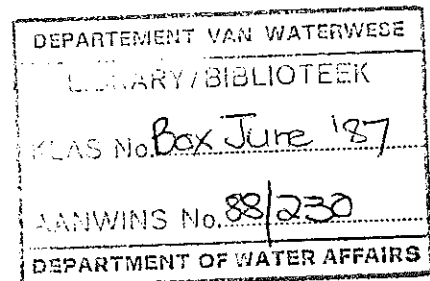


REPORT ON A SOIL SURVEY IN AREAS WHICH COULD BE
IRRIGATED FROM THE PROPOSED NECKARTAL DAM ON THE
FISH RIVER

VOLUME 2

SOIL PROFILE RECORDS AND LABORATORY RESULTS

JUNE 1987



Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A1 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 180+		
Munsell colour	10 YR 5/4	10 YR 5/4		
Colour description	Yellowish brown	Yellowish brown		
Texture	Sandy loam	Sandy clay loam		
Sand grade		Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky tending prismatic		
Mottles		Nil		
Roots		Few		
Permeability		Moderate		
Seepage		Nil		
Concretions		Abundant nodular CaCO ₃ and gypsum crystals		
% Stone and size		Occasional fine and medium shale gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8, 1/520	7, 6/65		
Sample No.	X	X		

Comments: Patches of surface gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A2 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 60	60 - 120+		
Munsell colour		10 YR 4/4		
Colour description	Brown sandy loam	Dark yellowish brown		
Texture	containing abundant	Sandy loam		
Sand grade	fine and medium shale	Medium		
% Clay	gravel.	15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Moderate		
Seepage				
Concretions		Abundant nodular and dif-fuse CaCO ₃		
% Stone and size		Occasional fine and medium shale gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,3/1000	7,6/35		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A3 Parent material Colluvium Location/airphoto/map
 Landform .. Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 20	20 - 120	120 - 210+	
Munsell colour	10 YR 4/4	10 YR 5/4		
Colour description	Dark yellowish brown	Yellowish brown		
Texture	Sandy loam	Sandy loam		
Sand grade	Medium	Medium		
% Clay	6 - 15	6 - 15		
Consistency	Slightly hard	Hard		
Structure	Moderate medium subangular blocky tending platy	Moderate medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Moderate to rapid		
Seepage	Nil	Nil		
Concretions	Nil	Frequent nodular CaCO ₃		
% Stone and size	Occasional fine and medium shale gravel	Occasional fine and medium shale gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	7,3/25	7,6/32		
Sample No.				

Comments: Fine and medium surface gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A4 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub TCP 28/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified colluvium	
Extent (cm-cm)	0 - 20	20 - 120	120 - 180+	
Munsell colour		10 YR 4/4		
Colour description	Yellowish brown	Dark yellowish brown		
Texture	sandy loam	Sandy clay loam	Fine and medium	
Sand grade	with fine and medium	Medium	shale gravel in dark	
% Clay	shale gravel.	15 - 35	yellowish brown sandy	
Consistency		Hard	loam matrix.	
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Moderate to rapid		
Seepage		Nil		
Concretions		Occasional diffuse and nodular CaCO ₃		
% Stone and size		Occasional fine and medium shale gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,0/940		
Sample No.		X		

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.A5..... Parent material .. Alluvium Location/airphoto/map
 Landform ... Lower slope Soil form Dundee ° Soil series/phase Dundee
 Vegetation/land use .. Sparse grass and herb tufts and occasional scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Stratified alluvium		
Extent (cm-cm)	0 - 20	20 - 160+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown	Fine and medium shale		
Texture	Sandy loam	gravel in matrix of dark		
Sand grade	Coarse	yellowish brown loamy		
% Clay	6 - 15	sand.		
Consistency	Slightly hard			
Structure	Weak fine subangular blocky tending platy			
Mottles	Nil			
Roots	Numerous	Numerous		
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Numerous fine and medium shale gravels			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,9/460	8,1/650		
Sample No.				

Comments: .. Moderate surface microrelief ..

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A6 Parent material Alluvium Location/airphoto/map
 Landform Lower slope Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 160+			
Munsell colour				
Colour description	Dark yellowish brown			
Texture	Fine and medium shale			
Sand grade	gravel in loamy sand			
% Clay	matrix.			
Consistency				
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional nodular CaCO ₃			
% Stone and size	Abundant fine and medium shale gravel			
Transition				
pH/Resistance 16°C (ohm)	0 - 30 8,4/1000	90,07800		
Sample No.				

