shall be constructed to treat and remove water pollutant prior to discharging to the stormwater system. Refer to attached sketch design.

Stormwater Management Code

Performance Criteria	Acceptable Solutions	Proposal
	<p>be demonstrated by indicating the areas that are to be set aside for water quality best management practices. For most development this can be achieved by determining pollutant loads using hand calculations as set out in Council's Guidelines for Pollutant Export Modelling in Brisbane and identifying the type and size of stormwater quality best management practices based on their efficiencies identified in Council's Subdivision and Development Guidelines</p> <p>A1.2 Stormwater quality best management practices are design, constructed and maintained in accordance with Council's Subdivision and Development Guidelines</p> <p>Note: Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part of a SBSMP)</p>	<p>Water quality best management practices utilizing low maintenance systems shall be constructed to treat and remove water pollutant prior to discharging to the stormwater system. Refer to attached sketch design</p>
<p>P2 Release of sediment laden stormwater is minimised</p>	<p>A2 All development complies with Council's Erosion and Sediment Control Standard</p> <p>Note: Compliance with this acceptable solution can be demonstrated by providing conceptual details of how the requirements of Council's Erosion and Sediment Control Standard will be met (conceptual SBSMP). This will generally be conditioned and may require the submission of a subsequent detailed SBSMP for operational works</p>	<p>Within this development the release of sediment laden stormwater shall be minimised by implementing of erosion and sediment control devices. Refer to attached sketch design details.</p>
<p><i>High risk development</i></p>		
<p>P3 Environmental values and water quality objectives of receiving waters within or downstream of the proposal are protected</p>	<p>A3.1 Relevant water quality objectives for receiving waters are identified and site specific discharge standards met</p>	<p>This acceptable solution is not applicable as the proposed development is not a high risk site.</p>

Performance Criteria or enhanced	Acceptable Solutions	Proposal
	<p><i>Note:</i> Compliance with this acceptable solution may be demonstrated by following the process outlined in the Management of Urban Stormwater Quality Planning Scheme Policy. This can be documented in a SBSMP</p> <p>A3.2 The design provides for stormwater quality best management practices that are sufficient to treat the target pollutants and will comply with the Council's Subdivision and Development Guidelines</p> <p>A3.3 Stormwater quality best management practices are designed, constructed and maintained in accordance with Council's Subdivision and Development Guidelines</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part of a SBSMP)</p>	<p>This acceptable solution is not applicable as the proposed development is not a high risk site.</p> <p>This acceptable solution is not applicable as the proposed development is not a high risk site.</p>
<p>P4 Release of sediment laden stormwater is minimised</p>	<p>A4 All development complies with Council's Erosion and Sediment Control Standard</p> <p><i>Note:</i> Compliance with this acceptable solution can be demonstrated by providing conceptual details of how the requirements of Council's Erosion and Sediment Control Standard will be met (conceptual SBSMP). This will generally be conditioned and may require the submission of a subsequent detailed SBSMP for operational works</p>	<p>This acceptable solution is not applicable as the proposed development is not a high risk site.</p>

DRAINAGE PLAN N°.

- LEGEND**
- EXISTING DRAINAGE
 - PROPOSED DRAINAGE
 - FLOW DIRECTION
 - FLOW RATE
 - FLOW VELOCITY
 - FLOW AREA
 - FLOW CAPACITY
 - FLOW RESISTANCE
 - FLOW LOSS
 - FLOW GAIN
 - FLOW STORAGE
 - FLOW DELAY
 - FLOW ACCELERATION
 - FLOW DECELERATION
 - FLOW OBSTRUCTION
 - FLOW DIVERSION
 - FLOW COLLECTION
 - FLOW TREATMENT
 - FLOW DISPOSAL
 - FLOW REUSE
 - FLOW STORAGE
 - FLOW DELAY
 - FLOW ACCELERATION
 - FLOW DECELERATION
 - FLOW OBSTRUCTION
 - FLOW DIVERSION
 - FLOW COLLECTION
 - FLOW TREATMENT
 - FLOW DISPOSAL
 - FLOW REUSE

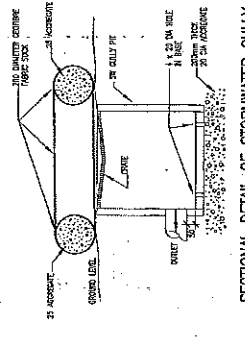
EROSION CONTROL LEGEND

- SLOTTED CONTROL FENCE
- PERFORATED METAL SLAT FENCE 10-20
- SLOTTED CONTROL FENCE 20-30
- SLOTTED CONTROL FENCE 30-40
- SLOTTED CONTROL FENCE 40-50
- SLOTTED CONTROL FENCE 50-60
- SLOTTED CONTROL FENCE 60-70
- SLOTTED CONTROL FENCE 70-80
- SLOTTED CONTROL FENCE 80-90
- SLOTTED CONTROL FENCE 90-100

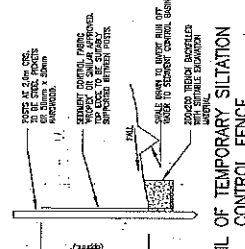
- NOTES**
- ALL DR. AND OR. ARE TO BE IN ACCORDANCE WITH THE LOCAL AUTHORITY.
 - ALL WORK TO BE DONE IN ACCORDANCE WITH THE LOCAL AUTHORITY.
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NOTES

