



SITE CLASSIFICATION REPORT
CERTIFICATE 2537755

CLIENT KONDININ COMMUNITY RECREATION COUNCIL INC
JOB ADDRESS LOT 263 #49 GORDON ST KONDININ

CLIENT JOB NO.
OWNER

STRUCTERRE JOB NO. S868595
DATE OF ASSESSMENT 4/1/18

SITE RECORD



SITE CLASSIFICATION	M	(in accordance with AS2870)
FOOTING DETAIL		
SAND PAD		
BUSHFIRE PRONE AREA	Not in a Bushfire Prone Area (see NOTE 2.)	
CORROSION CLASSIFICATION	R1	(Durability Class in accordance with AS3700)
WIND CLASSIFICATION	N2	(in accordance with AS4055)
-TERRAIN CATEGORY	2	
-TOPOGRAPHIC	T0	
-SHIELDING	No Shielding	

SOIL PROFILE

BOREHOLE 1: 0 - 100 topsoil; 100 - 500 SAND - brown; 500 - 2200 CLAY with gravel and sand (with 14.5% Linear Shrinkage and 61% passing the 0.425mm sieve) - dark brown; 2200 hard ground refusal.

BOREHOLE 2: 0 - 200 topsoil; 200 - 2200 CLAY with gravel and sand - dark brown; 2200 hard ground refusal.

BOREHOLE 3: 0 - 200 topsoil; 200 - 300 CLAY with gravel and sand - dark brown; 300 hard ground refusal.

NOTES

NOTE 1 Explanatory Notes & Standard Recommendations

This site classification report must be read in conjunction with the applicable Explanatory Notes & Standard Recommendations. For A Class sites, refer to the Explanatory Notes and Standard Recommendations for Stable (A Class) Sites, version 10.3 May 2016. For S, M, H1, H2 & E Class sites, refer to the Explanatory Notes and Standard Recommendations for Reactive (S, M, H1, H2 & E Class) Sites version 10.2 May 2016. For Equivalent Class sites, refer to the Explanatory Notes and Standard Recommendations for Equivalent Class Sites, version 1.2 May 2016.

NOTE 2 Bushfire - Prone Area

The Site may be situated in a bush fire prone area in accordance with the Department of Fire and Emergency Services (DFES) Bushfire Prone Area Map (Reference: <http://www.dfes.wa.gov.au/regulationandcompliance/bushfireproneareas/>) the current version at the time of this assessment. A Bushfire Attack Level (BAL) assessment may be required for this site, please confirm with the local authority. Should you require an assessment, please contact this Office.

ADDITIONAL NOTES / REQUIREMENTS

Site Condition

At the time of inspection the site was considered to be level and there was an existing house/shed. For specific levels of this site or topographical features, please refer to a professional site survey.

Sample Retrieval Probe

This report has been prepared using the Sample Retrieval Probe. A number of boreholes are conducted across the site or building area, in order to determine the soil profiles and provide a representation of the ground conditions. Where reactive material is encountered within the zone of influence, laboratory analysis is conducted in accordance with AS1289 3.1.2, 3.2.1, 3.3.1, 3.4.1 and 3.6.1.

CSIRO/Clay Reference

Refer to the CSIRO Brochure Ref BTF18 and Structerre's Clay Fact Sheet Version 1 dated 6/1/2010 for maintenance and performance requirements, and the expectations of the proposed residence.