Comments: Significant surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A7 Colluvium Location/airphoto/map
 Landform Lower slope Oakleaf Soil series/phase
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 35	35 - 110	110 - 230+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Coarse medium and fine	
Texture		Sandy loam	shale gravel in a matrix	
Sand grade		Medium	of yellowish-brown sandy	
% Clay		15 - 35	loam.	
Consistency		Hard		
Structure		Weak, medium, subangular, blocky tending prismatic		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine medium and coarse shale gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		8,0/200	8,8/1500	
Sample No.		X	X	

Comments: Moderate local microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A8 Parent material Colluvium Location/airphoto/map Limpopo (saline)
 Landform .. Lower slope Soil form Oakleaf Soil series/phase
 Vegetation/land use Very sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2°	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 60	60 - 210	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Abundant coarse, medium and fine shale gravels	
Texture		Sandy loam	in a matrix of yellowish brown sandy loam	
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak, fine, subangular, blocky		
Mottles		Nil		
Roots		Nil		
Permeability		Rapid		
Seepage		Nil		
Concretions		Diffuse and nodular CaCO ₃		
% Stone and size		Abundant fine & medium gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		7,8/38		8,0/57
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A9 Colluvium Location/airphoto/map Limpopo (saline)
 Landform Lower slope Parent material Oakleaf Soil series/phase
 Vegetation/land use Bare ground Soil form TCP 28/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Cemented Orthic A1	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 150		
Munsell colour	10 YR 5/4	7.5 YR 5/6		
Colour description	Yellowish brown	Strong brown		
Texture	Loam	Sandy loam		
Sand grade	Coarse	Fine		
% Clay	15 - 35	15 - 35		
Consistency	Hard	Slightly hard		
Structure	Platy	Moderate, medium, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Moderate	Rapid to moderate		
Seepage	Nil	Nil		
Concretions	Abundant diffuse CaCO ₃	Abundant diffuse and nodular CaCO ₃		
% Stone and size	Frequent fine and medium shale-gravel	Frequent fine and medium shale-gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	7, 5/16	7, 9/30		
Sample No.	X	X		

Comments: Fine, medium and coarse shale gravel surface
 Top horizon incipient Dorbank (Aerated texture)

Neckartal Irrigation Scheme : Soil profile Record Sheet

Profile No. A10 Colluvium Location/airphoto/map Limpopo (saline)
 Landform Lower slope Parent material Oakleaf Soil series/phase TCP 28/1/87
 Vegetation/land use Bare ground Soil form Dark yellowish brown Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 150†		
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Loamy sand	Sandy loam		
Sand grade	Coarse	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard	Slightly hard		
Structure	Moderate medium, sub-angular, blocky tending platy	Weak, fine, subangular, blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Abundant diffuse and nodular CaCO ₃		
Concretions	Occasional fine and medium shale gravel	Abundant coarse, medium and fine shale gravel		
% Stone and size	Gradual			
Transition				
pH/Resistance 16°C (ohm)	7,6/48	8,3/900		
Sample No.				

Comments: Fine medium and coarse gravel on surface

Profile No. All Parent material Colluvium Location/airphoto/map Limpopo
 Landform ... Lower slope Soil form Oakleaf Soil series/phase TCP 28/1/87
 Vegetation/land use Occasional tufts of grass and scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 150+		
Munsell colour		10 YR 4/4		
Colour description	Loamy sand with	Dark yellowish brown		
Texture	fine and medium	Sandy clay loam		
Sand grade	shale gravel.	Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots	Numerous	Few		
Permeability	Very rapid	Moderate to rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse and nodular CaCO ₃		
% Stone and size	Occasional fine and medium shale gravel	Abundant fine and medium shale gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,2/350		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A12 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2 ^o		
Extent (cm-cm)	0 - 30	30 - 150+		
Munsell colour		10 YR 4/3		
Colour description	Fine and medium	Brown		
Texture	shale gravel in	Sandy loam		
Sand grade	brown loamy	Medium		
% Clay	sand matrix.	15 - 35		
Consistency		Hard		
Structure		Moderate, medium, sub- angular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Nil		
Permeability	Very rapid	Rapid to moderate		
Seepage	Nil	Nil		
Concretions	Nil	Diffuse and nodular CaCO ₃		
% Stone and size	Numerous fine and medium shale gravels	Abundant fine and medium shale gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,6/1300	8,0/1000		
Sample No.				

Comments: Significant surface microrelief

Profile No. A13
 Landform Lower slope
 Vegetation/land use Sparse tuft grass and scrub
 Parent material Colluvium
 Soil form Oakleaf
 Soil series/phase
 Observer and date RRM 29/1/87
 Location/airphoto/map Calueque

