CVEN4201

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Gi a a Ufm cZ h\Y 7ci fgY

8YgWf]dh]cb cZ fcW_ a Ugg UbX X]gWcbh]bi]h]Yg/fcW_ ghfYb[h\ UbX ZU]`i fY ˙h\Yf]Wfa" 7cfY c[ []b[/Z]YX XUhU Wc`YWh]cb a Udd]b[UbX ZUWh fYg i fj Ymg/XUhU dfYgYbh h]cb /\ Ya]gd\Yf]W `dfc YWWcbg]]bhfcXi WWfmfcW_ g]cdY ghUV] ]hm Zci bXUh]cbg cb fcW_/YUWU j Uh]cb cb fcW_/ ]b!g]h ˙ghfYgg /ghfYggYg UWci hi bXY[ fci bX cdYb]b[ g/WUgg]Z]WUh]cb gmgh Ya g UbX h bbY ˙gi ddcfh fYei ]fYa Ybhg/g]Y ]j Ygh[ Uh]cbg Zcf UbXg]]XYg UbX g`cdY ghUV]]gh]cb `YVb]ei Yg/i gY cZg cdY ghUV]]hm Ub Umg]g dfc fUa g"

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Hc YbUV`Y mci hc VY UV`Y hc dYfZcfa VUg]W XYg][bg]b fcW_]bV\X]b[Zci bXUh]cbg g cdY ghUV]]hm UbX h bbY ˙XYg][bg"

Hc ghi Xm h\Y VUg]W df]bW]d`Yg fY`UhYX hc h\Y h\YcfmUbX XYg][b cZ fcW_ UbX gc] g cdYg]bV\X]b[Ub YUa]bUh]cb cZ h\Y X]ZZYfYbh hmdYg cZ g cdYg hUV]]hm UbX X]ZZYfYbhg h\Y]bj Ygh[Uh]cb a Yh\cXgž a Yh\cXg cZ UbU mg]b[g cdYg UbX X]ZZYfYbh a Yh\cX Zcf ghUV]]g]b[g cdYg"

Hc [ ]j Y mci gca Y YldYf]YbWY]b i g]b[Wca di hYf gcZhk UfY hc UggYgg h\Y ghUV]]hm cZU g cdY UbX j Uf]ci g fYa YX]Uh]cb a YUgi fYg"

Hc [ ]j Y mci U dfUWh]WU` i bXYfghUbX]b[cZ fcW_ UbX g cdY Yb[ ]bYYf]b["

7ci fgY @YUfb]b[Ci hWca Yg

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%" 6Y Za]`]Uf k ]h\ h\Y VUg]W df]bW]d`Yg fY`UhYX hc h\Y h\YcfmUbX XYg][ b cZ fcW_ Yb[ ]bYYf]b[ ]bV\X]b[ a Yh\cXg Zcf XYg][ fc`V]b[ž fYWcfX]b[UbX dfYgYbh]b[[YUh fYg cZ fcW_ a UggYg	D9%"%ž D9%"" ž D9%"(ž D9&"%ž D9&"(ž D9' "&ž D9' "(ž D9' "*
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Yb[ ]bYYf]b[hYWXb]ei Yg" Mci UfY Yl dYWhYX hc j]Yk U``h\Y `YWh fYg ]j Y Ug h\Ymk ]``[fYUhmUgg]gh]b
i bXYfgh UbX]b[k \Uh]g dfYgYbhYX]b h\Y `YWh fY bchYg" H\Y `YWh fYg k]``U`gc VY U df]a Ufmdc]bhcZ
Vca a i b]WUh]cb VYhk YYb h\Y WUgg UbX a mgY`Z : i fh\Yf\ca a i b]WUh]cb k]``VY j U`mci f gh XYbhYa U``UbX
A ccX`Y" ±h]g j Yf]a dcfhUbhh\Uh mci Z`Yei YbhmWXYW_mci fa YggU[Yg"

8 Ya cbghfUh]cbg k cf g\]dg. H\Y XYa cbghfUh]cbg k cf g\]dg]b h\]g gi VYWhUfY i gYX hc hYUWX mci ``\UbXg
cb' fcW_ XYgWf]dh]cb UbX WUgg]Z]WUh]cb/d`ch\]b[ cZXY ZYh XUhU UbX i gY cZ Vca di hYf dfc[ fUa g" H\Ymk ]`