EXPLANATORY NOTES AND STANDARD RECOMMENDATIONS REACTIVE (S, M, H1, H2 & E CLASS) SITES

GENERAL

1. THE EXPLANATORY NOTES AND STANDARD RECOMMENDATIONS ARE TO BE READ IN CONJUNCTION WITH THE SITE CLASSIFICATION REPORT.
2. THE PURPOSE OF THE SITE CLASSIFICATION REPORT IS TO:
 - a) CLASSIFY THE SITE IN ACCORDANCE WITH AS 2870 - 2011 "RESIDENTIAL SLABS AND FOOTINGS - CONSTRUCTION"
 - b) ENABLE FOOTINGS TO BE DESIGNED,
 - c) PROVIDE EARTHWORK RECOMMENDATIONS, AND
 - d) PROVIDE A WIND CLASSIFICATION IN ACCORDANCE WITH AS 4055 "WIND LOADS FOR HOUSING".
 IT IS NOT INTENDED FOR ANY OTHER PURPOSE, INCLUDING SOLE INFORMATION IN THE PROVISION OF A QUOTATION FOR SITE WORKS BY EARTH WORKERS. IT IS RECOMMENDED EARTH WORKERS PERFORM THEIR OWN INVESTIGATION FOR QUOTATION PURPOSES.
3. THE SITE CLASSIFICATION IS BASED ON THE SITE AS PRESENTED AT THE TIME OF THE INSPECTION. THE RECOMMENDED FOOTING DESIGN IS SUBJECT TO SATISFACTORY COMPLETION OF RECOMMENDED EARTHWORKS, (REFER NOTE 14) AS A MINIMUM. SHOULD CHANGES TO THE LEVELS OF THE SITE OCCUR, OTHER THAN THE RECOMMENDATIONS INCLUDED IN THE SITE CLASSIFICATION REPORT, REFER BACK TO THIS OFFICE FOR REVIEW OF CLASSIFICATION AND FOOTING DESIGN!
4. ALL RECOMMENDATIONS GIVEN IN THE SITE CLASSIFICATION REPORT HAVE BEEN DETERMINED FROM THE INFORMATION THAT WAS AVAILABLE TO THIS OFFICE AT THE TIME OF THE INVESTIGATION. IF FURTHER INFORMATION RELATING TO THE SITE OR DEVELOPMENT BECOMES AVAILABLE, THESE RECOMMENDATIONS ARE SUBJECT TO RE-ASSESSMENT AND MAY CHANGE.
5. THE REACTIVITY OF THE DIFFERENT SITE CLASSES ARE AS FOLLOWS:
 - CLASS S SITES ARE SLIGHTLY REACTIVE WITH AN EXPECTED SURFACE MOVEMENT OF BETWEEN 0mm AND 20mm
 - CLASS M SITES ARE MODERATELY REACTIVE WITH AN EXPECTED SURFACE MOVEMENT OF BETWEEN 20mm AND 40mm
 - CLASS H1 SITES ARE HIGHLY REACTIVE WITH AN EXPECTED SURFACE MOVEMENT OF BETWEEN 40mm AND 60mm
 - CLASS H2 SITES ARE HIGHLY REACTIVE WITH AN EXPECTED SURFACE MOVEMENT OF BETWEEN 60mm AND 75mm
 - CLASS P SITES ARE PARTICULAR CLASSIFICATIONS, SUCH AS UNUSUAL SITES OR SITES REQUIRING ADDITIONAL INVESTIGATION PRIOR TO PROVIDING DETAILS.
6. BOREHOLES EXCAVATED REVEAL THE SOIL PROFILE AT THE BOREHOLE LOCATION ONLY. FROM THIS, IT IS INFERRED THAT THESE ARE THE SOIL CONDITIONS OVER THE SITE. VARIATIONS CAN OCCUR WHICH MAY NOT HAVE BEEN DETECTED AT THE INVESTIGATION STAGE AND THEREFORE ANY ANOMALY SHOULD BE REFERRED BACK TO THIS OFFICE TO ENABLE THE FOOTING DESIGN TO BE CONFIRMED, ALTERED, OR SPECIFIC EARTHWORK RECOMMENDATIONS GIVEN TO ADDRESS THE ANOMALY. THIS MAY RESULT IN AN UPGRADE OF FOOTINGS OR SAND PAD REQUIREMENTS.
7. A NUMBER OF BOREHOLES ARE CONDUCTED ACROSS THE SITE IN ORDER TO DETERMINE THE SOIL PROFILES AND PROVIDE A REPRESENTATION OF THE GROUND CONDITIONS.