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 120	120 - 180+	
Munsell colour		10 YR 3/6		
Colour description		Dark yellowish brown	Coarse, medium and fine	
Texture		Loamy sand	shale gravel in a matrix	
Sand grade		Coarse	of yellowish-brown	
% Clay		6 - 15	loamy sand	
Consistency		Hard		
Structure		Weak, medium, subangular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil	Ca concretions present	
% Stone and size		Occasional fine and medium gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		8,8/3800	8,6/1000	
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. AL4 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Calueque (saline)
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Orthic A	Neocutanic B2	Stratified alluvium
Extent (cm-cm)	0 - 10	10 - 30	30 - 80	80 - 200+
Munsell colour		10YR 4/4	10YR 4/4	
Colour description		Dark yellowish brown	Dark yellowish brown	Coarse medium and fine shale gravel
Texture		Loam	Loamy sand	in a matrix of yellowish brown loamy sand
Sand grade		Medium	Coarse	
% Clay		15 - 35	6 - 15	
Consistency		Hard (slightly cemented)	Slightly hard	
Structure		Platy tending prismatic	Weak, medium, sub-angular, blocky	
Mottles		Nil	Nil	
Roots		Few	Numerous	
Permeability		Moderate	Rapid	
Seepage		Nil	Nil	
Concretions		Nil	Occasional fine nodular CaCO ₃	
% Stone and size		Occasional fine gravel	Abundant shale gravel	
Transition		Gradual	Gradual	
pH/Resistance 16°C (ohm)		7,5/47	8,6/280	7,5/54
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A15 Parent material ... Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase ... Caluque
 Vegetation/land use Sparse tuft grass and scrub Observer and date ... RRM..29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 80 10YR 4/4	80 - 170+	
Munsell colour		Dark yellowish brown	Abundant coarse medium and fine shale gravel in a matrix of	
Colour description		Sandy loam	7.5 YR 4/4	
Texture		Coarse	(brown) loamy sand.	
Sand grade		6 - 15		
% Clay		Slightly hard		
Consistency		Weak, fine, subangular blocky		
Structure		Nil		
Mottles		Numerous		
Roots		Rapid		
Permeability		Nil		
Seepage		Nil		
Concretions		Nil	Ca concretions present	
% Stone and size		Frequent fine and medium shale gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		8,5/850	8,8/1000	
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A16 Colluvium Location/airphoto/map Okavango
 Lower slope Parent material Soil series/phase
 Landform Oakleaf Soil series/phase
 Very sparse scrub Observer and date RRM 29/1/87
 Vegetation/land use

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified wash	Orthic A	Neocutanic B2	Stratified alluvium
Extent (cm-cm)	0 - 10	10 - 25	25 - 150	150 - 220
Munsell colour		10 YR 4/4	7.5YR 4/4	
Colour description		Dark yellowish brown	Brown	Coarse, medium and fine shale gravel
Texture		Sandy loam	Loamy sand	in a matrix of brown sand.
Sand grade		Medium	Medium	
% Clay		6 - 15	6 - 15	
Consistency		Slightly cemented	Hard	
Structure		Weak platy	Weak, medium, subangular blocky	
Mottles		Nil	Nil	
Roots		Nil	Nil	
Permeability		Rapid	Rapid	
Seepage		Nil	Nil	
Concretions		Nil	Occasional fine nodular CaCO ₃	
% Stone and size		Occasional fine and medium medium gravel	Occasional fine and medium gravel	
Transition		Gradual	Gradual	
pH/Resistance 16°C (ohm)		8,0/450	7,6/120	7,6/120
Sample No.				

Comments: Very sparse scrub... Abundant surface gravel and cobbles.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A17 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Stratified alluvium		
Extent (cm-cm)	0 - 40	40 - 210		
Munsell colour		2.5 Y 4/4		
Colour description		Olive brown		
Texture		Abundant coarse		
Sand grade		medium and fine shale		
% Clay		gravels in a matrix		
Consistency		of loamy coarse sand		
Structure		with abundant CaCO ₃		
Mottles		nodules.		
Roots		o		
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)		8,0/400 40 - 80	7,4/160 80 - 120	
Sample No.				

Comments: Moderate surface microrelief

Profile No. A18 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Okavango
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 70	70 - 220+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown		
Texture		Loamy sand		
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak, fine, sub-angular, blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional fine nodular CaCO ₃		
% Stone and size		Abundant fine and medium shale gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		7,9/570	8,0/620	
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A19 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 120 10 YR 4/4	120 - 190+		
Munsell colour	Dark yellowish brown	Fine medium and coarse gravel and boulders in a sand matrix		
Texture	Loamy sand			
Sand grade	Fine			
% Clay	6 - 15			
Consistency	Friable			
Structure	Weak, medium, subangular blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,3/1000			
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A20 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 130	130 - 220+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Chiefly coarse	
Texture		Loamy sand	gravel in a matrix	
Sand grade		Fine	of brown loamy	
% Clay		6 - 15	sand.	
Consistency		Friable - slightly hard		
Structure		Weak, medium, subangular, blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Very rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		7,9/1800	8,9/1500	
Sample No.		X		

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A21 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Stratified alluvium		
Extent (cm-cm)	0 - 20	0 - 20		
Munsell colour		10 YR 4/6		
Colour description		Dark yellowish brown		
Texture		Coarse, medium and fine		
Sand grade		shale gravel in a matrix		
% Clay		of loamy sand.		
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)		8,3/1400 20 - 50	8,4/1200 50 - 100	
Sample No.				

Comments: Substantial surface microrrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.A22..... Parent material Colluvium Location/airphoto/map
 Landform ..lower.slope..... Soil form ..Oakleaf Soil series/phase Levubu
 Vegetation/land use ...Sparse.scrub..... Observer and date ..RRM 29/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 40	40 - 210+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown	Abundant coarse, medium		
Texture	Sandy loam	and fine shale gravel in		
Sand grade	Medium	a matrix of reddish		
% Clay	6 - 15	brown (5 YR 5/4) sandy		
Consistency	Friable to slightly hard loam			
Structure	Weak, medium, subangular, blocky tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine and medium gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8, 3/1000	7, 6/90		
Sample No.				