5ggYgga Ybh

H\Y˘Z̆bU˘[fUXY˘Zcf˘h\]g˘Wci fgY˘k]˘`bcfa U˘mVY˘VUgYX˘cb˘h\Y˘gi a ˘cZ h\Y˘gWcfYg˘Zfca ˘YUW\˘cZ h\Y UggYgga YbhÞUg_g"˘H\Y˘: ]bU˘`9I Ua]bUh]cb˘]g˘k cfh\˘))ı˘˘cZ h\Y˘:]bU˘A Uf_]Z̆WUgg˘k cf_]g˘]bWi XYX˘UbX %\$\$ı˘˘]Z̆WUgg˘k cf_]g˘bch]bWi XYX"˘H\Y˘WUgg˘k cf_]g˘k cfh\˘()ı˘˘cZ h\Y˘:]bU˘A Uf_]Z̆bWi XYX"˘5 a Uf_cZ Uh˘YUgh˘($ı˘˘]b˘h\Y˘Z̆bU˘YI Ua]bUh]cb˘]g˘fYei]fYX˘VYŽcfY˘h\Y˘WUgg˘k cf_]g˘]bWi XYX˘]b˘h\Y˘Z̆bU˘a Uf_"˘H\Y Z̆cfa U˘YI Ua ˘gWf]dhg˘k]˘`bch˘VY˘fYh˘ˇfbYX"˘Gh XYbhg˘k \c˘dYfˆcfa ˘dccf˘m]b˘h\Y˘UggYgga YbhÞUg_g˘UbX k cf_g\cdg˘UfY˘fYW̄ca a YbXYX˘hc˘X]gWi gg˘dfc[fYgg˘k]h\˘h\Y˘˘WYi fYˆXi f]b[˘h\Y˘gYa YghYf˘"Bch Y˘˘H\Y ˘YW̄i fYˆfˆYgYfj Yg˘h\Y˘f][\h˘hc˘UX↑ˆgh˘h\Y˘Z̆bU˘gWcfYg˘VmgWU˘]b[˘]Z̆U[fYYX˘Vm˘h\Y˘< YUX˘cZ GW\Xcc˘"˘H\YfY˘k]˘ VY˘hUg_g˘hc˘Wca d˘YhY˘Ug˘dUfh̄cZ h\Y˘Z̆Y˘X˘hf]dž Vi h̄h\YfY˘k]˘`VY˘bc˘dcg]hj Y˘a Uf_g˘Uk UfXYX˘Z̆cf ]hfˆ˘ghUg mci ˘Xc˘bch˘[ Yhˆa Uf_g˘Z̆cf UhhYbX]b[ ˘˘YW̄i fYgŁ"˘˘U]ˆfY˘hc˘UhhYbX˘k ]h\ci h˘K 9@@˘XcW̄a YbhYX˘a YX]WU˘ gi ddcfh̄cf˘Wca d˘Yh]b[ ˘h\Y˘fYei ]fYX˘Ug_g˘cb˘h\Y˘Z̆Y˘X˘f]d˘gUh]gZŽUWhcf]k k ]˘`fYgi `h]b˘U˘fYXi W̆]cb˘]b˘mci f cj YfU˘`UggYgga Ybh̄]b˘h\Y˘gi V˘YW̆Vi ˘d˘hc˘%\$˘a Uf_g"˘5 ˘gi VghUbh̄U˘Ugg][ba Ybhˆk]˘`U`gc˘VY˘gYh̄Zcf h\˘cgY k \c˘Xc˘bch̄UhhYbX˘UbX˘]ha i ghˆVY˘Wca d˘YhYX˘gUh]gZŽUWhcf]m˘

h\Y`Ugg][ba Ybh`k]``VY`gd`]h]bhc`Wca dcbYbhg`k]h\`Xi Y`XUhYg`X]ghf]Vi hYX`h`fci [\ci hh\Y`gYgg]cb"`H\]g`k]``
U``ck `mci `hc`Wca d`YhY`YUW\`dUfhUg`]h]g`hUi [\h]b`WUgg`fg]a]`Uf`hc`U`k cf_g\cdŁ`gc`Ug`bchhc`cjYfcUX
mci fgY`j Yg`Uhh\Y`YbX`cZh\Y`gYgg]cb`UbX`hc`YbUV`Y`a Y`hc`[]jY`mci `gca Y`a Uf_g#ZYYXVUW_`df]cf`hc`h\Y`YbX
cZh\Y`mYUf"`∓h]g`U]a YX`hc`[]jY`ZYYXVUW_`k]h]b`hk c`k YY_g`cZgi Va]gg]cb"