SAND PAD

8. THE ADDITION OF A SAND PAD CAN MODIFY THE EXPECTED SURFACE MOVEMENT FROM SEASONAL MOISTURE CHANGES, (YS), AND CAN CHANGE THE SITE CLASSIFICATION OF THE SITE FROM THAT PRESENTED. THE EXPECTED SURFACE MOVEMENT IS RE-CALCULATED INCORPORATING THE RECOMMENDED SAND PAD, AS OUTLINED ON THE SITE CLASSIFICATION REPORT, AND THE RECOMMENDED FOOTING DESIGN IS BASED ON THIS MODIFIED EXPECTED SURFACE MOVEMENT. THEREFORE, THE RECOMMENDED FOOTING DESIGN IS ONLY TO BE USED IN CONJUNCTION WITH THE RECOMMENDED SAND PAD AND EARTHWORKS AS OUTLINED IN THE SITE CLASSIFICATION REPORT.
9. THE RECOMMENDATIONS FOR THE SAND PAD IS FOR STRUCTURAL PURPOSES ONLY, AND DOES NOT PROVIDE THE MINIMUM FINISHED PAD LEVEL IN RELATION TO FLOOD LEVELS, OR DEPTH TO GROUNDWATER. MAXIMUM GROUNDWATER SHALL BE MINIMUM 750mm BELOW THE FINISHED LEVEL SHOULD THE SITE BE LOCATED IN A LOW LYING OR FLOOD PRONE AREA, REFER TO THE LOCAL AUTHORITY FOR MINIMUM BUILDING HEIGHT.
10. IMPORTED FILL FOR USE AS A SAND PAD TO BE FREE OF ANY DELETERIOUS MATERIALS INCLUDING ORGANICS, (ROOTS, STUMPS, GRASSES, DECOMPOSED ORGANICS - PEAT, TIMBER), BUILDING RUBBLE, GLASS, PLASTICS, WASTE MATERIALS. THE FINES CONTENT, (PERCENTAGE PASSING THE 0.075mm SIEVE) TO BE LESS THAN 5% BY MASS.
11. TYPICALLY, THE DEPTHS OF NON-REACTIVE SAND COVER REQUIRED OVER THE REACTIVE SOIL PROFILE FOR EACH CLASS IS AS FOLLOWS:
 - S CLASS - MINIMUM 600mm
 - M CLASS - MINIMUM 800mm
 - H1 & H2 CLASS - MINIMUM 1000mm
12. SAND PAD TO EXTEND BEYOND BUILDING AREA A MINIMUM OF 1.5 TIMES THE PAD DEPTH. RECOMMENDED SAND PAD DEPTH IS ABOVE THE HIGHEST POINT, UNLESS OTHERWISE SPECIFIED.
13. IT IS REQUIRED THAT EARTH WORKERS CONFIRM THAT THE MINIMUM DEPTH OF RECOMMENDED SAND PAD IS ACHIEVED.