Comments: Moderate surface microrelief

Profile No. ... A23 Parent material Colluvium Location/airphoto/map Dundee
 Landform ... Lower slope Soil form Dundee Soil series/phase RRM 29/1/87
 Vegetation/land use ... Sparse tuft grass and scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Stratified alluvium		
Extent (cm-cm)	0 - 35	35 - 220+		
Munsell colour				
Colour description		Abundant coarse, medium and fine shale gravel		
Texture		in a matrix of yellowish-		
Sand grade		brown loamy coarse sand.		
% Clay				
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)		35 - 60 8,1/940	60 - 100 8,0/850	
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation scheme : soil profile record. Sheet

Profile No. A24 Parent material Colluvium Location/airphoto/map Jozini
 Landform Lower slope Soil form Oakleaf Soil series/phase RRM 29/1/87
 Vegetation/land use Sparse scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Orthic A	Neocutanic B2	Stratified alluvium
Extent (cm-cm)	0 - 10	10 - 45 10 YR 4/4	45 - 110 10 YR 4/4	110 - 170
Munsell colour		Dark yellowish brown	Dark yellowish brown	Abundant, coarse, medium
Colour description		Sandy clay loam	Sandy loam	and fine shale gravels
Texture		Coarse	Coarse	in a matrix of yellowish-
Sand grade		15 - 35	15 - 35	brown loamy sand.
% Clay		Hard	Hard	
Consistency		Weak, platy, tending medium subangular blocky	Weak, fine, subangular, blocky	
Structure		Nil	Nil	
Mottles		Few	Few	
Roots		Moderate	Rapid	
Permeability		Nil	Nil	
Seepage		Nil	Nil	
Concretions		Frequent fine and medium shale gravels	Occasional medium and fine gravels	
% Stone and size		Gradual	Gradual	
pH/Resistance 16°C (ohm)		7,7/180	7,6/110	
Sample No.		X	X	

Comments: Moderate surface microrelief and surface gravel.

Profile No. A25 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 140	140 - 200+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Coarse, medium and fine	
Texture		Loamy sand	gravel and boulders in	
Sand grade		Medium	a sandy matrix	
% Clay		6 - 15		
Consistency		Friable		
Structure		Weak, medium, subangular, blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Very rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		8,0/250	8,6/550	
Sample No.				

Comments: Moderate surface microrelief and scattered surface gravel and cobbles

Profile No. A26
 River terrace
 Vegetation/land use Sparse tuft grass and scrub

Parent material Alluvium
 Soil form Dundee

Location/airphoto/map Dundee
 Soil series/phase RRM 29/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 220+			
Munsell colour	7.5 YR 4/4			
Colour description	Brown			
Texture	Loamy sand			
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure				
Mottles	Numerous			
Roots	Very rapid			
Permeability	Nil			
Seepage	Nil			
Concretions	Frequent lenticular fine medium & coarse gravel bodies.			
% Stone and size				
Transition		8,9/1400		
pH/Resistance 16°C (ohm)	8,5/1000	180 - 220		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A27 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 150	150 - 200+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Abundant coarse, medium		
Texture	Loamy sand	and fine gravel in a		
Sand grade	Medium	matrix of sand		
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	9,8/700	9,0/930		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A28 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 100	100 - 190+		
Munsell colour	10 YR 4/3			
Colour description	Brown	Fine, medium & coarse		
Texture	Loamy sand	gravel in a coarse sand matrix		
Sand grade	Fine			
% Clay	6 - 15			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	9,1/1000	8,8/1200		
Sample No.	X			

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A29 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 100			
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Coarse medium and fine		
Texture	Loamy sand	gravel and boulders in		
Sand grade	Fine	a sand matrix		
% Clay	0 - 6			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,9/1800	8,7/1200		
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A30 Parent material Alluvium Location/airphoto/map Okavango (saline)
 Landform River terrace Soil form Oakleaf Soil series/phase RRM 29/1/87
 Vegetation/land use Sparse scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 110	110 - 190+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Coarse, medium and fine gravel and boulders in a brown loamy sand matrix.	
Texture	Gravel and boulders in fine sand matrix	Loamy sand		
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak, medium, subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant fine nodular CaCO ₃		
% Stone and size		Occasional fine & medium gravel		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		8,2/82	8,2/170	
Sample No.				

Comments: Moderate microrelief and scattered alluvial gravels and boulders
 on surface.

Profile No. A31 Parent material Alluvium Location/airphoto/map
 River terrace Soil form Oakleaf Soil series/phase Levubu
 Sparse scrub Vegetation/land use Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium	Stratified alluvial gravel	
Extent (cm-cm)	0 - 40	40 - 120	120 - 200+	
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Brown loamy	Fine, medium and	
Texture	Loamy sand	sand with	coarse gravel	
Sand grade	Medium	occasional fine	in a loamy sand	
% Clay	6 - 15	gravel lenses.	matrix.	
Consistency	Friable			
Structure	Weak, fine, subangular, blocky, tending prismatic			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine gravels			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,7/1700		8,3/580	
Sample No.				