@UhY`gi Va ]gg]cbg`k]``VY`dYbU`]gYX`Uhh\Y`fUhY`cZ%$ı`dYf`XUm`UZhYf`h\Y`Xi Y`h]a Y`UbX`XUhY`\Uj Y`YI d]fYX

5ggYgga Ybh`&. `G`cdY`GHUV]`]hm

GHUfh`XUHY. `K YY_`(

8YHU]`g.

H\]g`Ugg][ba Ybh`k]h`Wcj Yf`h\Y`g`cdY`ghUV]`]hmWca dcbYbhcZh\Y`Wci fgY"`∓k]``UggYgg`mci f`UV]`]hmhc
UbU`mgY`U`g`cdY`i g]b[ `h\Y`dfc[fUa `G`cdY#K `UbX`hc`Wcbg]XYf`UbX`XYg][b`dcgg]V`Y`fma YX]Uh]cb`a YUgi fYg"
; YchYW\b]WU``Yb[]bYYfg`cZYb`i gY`Wca di hYfg`hc`XYg][b`UbX`UbU`mgY`g`cdYg`gc`]h]g`a dcfhUbhh\Uhmci
`YUfb`\ck `hc`i gY`h\Ya `dfcdYf`mUbX`U`gc`j Yfma `dcfhUbhm`YUfb`h\Y]f`]a]hUh]cbg"`E i U]mmcZdfYgYbhUh]cb`]g
U`gc`]a dcfhUbh`

@UhY`gi Va ]gg]cbg`k]``VY`dYbU`]gYX`Uhh\Y`fUhY`cZ%$ı`dYf`XUm`UZhYf`h\Y`Xi Y`h]a Y`UbX`XUhY`\Uj Y`YI d]fYX

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GHUfh`XUHY. `B ch5dd`]WUV`Y

@Yb[h\. `&`\ci fg`fHcHU`a`]`a Y`]bW`i X]b[`fYUX]b[ #`d`cUX`H67Ł

8YHU]`g.

H\Y`Z]bU``CD9B `6CC? `YI Ua `k]``UggYgg`mci f`i bXYfghUbX]b[`cZh\Y`k \c`Y`Wci fgY`k]h\`dUfh]W`Uf
Ya d\Ug]g`cb`mci f`UV]`]hmhc`gmbh\Yg]gY`XUHU`UbX`]bj Ygh][UHY`UbX`XYg][b`ghfi Wi fYg`]b`fcW_ `a UggYg`UbX
g`cdYg"`5 `a Uf_`cZUh`YUgh`($ı`]b`h\Y`Z]bU``YI Ua]bUh]cb`]g`fYei]fYX`VYZcfY`h\Y`WUgg`k cf_]g`]bWi XYX`]b
h\Y`Z]bU``a Uf_