EARTHWORKS

14. RECOMMENDED EARTH WORKS TO BE CONDUCTED IN ACCORDANCE WITH AS 3798-2007 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS", AND TO INCLUDE BUT NOT LIMITED TO:
 - a) REMOVAL OF ALL VEGETATION, TOPSOILS, UNCONTROLLED FILLS AND OTHER DELETERIOUS MATERIALS FROM THE BUILDING ENVELOPE,
 - b) GRUBBING OUT OF ANY TREES ENSURING THE REMAINING HOLES ARE BACKFILLED WITH CLEAN COMPACTED SAND,
 - c) NOTIFYING THE ENGINEER OF ANY UNUSUAL FEATURE OR DISCREPANCY THAT MAY BECOME EVIDENT DURING EARTHWORKS, PRIOR TO PROCEEDING,
 - d) COMPACTING TO MEET THE REQUIREMENTS AS OUTLINED IN AS 3798-2007 TABLE 5.1.
15. FILL MATERIAL (WHICH IS NOT ALWAYS APPARENT AT THE INITIAL INVESTIGATION STAGE) IS TO BE DEALT WITH AS FOLLOWS:
 - a) IF IT IS CERTIFIED BY OTHERS IT CAN REMAIN.
 - b) IF IT IS NOT CERTIFIED IT WILL REQUIRE REMOVAL DOWN TO NATURAL GROUND, OR VERIFIED. ANY SAND CAN BE REUSED.
 - c) IF A PAD HAS ALREADY BEEN CONSTRUCTED, THE SITE CLASSIFICATION IS NOT CERTIFICATION OF THE PAD. THAT IS TO BE CERTIFIED BY OTHERS UNLESS SPECIFICALLY REQUESTED.
16. ANY ORGANIC MATTER OR ROOTS ENCOUNTERED, THAT IS BEYOND WHAT IS NORMALLY CONSIDERED ACCEPTABLE, IS TO BE REMOVED. THIS WILL NECESSITATE RAKING THE SITE TO REMOVE ORGANIC MATERIAL, TURNING THE SITE OVER AND RE-COMPACTING AS A MINIMUM.

RETAINING WALLS

17. AN ASSESSMENT OF ANY EXISTING OR PROPOSED RETAINING WALLS HAS NOT BEEN CONDUCTED AS PART OF THIS SITE CLASSIFICATION REPORT.
18. IF THE PROPOSED BUILDING IS TO BE LOCATED WITHIN 1:1 (HORIZONTAL TO VERTICAL) DISTANCE OF ANY RETAINING WALL, THIS MAY PLACE ADDITIONAL LOADS ON THE WALL THAT WERE NOT INITIALLY DESIGNED FOR. AN INSPECTION OF THE STRUCTURAL INTEGRITY OF THE RETAINING WALL WILL BE REQUIRED TO PROVIDE CERTIFICATION AND/OR RECOMMENDATIONS PRIOR TO ANY CONSTRUCTION. PLEASE REFER BACK TO THIS OFFICE FOR ASSISTANCE.

STORMWATER DRAINAGE

19. ALL STORMWATER MUST BE DISCHARGED INTO COUNCIL DRAINS OR A MINIMUM OF 3m FOR S CLASS SITES, 4m FOR M CLASS SITES AND 5m FOR H1 & H2 CLASS SITES, AWAY FROM THE RESIDENCE AND/OR ADJACENT BUILDINGS INTO SOAKWELLS. IF THIS RESTRICTION CANNOT BE ACHIEVED REFER BACK TO THIS OFFICE FOR AN ALTERNATIVE DESIGN.

WIND CLASSIFICATION

20. WIND CLASSIFICATION IS GIVEN FOR THE EXPECTED CONDITION 5 YEARS HENCE. THIS CLASSIFICATION IS LIMITED TO BUILDINGS WHICH HAVE THE FOLLOWING LIMITATION (AS PER AS4055):
 - a) MAXIMUM DISTANCE FROM THE GROUND LEVEL TO THE UNDERSIDE OF EAVES SHALL NOT EXCEED 6.0m.
 - b) MAXIMUM DISTANCE FROM GROUND LEVEL TO THE HIGHEST POINT OF THE ROOF, EXCLUDING CHIMNEYS, SHALL NOT EXCEED 8.5m.
 - c) THE ROOF PITCH SHALL NOT EXCEED 35°.
 - d) THE WIDTH, EXCLUDING EAVES, SHALL NOT EXCEED 16.0m AND THE LENGTH SHALL NOT EXCEED 5x THE WIDTH.
 IF THE BUILDING FALLS OUTSIDE OF THESE LIMITATIONS, THE STATED WIND CLASSIFICATION DOES NOT APPLY. REFER BACK TO THIS OFFICE FOR A REVISED WIND CLASSIFICATION.

ENVIRONMENTAL

21. NO ENVIRONMENTAL ASSESSMENT OF THIS SITE HAS BEEN UNDERTAKEN. SHOULD AN ENVIRONMENTAL ASSESSMENT BE REQUIRED, IT IS RECOMMENDED THAT AN ENVIRONMENTAL ENGINEER BE ENGAGED.