Comments: Moderate surface microrelief

Profile No. A32 Parent material Alluvium Location/airphoto/map Dundee
 Landform River terrace Soil form Dundee Soil series/phase RRM 29/1/87
 Vegetation/land use Sparse scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 170	170 - 190+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine and medium		
Texture	Loamy sand	gravel in a matrix		
Sand grade	Fine	of brown loamy sand		
% Clay	6 - 15			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/1700			
Sample No.	X			

Comments: Moderate surface microrelief

Profile No. A33 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Stratified alluvial gravel	Stratified alluvium	
Extent (cm-cm)	0 - 80	80 - 220	220 - 300+	
Munsell colour	Brown fine loamy	Fine, medium and	Brown fine	
Colour description	sand	coarse gravel and	loamy sand.	
Texture		pebbles in loamy		
Sand grade		sand matrix		
% Clay				
Consistency				
Structure				
Mottles				
Roots	Numerous			
Permeability				
Seepage				
Concretions			Occasional diffuse CaCO ₃	
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	9,5/1200	9,2/200		
Sample No.				

Comments: Substantial surface microrelief

Neckartal irrigation scheme : soil profile record sheet

Profile No. A34 Parent material Alluvium Location/airphoto/map
 Landform . River terrace Soil form Dundee Soil series/phase Dundee (stony)
 Vegetation/land use . Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvial gravel	Stratified alluvium		
Extent (cm-cm)	0 - 200	200 - 290		
Munsell colour	Fine, medium and coarse gravel and pebbles in a sandy matrix.	Brown loamy sand		
Colour description				
Texture				
Sand grade				
% Clay				
Consistency				
Structure				
Mottles				
Roots	Numerous			
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	9,2/1600	8,0/130		
Sample No.				

Comments: Slightly saline, but only below 200cm.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A.35 Parent material Alluvium Location/airphoto/map Dundee (stony)
 Landform River terrace Dundee Soil series/phase RRM 29/1/87
 Vegetation/land use .. Sparse scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvial gravel	Stratified alluvium		
Extent (cm-cm)	0 - 80	80 - 250+		
Munsell colour	Fine, medium and coarse gravel	Brown, medium loamy sand		
Colour description	in a sand matrix.	with occasional pebble lenses.		
Sand grade				
% Clay				
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	8, 6/1200	8, 8/2700		
Sample No.				

Comments:
 Moderate surface microrelief. Abundant alluvial gravel
 and boulders on surface.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...A36..... Parent material Alluvium Location/airphoto/map Dundee (stony)
 Landform River terrace Soil form Dundee/Mispah Soil series/phase
 Vegetation/land use Sparse scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvial gravel			
Extent (cm-cm)	0 - 200			
Munsell colour	o			
Colour description	Fine, medium and			
Texture	coarse gravel and			
Sand grade	boulders in a sand			
% Clay	matrix.			
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	8,6/1700			
Sample No.				

Comments:
 Substantial surface microrelief. Soil should probably
 be classified as Mispah

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A37 Parent material Alluvium Location/airphoto/map
 Landform .. River terrace Soil Form Oakleaf Soil series/phase Oakleaf
 Vegetation/land use .. Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 110	110 - 190+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Coarse, medium and	
Texture		Sand	fine gravel in a	
Sand grade		Fine	brown loamy sand	
% Clay		0 - 6	matrix.	
Consistency		Friable		
Structure		Weak, medium, subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Very rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		8,6/680	8,8/2100	
Sample No.				

Comments: .. Moderate surface microrelief.

Profile No.A38..... Parent materialAlluvium..... Location/airphoto/map
 Landform ...River terrace..... Soil formOakleaf..... Soil series/phase ...Oakleaf.....
 Vegetation/land use ...Sparse scrub..... Observer and dateRRM.29/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 120	120 - 180+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse		
Texture	Sand	gravel and pebbles		
Sand grade	Fine	in a sand matrix		
% Clay	0 - 6			
Consistency	Eriable			
Structure	Weak, medium, subangular, blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,7/2000			
Sample No.	X			

Comments:
 Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A39 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Oakleaf (saline)
 Vegetation/land use Sparse scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 100	100 - 250+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Borwn loamy sand		
Texture	Sand	with occasional		
Sand grade	Fine	lenses of fine and		
% Clay	0 - 6	medium gravel		
Consistency	Friable			
Structure	Weak, medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/1400	7,8/75		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. **A40** Parent material **Alluvium** Location/airphoto/map
 River terrace Soil form **Dundee** Soil series/phase **Dundee**
 Sparse scrub Observer and date **RRM 29/1/87**
 Vegetation/land use

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 90	90 - 180		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse		
Texture	Sand	gravel and pebbles in		
Sand grade	Fine	a sand matrix		
% Clay	0 - 6			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,8/2300			
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A41 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Oakleaf
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 110	110 - 120+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Fine, medium and coarse	
Texture		Sand	gravel in a sand matrix	
Sand grade		Fine		
% Clay		0 - 6		
Consistency		Friable		
Structure		Weak, medium, subangular, blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Very rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition		Abrupt		
pH/Resistance 16°C (ohm)		8,3/1200		
Sample No.				

Comments:
 Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A42 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Oakleaf
 Vegetation/land use Sparse tuft grass, scrub and Acacia trees Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 100	100 - 180		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse,		
Texture	Sand	gravel, pebbles and		
Sand grade	Fine	boulders in a sand		
% Clay	0 - 6	matrix		
Consistency	Friable			
Structure	Weak, medium, subangular, blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/2300	9,0/2800		
Sample No.				