F Ygci fWⱮg

DfYgⱮf]VYX˙F Ygci fWⱮg˙
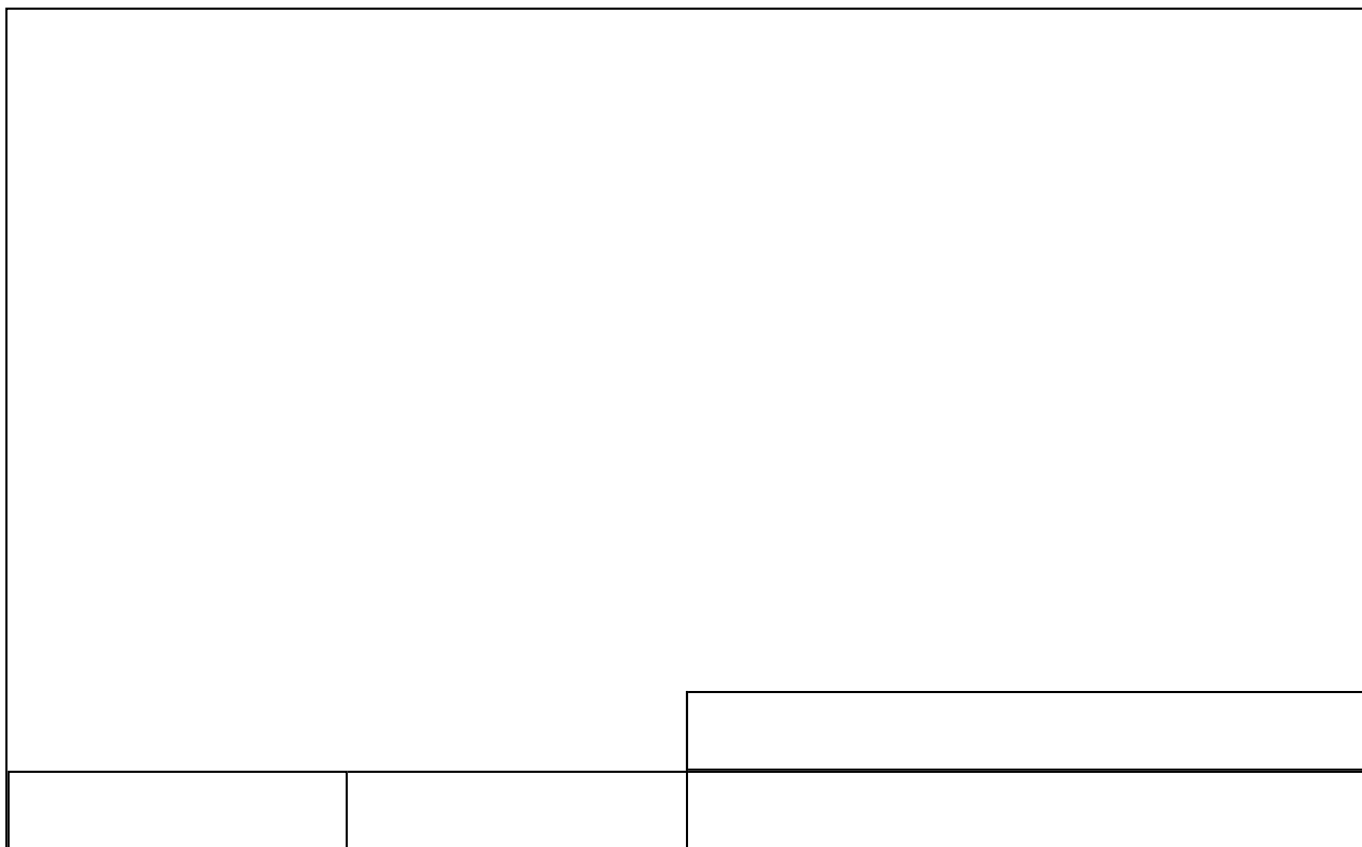
H\Y GV\cc` Wca di hYf UVcfUhcf]Yg dfcj]XY mci UWWYgg hc DaUeU[W UWdfc[fUa gž6[be fd`ch]b[XYZYWh
XUhUŁUbX 7jS_[WUbX DE$ fl bXYf[fci bX ghfYgg UbU`mg]gŁ/UbX hY 9VaEfgV[a dfc[fUa 9VaE^abWfĝc`
g`cdY ghUV]`]hmUbU`mg]gŁ"Gczk UfY WUb U`gc VY UWWYggYX j]U 3UUWée 3`kf[_ W3`ki ZWdW : cfYIUa d`Y Zcf
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7ci fgY 9jU`i Uh]cb UbX 8YjY`cda Ybh

H\Y Wci fgY]g fYj]Yk YX Ubbi U`mh\fci[\ h\Y m9IdYf]YbWY gi fjYm 5``fYgdcbgYg UfY Wcbg]XYfYX UbX =
a U_Y W\Ub[Yg hc h\Y Wci fgY Ubbi U`]m b fYgdcbgY" =Ua `U gc U`k Umg \Uddmhc [YhZYYXVUW_ Xi f]b[
h\Y Wci fgY Zcf]a a YX]UhY W\bg]XYfUh]cb" Mci WUb Ya U]`a Y X]fYWh\mcfi gY h\Y ZYYXVUW_ ]gWi gg]cb hcc` =
\UjY d`UWYX ]b A ccX`Y"