SEISMIC

22. RECOMMENDED FOOTING DETAILS ARE SUITABLE FOR SEISMIC CONDITIONS WITH AN EARTHQUAKE HAZARD FACTOR OF ≤0.11. RECOMMENDED FOOTING DETAILS PROVIDED FOR SITES WITH AN EARTHQUAKE HAZARD FACTOR OF >0.11, ARE NOT FOR CONSTRUCTION, BUT FOR COSTING PURPOSES ONLY. IT IS RECOMMENDED THAT A FULL SEISMIC DESIGN IS CONDUCTED.

SITE DRAINAGE

23. SUBSOIL DRAINAGE MAY BE REQUIRED ON REACTIVE SITES. SUBSOIL DRAINAGE IS TO CONSIST OF 90mm Ø SLOTTED PIPE OR SIMILAR IN A 600mm DEEP TRENCH WITH AN AGGREGATE FILTER CONSISTING OF 30mm ALL IN AGGREGATE AND GEO-TEXTILE FABRIC, OR SIMILAR. IT IS TO BE LOCATED A MINIMUM 600mm AWAY FROM THE BUILDING. ANY WATERPROOF MEMBRANE IS TO BE DRAPED INTO THE TRENCH FOR ITS FULL DEPTH. IF ROCK IS ENCOUNTERED, THE ENGINEER MAY REDUCE THE DEPTH OF THE TRENCH. THE EXTENT OF SUBSOIL DRAINAGE IS TO BE DETERMINED AT THE TIME OF THE BASE INSPECTION.
24. PROVIDE SURFACE CUT-OFF DRAINS TO CONTROL SURFACE RUN-OFF TO PREVENT IT FLOWING ONTO THE PAD/BUILDING AREA. SURFACE DRAINS ARE APPROXIMATELY 300mm DEEP LOCATED APPROXIMATELY 1.5m UP-HILL OF ANY CUT, AND SHAPED TO DRAIN AWAY.
25. THE PREPARED BASE MAY NEED TO BE INSPECTED AND APPROVED BY THIS OFFICE. IF MORE REACTIVE SOIL IS ENCOUNTERED, FOOTING AND/OR PAD REQUIREMENTS MAY BE UPGRADED. THIS WILL BE DETERMINED AT THE TIME OF THE BASE INSPECTION. THE BASE IS TO BE DOMED OR GRADED WITH A FALL OF AT LEAST 1:100 SO IT CANNOT POND WATER.
26. WHEN CONSTRUCTING THE BUND, ENSURE IT HAS ADEQUATE OPENINGS SUCH THAT IT CANNOT DAM WATER, SUCH AS A SAND KEEL OR PLACE SUBSOIL THROUGH IT. ENSURE THAT ANY BUND IS OUTSIDE THE ZONE OF INFLUENCE OF THE FOUNDATIONS OF THE RESIDENCE. IT IS RECOMMENDED THAT THE HEEL OF THE BUND IS AT LEAST THE DEPTH OF THE PAD AWAY AT ANY POINT OF MEASUREMENT, FROM THE BUILDING.
27. DURING OR AFTER WET PERIODS, REACTIVE SITES MAY BECOME WATERLOGGED, DIFFICULT TO WORK OR BOGGY AND MAY NEED TO BE LEFT TO ALLOW SOME DRYING TO ENABLE WORKS TO PROCEED.

MAINTENANCE

28. REFER TO THE CSIRO BROCHURE BTF 18, STRUCTERRE CLAY FACT SHEET AND APPENDIX B OF AS2870-2011 FOR EXPECTED MAINTENANCE REQUIREMENTS AND PERFORMANCE EXPECTATIONS.