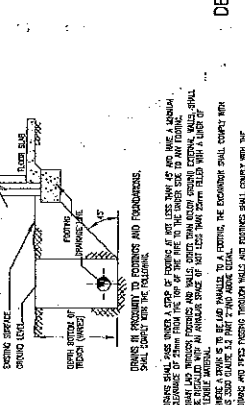
- PROVISIONS OF ALL APPLICABLE REGULATIONS SHALL BE OBSERVED AND STRICTLY ENFORCED.
- STORMWATER AND EROSION CONTROL SHALL BE PROVIDED TO PROTECT THE SITE.
- ALL STORMWATER AND EROSION CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE LOCAL AUTHORITY.
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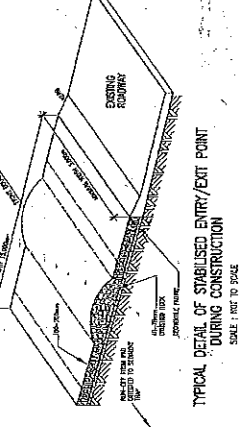
SECTIONAL DETAIL OF STORMWATER GULLY WITH GEOFABRIC FABRIC SOCK



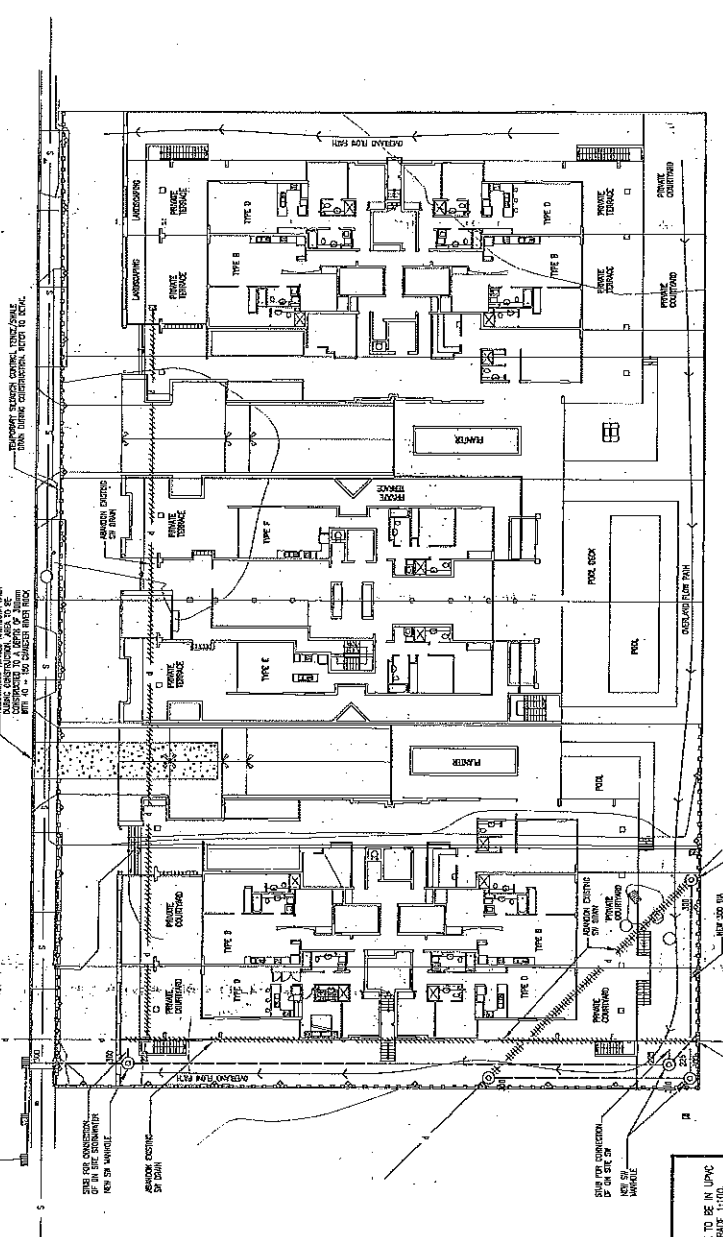
DETAIL OF TEMPORARY SILTATION CONTROL FENCE



DETAIL OF DRAINAGE LINE IN RELATION TO FOOTINGS AND FOUNDATIONS



TYPICAL DETAIL OF STABILISED ENTRY/EXIT POINT DURING CONSTRUCTION



STORMWATER AND EROSION SEDIMENT CONTROL SERVICES SITE AND LEVEL 1 FLOOR PLAN

NOTE:
ALL STORMWATER DRAINAGE TO BE IN UPVC CLASS 150 ON MINIMUM GRADE 1:100.

NOT FOR CONSTRUCTION

PRELIMINARY - 00/00/00-

HYDRAULIC SERVICES-STORMWATER & EROSION SEDIMENT CONTROL SERVICES SITE & LEVEL 1 FLOOR PLAN

DRAWING NO: **05935-sk1**

SHEET NO: 1 of 2

DATE: 06/07/2024

SCALE: 1:100 @ A3

Chilton Woodward & Associates

25 Markham Road, North York, Ont. M3J 1R2

416-291-1234

WWW.CHILTONWOODWARD.COM

SCALE: 1:200

CHECKED: *[Signature]*

DRAWN: *[Signature]*

RESIDENTIAL DEVELOPMENT AT 28-42 FERRY ROAD WEST END

PROJECT: **RESIDENTIAL DEVELOPMENT AT 28-42 FERRY ROAD WEST END**

ARCHITECT: **FERRIS MILLER ARCHITECTS**

1000 ...

PHONE: (416) 463-1152

KOZMARC PTY LTD

ARCHITECT

FERRIS MILLER ARCHITECTS

1000 ...

PHONE: (416) 463-1152

DESIGNER	DATE
DATE	DATE
DATE	DATE
DATE	DATE
DATE	DATE