Comments: Substantial surface microrelief

Profile No. A43 Parent material Alluvium Location/airphoto/map Dundee
 Landform River terrace Soil form Dundee Soil series/phase RRM 29/i/87
 Vegetation/land use Sparse tuft grass and scrub Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 180	180 - 200+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse		
Texture	Sand	gravel in a sand matrix		
Sand grade	Fine			
% Clay	0 - 6			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occ. fine and medium gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/1900			
Sample No.				

Comments: Moderate surface microrelief. Strips of alluvial gravel in places on surface.

Profile No. A44
 Landform River terrace
 Vegetation/land use Sparse tuft grass and scrub

Parent material Alluvium
 Soil form Dundee
 Sparse tuft grass and scrub

Location/airphoto/map Dundee
 Soil series/phase RRM 29/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 50	50 - 160+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse gravel pebbles and boulders in a sand matrix		
Texture	Sand			
Sand grade	Medium			
% Clay	0 - 6			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,5/2100			
Sample No.				

Comments: Moderate surface microrelief. Occasional alluvial gravel and boulders on surface.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. A45 Parent material Alluvium Location/airphoto/map
 Landform River terrace Dundee Soil series/phase Dundee
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM..29/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 220	220 - 260+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine, medium and coarse		
Texture	Sand	gravels pebbles and		
Sand grade	Fine	boulders in a sand matrix		
% Clay	0 - 6			
Consistency	Friable			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Frequent gravel lenses			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	9,2/1700			
Sample No.	X			

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil profile Record Sheet

Profile No. B1 Parent material Alluvium Location/airphoto/map
 River terrace Soil form Oakleaf Soil series/phase Limpopo
 Sparse tuft grass and scrub Vegetation/land use Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 80	80 - 250+	
Munsell colour	10 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown	Fine, medium and coarse	
Texture	Sandy loam	Sandy loam	gravel, pebbles and	
Sand grade	Medium	Medium	boulders in a brown	
% Clay	6 - 15	15 - 35	sandy loam matrix,	
Consistency	Slightly hard	Hard	calcretized at base	
Structure	Weak, medium, subangular, blocky tending prismatic	Weak to moderate, subangular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant fine nodular CaCO ₃		
% Stone and size	Occ. fine, medium & coarse gravel	Abundant fine, medium & coarse gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,4/1400	8,4/90		
Sample No.				

Comments: Adjoins extensive area of surface gravel and cobbles.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B2 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B21	Neocutanic B22	Stratified alluvium
Extent (cm-cm)	0 - 15	15 - 120	120 - 240	240 - 280
Munsell colour	5 YR 4/4	7.5 YR 4/4	7.5 YR 4/4	
Colour description	Reddish brown	Brown	Brown	Fine, medium and coarse
Texture	Sandy loam	Sandy loam	Sandy loam	gravel, pebbles and
Sand grade	Medium	Medium	Coarse	boulders
% Clay	15 - 35	15 - 35	6 - 15	
Consistency	Friable to slightly hard	Friable	Friable to slightly hard	
Structure	Weak platy	Weak, fine, subangular, blocky	Weak, fine to medium, subangular, blocky	
Mottles	Nil	Nil	Nil	
Roots	Numerous	Few	Nil	
Permeability	Rapid	Rapid	Rapid	
Seepage	Nil	Nil	Nil	
Concretions	Nil	Abundant nodular CaCO ₃	Occasional diffuse CaCO ₃	
% Stone and size	Frequent fine, medium and coarse gravel	Abundant, fine, medium, and coarse gravel	Frequent, fine, medium & coarse gravel	
Transition	Gradual	Gradual	Fairly abrupt	
pH/Resistance 16°C (ohm)	8, 1/65	8, 4/400	8, 3/300	
Sample No.	X	X	X	

Comments: Abundant surface gravel and cobbles

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.B3..... Parent materialAlluvium..... Location/airphoto/map
 River terrace Oakleaf
 Landform Soil form Soil series/phase Limpopo
 Vegetation/land use .Sparse tuft grass and scrub..... Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 230+	
Munsell colour	7.5 YR 4/4	7.5YR 4/4		
Colour description	Brown	Brown	Fine, medium and	
Texture	Sandy loam	Sandy loam	coarse gravel and pebbles	
Sand grade	Medium	Medium	in a brown sandy loam	
% Clay	6 - 15	15 - 35	matrix	
Consistency	Friable to sl. hard.	Slightly hard		
Structure	Weak, platy, tending prismatic	Weak, fine, subangular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Numerous		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant nodular and diffuse CaCO ₃		
% Stone and size	Occasional medium and coarse gravel	Occasional medium and coarse gravel		
Transition	Fairly abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,2 /1000	8,0/380		
Sample No.				

Comments:
 Abundant surface gravel and boulders.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B4 Parent material Alluvium Location/airphoto/map
 Landform River terrace Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 60	60 - 220+		
Munsell colour	7.5YR 4/4			
Colour description	Brown	Fine, medium and		
Texture	Sandy loam	coarse gravel with		
Sand grade	Medium	occasional pebbles in		
% Clay	15 - 35	a brown sand matrix		
Consistency	Slightly hard			
Structure	Weak to moderate, medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Abundant diffuse and nodular CaCO ₃			
% Stone and size	Occasional fine and medium gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8, 4/260			
Sample No.				