CORROSION CLASSIFICATION

29. THE CORROSION CLASSIFICATION HAS BEEN ASSESSED IN ACCORDANCE WITH AS3700 (CURRENT VERSION).

DOC# SS001-1.14 VERSION 10.2 - MAY 2016



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CLAY FACT SHEET

THIS FACT SHEET IS INTENDED FOR INFORMATION PURPOSES ONLY, FOR STRUCTERRE CONSULTING ENGINEERS' (STRUCTERRE) CLIENTS. IT IS NOT INTENDED FOR ANY OTHER PURPOSE AND SHALL NOT BE USED WITHOUT THE EXPRESS PERMISSION OF STRUCTERRE. IT IS OF A GENERAL NATURE ONLY AND DOES NOT REFER TO ANY SPECIFIC SITES, AS ALL SITES VARY AND ARE INDIVIDUAL. ANY SPECIFIC QUERIES SHOULD BE REFERRED TO AN ENGINEER.

ENSURE THAT ALL SURFACE DRAINS ARE FULLY MAINTAINED IN WORKING ORDER. IT IS IMPORTANT THAT THE SURFACE CUT OFF DRAIN BE KEPT OPEN TO ALLOW THE WATER TO DRAIN QUICKLY AND FREELY. GRASS TO BE KEPT TRIMMED AND ANY DEBRIS REMOVED DURING WINTER, AS IT BUILDS UP. ANY BLOCKAGE MAY CAUSE OVERFLOW AND THEN A POSSIBLE BREAK IN THE DRAIN, CAUSING WATER TO FLOW ONTO THE PAD.

ENSURE THAT ALL SUBSOIL DRAINS ARE FULLY MAINTAINED IN WORKING ORDER. THE SUB-SOIL DRAIN SHOULD BE REGULARLY CHECKED TO ENSURE THAT IS IS FUNCTIONING. THE OUTLET SHOULD BE LOCATED TO ALLOW FREE DRAINAGE AND PROTECTION FROM DAMAGE. ALL ROOF WATER IS TO BE PIPED AWAY FORM THE RESIDENCE. IT IS RECOMMENDED TO INSTALL A SEPARATE ROOF WATER DRAINAGE SYSTEM AND ONLY CONNECT INTO THE SUBSOIL DRAIN WHERE IT TURNS INTO A NORMAL DRAIN. STAND PIPES OR CONCRETE LINERS ARE USUALLY PLACED AT THE CHANGE OF DIRECTION OF THE SUB-SOIL DRAINS. THE LOCATIONS OF THESE SHOULD ALSO BE MAINTAINED, AS THEY ARE NECESSARY TO CARRY OUT CHECKS AND CLEAN THE SUB-SOIL DRAIN AS REQUIRED.

WHERE THE DRAINS PASS THROUGH THE BUND, THE OUTLETS ARE SOMETIMES COVERED WITH ERODED SOIL FROM THE BUND. THEREFORE, THESE NEED TO BE PROTECTED AND KEPT OPEN. A SMALL HEAD WALL SERVES TO PROTECT THE PIPE ENDS AND PREVENT BLOCKAGE.

AS THE CLAY BUND IS INITIALLY UNCONSOLIDATED, WITH TIME (ESPECIALLY DURING THE FIRST WINTER) IT WILL CONSOLIDATE. CRACKS MAY OCCUR BETWEEN THE CLAY BUND AND THE SAND, HOWEVER THIS IS NOT OF ANY SIGNIFICANT CONSEQUENCE AS THE BUND IS LOCATED OUTSIDE THE ZONE OF INFLUENCE OF THE FOUNDATIONS. WHEN CRACKS DO OCCUR, IT IS RECOMMENDED THAT THEY BE FILLED IN OR CAVED IN BY RODDING AND HOISING. THE CLAY BUND WILL NEED TO BE STABILISED EITHER BY STONE PITCHING, TERRACING OR PLANTING OF SURFACE COVER.