Gi Va]gg]cb cZ 5ggYgga Ybh HUg_g

D YUgY fYZYf hc h\Y A ccX Y dU[Y cZ h\Y Wci fgY Zcf Z fh\Yf [i]XUbW cb UggYgga Ybh gi Va]gg]cb"

5WUXYa]W<cbYghmïUbX`D`U[`]Uf]ga

6Yk UfY¨5b`Ugg][ ba YbhíhʌUhï]bWï XYg`d`U[`]Uf]gYX`a UhYf]U`k]¨`fYW]j Y`U`$ı ¨: U]ˇžUbXˇgh XYbhgˇk \c d`U[`]Uf]gY`a Um²U]¨ʌY`Wćï fgY¨˙Ghï XYbhg`k \cˇd`U[`]Uf]gY`UfY`U`gc¨¨]UV¨Y`hc¨X]gW|d¨bUfmïUWʞcbžˇ]bWï X]b[Yl Wï g]cbˇƶca ¨Ybfc`a Ybhˇ

D`U[`]Uf]ga ¨]g¨hʌY¨ï gY¨cźUbchʌYf`dYfgcb'g`kˇcf_¨cf¨]XYUg`Ug¨]ZhʌYmïk YfY¨mci f¨ck b"¨K \Yb¨]hï]g¨bYW¨ggUfmïcf XYg]fUV¨Y`hc¨ï gY¨chʌYf`dYcd¨Y'g`a UhYf]U`¨mci ¨g\ci ¨X¨UXYqui UhY¨mïUW_bck ¨YX[Y¨k \cgY¨k cfXg¨cf¨]XYUg`hʌYm UfY¨UbX¨k \YfY¨mci ¨Źci bX¨hʌYa ¨f[¨]j¨]b[¨hʌY¨Wća d¨YhY¨fYźfYbWY¨XYHU]¨gž¨]bWï X]b[¨dU[¨Ybi a VYffǥ±L"¨H\Y

5WUXYa]W±bZcfa Uh]cb

? YmI B GK 8UHYg ! Y [" 7 Ybgi g 8UHYž YI Ua XUHYgž UghXUmhc Xfcd U Wci fgY k]H ci h UWUXYa]W±bUbWU `]UV]`]hm YHW

:]bU 9I Ua]bUh]cbg.

:]bU YI Ua g]b HYfa %k] VY \Y X cb]bY VY+k YYb $H 5df] ! % H A Um]bWi g]j Y" Mci UfY fYei]fYX hc VY Uj U`UV`Y cb H YgY XUHYg" D YUgY Xc bchhc a U_Y UbmdYfgcbU` cf fUj Y UffUb[Ya Ybhg Xi f]b[H]g dYf]cX"

Gi dd`Ya YbhUfm 9I Ua]bUh]cbg.

Gi dd`Ya YbHUfm 9I Ua ]bUh]cbg Zcf HYfa %&$&$%k ] VY \Y X cb &( H ! &, H A Um ]bWi g]j Y g\ci X mci VY fYei ]fYX hc g]hcbY" Mci UfY fYei ]fYX hc VY Uj U`UV`Y cb H YgY XUHYg" D YUgY Xc bchhc a U_Y UbmdYfgcbU` cf fUj Y UffUb[Ya Ybhg Xi f]b[H]g dYf]cX"

Appendix : Engineers Australia (EA) Professional Engineer Competency Standard

Program Intended Learning Outcomes	
Knowledge and skill base	
PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline	
PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline	
PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline	
PE1.4 Discernment of knowledge development and research directions within the engineering discipline	
PE1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline	
PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline	
Engineering application ability	
PE2.1 Application of established engineering methods to complex engineering problem solving	
PE2.2 Fluent application of engineering techniques, tools and resources	
PE2.3 Application of systematic engineering synthesis and design processes	
PE2.4 Application of systematic approaches to the conduct and management of engineering projects	
Professional and personal attributes	
PE3.1 Ethical conduct and professional accountability	