Comments: Abundant surface gravels and cobbles

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B5 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Letaba (saline)
 Vegetation/land use Bare ground Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 250+		
Munsell colour	7.5YR 4/4	5 YR 4/4		
Colour description	Brown	Reddish brown		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35		
Consistency	Slightly hard	Slightly hard		
Structure	Platy	Moderate, medium, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse and nodular CaCO ₃		
% Stone and size	Occasional fine and medium gravel	Frequent fine, medium and coarse gravel & cobbles		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8.2/870	8.1/30		
Sample No.				

Comments: Abundant surface gravel:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B6
 Landform River terrace
 Vegetation/land use Bare ground

Parent material Alluvium
 Soil form Oakleaf

Location/airphoto/map Letaba (saline)
 Soil series/phase
 Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 210+		
Munsell colour	7.5 YR 4/4	5 YR 4/6		
Colour description	Brown	Yellowish red		
Texture	Sandy loam	Sandy clay loam		
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35		
Consistency	Slightly hard	Friable to slightly hard		
Structure	Platy	Moderate, medium, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse and nodular CaCO ₃		
% Stone and size	Occasional fine, medium and coarse gravel	Frequent fine, medium & coarse gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8, 1/22	8, 2/18		
Sample No.				

Comments: Abundant surface gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B7 Alluvium
 River terrace Parent material Location/airphoto/map
 Landform Soil form Soil series/phase
 Vegetation/land use Sparse tuft grass and scrub; few Acacia trees Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 210+		
Munsell colour		5 YR 4/6		
Colour description		Yellowish red		
Texture	Gravel	Sandy loam		
Sand grade		Coarse		
% Clay		15 - 35		
Consistency		Friable to slightly hard		
Structure		Weak to moderate, medium subangular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Frequent fine nodular CaCO ₃		
% Stone and size		Frequent fine medium, and coarse gravel		
Transition				
pH/Resistance 16°C (ohm)		8,5/1500		
Sample No.				

Comments:
 Abundant surface gravel and cobbles:
 Dongas require rehabilitation:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B8 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Letaba (saline)
 Vegetation/land use Very sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 230+		
Munsell colour	7.5 YR 4/4	5 YR 4/6		
Colour description	Brown	Yellowish red		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard	Friable to slightly hard		
Structure	Weak platy	Weak, fine to medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Occasional diffuse CaCO ₃		
% Stone and size	Occasional fine, medium and coarse gravel	Frequent fine, medium & coarse gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,4/1200	7,8/52		
Sample No.				

Comments:
 Scattered surface gravel and cobbles adjacent.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B9 Parent material Colluvium Location/airphoto/map
 Landform ... Lower slope Soil form ... Oakleaf Soil series/phase Letaba
 Vegetation/land use ... Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2 °	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 40	40 - 180	180 - 240+	
Munsell colour	7.5YR 4/4	5 YR 4/6		
Colour description	Brown	Yellowish red	Fine, medium and coarse	
Texture	Sandy loam	Sandy loam	gravel and pebbles in	
Sand grade	Coarse	Coarse	a brown sand matrix	
% Clay	6 - 15	15 - 35		
Consistency	Friable to slightly hard	Slightly hard		
Structure	Weak to moderate, medium, subangular, blocky	Weak to moderate, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Frequent diffuse CaCO ₃		
% Stone and size	Frequent fine, medium & coarse gravel	Frequent fine, medium & coarse gravel		
Transition	Gradual	Abrupt		
pH/Resistance 16°C (ohm)	8,2/850	8,1/1000		
Sample No.				

Comments:

Neckartal Irrigation Scheme - Soil Profile Record Sheet

Profile No. B10
 Lower slope
 Landform
 Vegetation/land use

Parent material Colluvium
 Soil form Oakleaf
 Sparse tuft grass and scrub

Location/airphoto/map Limpopo
 Soil series/phase RRM 29/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 200	200 - 230+	
Munsell colour	7.5 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown	Fine, medium and coarse	
Texture	Sandy loam	Sandy loam	gravel, pebbles and	
Sand grade	Medium	Medium	boulders in a brown	
% Clay	6 - 15	15 - 35	sandy loam matrix	
Consistency	Friable to slightly hard	Slightly hard		
Structure	Moderate, medium, sub-angular, blocky	Weak to moderate, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Frequent diffuse CaCO ₃		
% Stone and size	Occ. fine gravel	Occasional fine, medium & coarse gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	7,9/260	7,7/160		
Sample No.				