WHERE POSSIBLE PLACE IMPERVIOUS PATHS AROUND AND ADJACENT TO THE HOUSE GRADED SUCH THAT WATER WILL DRAIN AWAY FROM THE FOOTINGS AND NOT POND NEXT TO THE HOUSE. THE BENEFIT OF SUCH PATHS IS THAT IT WILL ASSIST IN CONTROLLING THE MOISTURE CONTENT OF THE CLAY FOUNDATION MORE UNIFORMLY THROUGHOUT THE YEAR. THUS LIMITING THE AMOUNT OF SWELLING AND SHRINKING OF THE CLAY (GENERALLY THE MAIN CAUSE OF CRACKING IN THE HOUSE).

JUST AFTER COMPLETION OF THE RESIDENCE, THERE WILL BE LOOSE OR UNSTABLE SOIL, WHICH WILL NEED TO BE STABILISED. THE CUT, WHICH MAY BE STEEP, MAY NEED RETAINING, STONE PITCHING OR CUTTING TO A LESSER ANGLE WHICH CAN BE STABILISED BY PLANTING SURFACE COVER IE: GRASS. STONE PITCHING DETAILS MUST BE DESIGNED BY AN ENGINEER. IT IS TO BE NOTED THAT AS THE CLAY BUND CONSOLIDATES, ANY STONE PITCHING WILL MOVE AND THIS WILL BE TAKEN INTO ACCOUNT WHEN DESIGNING AND BUILDING THE STONE PITCHING.

TERRACING IS A SUITABLE ALTERNATIVE TO ACHIEVE A STABLE SLOPE AND TO PROVIDE A SURFACE CUT OFF DRAIN. THE TOP TERRACE WOULD SLOPE BACKWARDS FORMING THE DRAIN.

PLANTING ON THE SLOPES ALSO SERVES TO STABILISE THE SLOPE. PLANTING OF LOW SURFACE VEGETATION UP-SLOPE OF THE SURFACE CUT OFF DRAIN WILL SLOW ANY RUN-OFF, THUS MAKING IT EASIER FOR THE DRAIN TO COPE WITH SUDDEN DOWNPOURS OR EXCESS WATER.

FOR THE REQUIREMENTS OF PLANTING TREES/SHRUBS ETC, AND THEIR EFFECT UPON THE RESIDENCE, REFER TO THE CSIRO PUBLICATION BTF 18. THE INFORMATION IN THIS SHEET CONSTITUTES PART OF THIS GENERAL FACT SHEET. WHILE THIS PUBLICATION IS FOR AUSTRALIA GENERALLY, IT IS STILL CONSIDERED APPROPRIATE FOR PERTH CONDITIONS. ALTHOUGH WE USE SAND PAD OVER REACTIVE SOILS, THE CLASSIFICATION OF DAMAGE IS STILL APPROPRIATE AS THE FOOTINGS IN PERTH HAVE BEEN REDUCED IN SIZE RELATIVE TO THOSE IN THE EASTERN STATES, WHERE THEY ARE PLACED DIRECTLY INTO CLAY.

THE END RESULTS AND THE PERFORMANCE THAT IS REQUIRED WOULD BE SIMILAR. IN ALL HOUSES CONSTRUCTED ON CLAY SITES, SOME MOVEMENT OF THE FOUNDATIONS AND CRACKING MUST BE EXPECTED WITHIN THE RESIDENCE. IT IS OUTSIDE THE REALMS OF PRACTICALITY AND ECONOMICS TO DESIGN A FOOTING SYSTEM WHICH IS SO STRONG AS TO HAVE NEGLIGIBLE CRACKING OCCUR IN THE HOUSE, AS, TO DO SO, MAY MAKE THE HOUSE UNAFFORDABLE.

THE DEGREE OF CRACKING WHICH IS CONSIDERED NOT UNACCEPTABLE, WHEN THE CRACKING IS CAUSED BY THE SWELLING AND SHRINKING OF THE CLAY FOUNDATIONS (VOLUMETRIC VARIATIONS) AS OPPOSED TO CRACKING CAUSED BY FAULTS, IS DEPENDENT O THE TYPE OF CLAY PRESENT. REFER TO CSIRO PUBLICATION BTF 18 OR AS2870 FOR A TABLE OF DEGREES OF CRACKING WHICH IS CONSIDERED NOT UNACCEPTABLE.

WITH DOLERITIC CLAYS (HIGH REACTIVITY TYPE H) CRACKING UP TO 5mm WOULD BE CONSIDERED NOT UNACCEPTABLE.

WITH STABLE (TYPE S) CLAYS, CRACKING UP TO 1.5mm WOULD BE CONSIDERED NOT UNACCEPTABLE.

WHEN CRACKING IN THESE CATEGORIES OCCUR, DEPENDING ON THE EXTENT, THE REPAIR WOULD FALL WITHIN THE REALMS OF THE HOUSE-OWNERS MAINTENANCE. WHERE CRACKING HAS OCCURRED OUTSIDE THE LIMITS, IN DETERMINING THE RESPONSIBLE PARTIES FOR THE REPAIR, CONSIDERATION NEEDS TO BE GIVEN TO THE COMPLIANCE BY THE OWNER TO THE RECOMMENDATIONS CONTAINED IN THIS FACT SHEET, AS NON-COMPLIANCE WITH THIS INFORMATION MAY BE A CONTRIBUTING FACTOR FOR THE CRACKING.

IT IS TO BE NOTED THAT WHEN A HOUSE IS NEWLY CONSTRUCTED ON CLAY SITES, THE MOST AMOUNT OF MOVEMENT OF THE CLAY WILL OCCUR IN THE FIRST COUPLE OF SEASON CHANGES, AS THE MOISTURE REGIMES ADJUST TO THE NEW SITE CONDITIONS. ONCE THESE CONDITIONS STABILISE OR THE MOISTURE EQUILIBRIUM IS REACHED, THE MOVEMENT OF THE HOUSE IS LESSENER OR STOPPED.

CARRY OUT GOOD GARDEN MAINTENANCE WITH GARDEN MAINTENANCE, ENSURE THAT THE MOISTURE CONTENT OF THE FOUNDATION IS KEPT AS UNIFORM AS POSSIBLE THROUGHOUT THE YEAR. DO NOT PLANT TREES AND SHRUBS IN CLOSE PROXIMITY TO THE HOUSE (IF THIS DOES OCCUR, ENSURE THAT THE ABOVE NOTE IS COMPLIED WITH). DO NOT PLANT TREES CLOSER THAN 1.5 TIMES THE MATURE HEIGHT OF THE TREE. WATER THE GARDEN BY AN AUTOMATIC RETICULATION SYSTEM, WHERE POSSIBLE, TO ENSURE UNIFORM MOISTURE CONTENT THROUGHOUT THE YEAR.

IF EARTHWORKS ARE CARRIED OUT IN SUMMER, WITH CONSTRUCTION COMMENCING IN THE SAME TIME, THERE IS GENERALLY MORE MOVEMENT IN THE CLAY FOUNDATION (CAUSING HOUSE MOVEMENT AND CRACKING) AS THE LONG-TERM MOISTURE LEVELS OF THE CLAY TENDS TO BE CLOSER TO THE WINTER MOISTURE LEVELS THAN THE SUMMER MOISTURE LEVELS.

IF TREE(S) ARE PLANTED IN NON-COMPLIANCE WITH THESE NOTES, INITIALLY NOT A GREAT DEAL OF MOVEMENT IS OBSERVED. HOWEVER, AS THE TREE(S) MATURE, IT STARTS TO DISTURB THE MOISTURE REGIME CAUSING DIFFERENTIAL VOLUMETRIC VARIATIONS IN THE CLAY FOUNDATIONS, WHICH MAY CAUSE CRACKING.

ON SUBSTANTIALLY LEVEL CLAY SITES, NOTES REGARDING SURFACE CUT-OFF DRAINS ARE NOT GENERALLY APPLICABLE, AND THE SURFACE OF THE CLAY IS SHAPED SUCH THAT WATER DRAINS TO THE SUBSOIL DRAIN.

DOC VERSION 1.0 - JANUARY 2018



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