Comments:

Profile No. B11 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Letaba
 Vegetation/land use Sparse tuft. grass. and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2 °	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 180	180 - 210+	
Munsell colour	7.5 YR 4/4	5 YR 4/6 °		
Colour description	Brown	Yellowish red	Fine, medium and coarse	
Texture	Sandy loam	Sandy loam	gravel, pebbles, and	
Sand grade	Coarse	Coarse	boulders in a brown	
% Clay	6 - 15	15 - 35	loamy sand matrix	
Consistency	Slightly hard	Hard		
Structure	Weak, medium, sub-angular, blocky	Moderate, medium, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Numerous fine nodular CaCO ₃		
% Stone and size	Frequent fine, medium & coarse gravel	Occasional coarse, medium and fine gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,2/1000	7,7/100		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B13 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Letaba
 Vegetation/land use Sparse scrub and tuft grass Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 180	180 - 200+	
Munsell colour	7.5 YR 4/4	5 YR 4/6		
Colour description	Brown	Yellowish red ^o	Fine, medium and coarse	
Texture	Sandy loam	Sandy loam	gravel in a sandy	
Sand grade	Coarse	Coarse	matrix	
% Clay	6 - 15	15 - 35		
Consistency	Friable to slightly hard	Hard		
Structure	Weak, fine to medium, subangular, blocky	Moderate, medium, sub- angular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant fine nodular CaCO ₃		
% Stone and size	Frequent fine & medium gravel	Frequent fine & medium gravel		
Transition	Gradual	Abrupt		
pH/Resistance 16°C (ohm)	8,2/1300	7,8/300		
Sample No.	X	X		

Comments:

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Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 180+		
Munsell colour	7.5 YR 4/4	5 YR 4/4		
Colour description	Brown	Reddish brown		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	15 - 35		
Consistency	Friable to slightly hard	Hard		
Structure	Moderate, medium, sub-angular, blocky	Moderate, medium, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Occasional diffuse CaCO ₃		
% Stone and size	Frequent fine & medium gravel	Occasional fine & medium gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,6/1700	8,3/1000		
Sample No.				

Comments:

Profile No. B15 Parent material Colluvium Location/airphoto/map Letaba (saline)
 Landform Lower Slope Oakleaf Soil series/phase
 Vegetation/land use Sparse scrub and grass; a few Acacia trees Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2 ^s		
Extent (cm-cm)	0 - 20	20 - 210		
Munsell colour	5 YR 4/4	5 YR 4/6		
Colour description	Reddish brown	Yellowish red		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35		
Consistency	Friable to slightly hard	Hard		
Structure	Weak to moderate, medium, subangular, blocky	Weak, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Occasional fine nodular CaCO ₃	Abundant fine nodular CaCO ₃		
% Stone and size	Occasional fine and medium gravel	Frequent gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	7, 3/30	7, 4/40		
Sample No.				

Comments: Dongas will require rehabilitation

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. B16 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Okavango
 Vegetation/land use Sparse scrub and grass Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 220		
Munsell colour	7.5 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown		
Texture	Loamy sand	Sandy loam		
Sand grade	Medium	Medium		
% Clay	6 - 15	6 - 15		
Consistency	Friable to slightly hard	Slightly hard		
Structure	Weak, fine, subangular, blocky tending platy	Weak, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant fine nodular CaCO ₃		
% Stone and size	Occasional fine and medium gravels	Frequent fine and medium gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,3/1900	8,3/580		
Sample No.	X	X		

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 1 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee (sandy phase)
 Vegetation/land use Sparse tuft grasses and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Shale gravel in sandy matrix	Maroon Nama shale and sandstone	
Extent (cm-cm)	0 - 50	50 - 100	100+	
Munsell colour	7.5 YR 4/4			
Colour description	Brown			
Texture	Loamy sand			
Sand grade	Fine			
% Clay	0 - 6			
Consistency	Loose			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,2/580			
Sample No.	X			

Comments: Becomes deeper towards river. Surface horizon of + 10 cm of medium
 aeolian sand present in places.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 2 Parent material .. Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee (sandy phase)
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Gravels and cobbles in medium sand matrix		
Extent (cm-cm)	0 - 50	50 - 110+		
Munsell colour	10 YR 3/4			
Colour description	Dark yellowish brown			
Texture	Sand			
Sand grade	Coarse			
% Clay	0 - 6			
Consistency	Loose			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Excessive			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine pebbles			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,7/2800			
Sample No.	X			

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 3 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 220+		
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy	Brown		
Texture	sand and fine	Sandy clay loam		
Sand grade	gravel	Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant diffuse CaCO3 and gypsum crystals		
% Stone and size		Nil		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,3/40		
Sample No.				

Comments: Moderate surface microrelief:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 4 Parent material Colluvium/shale Location/airphoto/map
 Landform .. Middle slope Soil form Hutton Soil series/phase Shigalo (shallow)
 Vegetation/land use .. Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Friable weathered shale	Shale bedrock	
Extent (cm-cm)	0 - 25	25 - 60	60+	
Munsell colour	5 YR 4/6			
Colour description	Yellowish red			
Texture	Sandy loam			
Sand grade	Medium			
% Clay	15 - 35			
Consistency	Hard			
Structure	Weak, medium to coarse subangular, blocky			
Mottles	Nil			
Roots	Numerous	Few		
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional diffuse CaCO ₃			
% Stone and size	Occasional pebbles			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,0/850			
Sample No.	X			

Comments: .. Abundant surface pebbles and cobbles.
 .. Shale will break down under cultivation to 60cm depth.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 5 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse scrub Observer and date TCP... 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvial gravel	
Extent (cm-cm)	0 - 5	5 - 70	70 - 210+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand	Brown	Fine medium and coarse gravel and pebbles in brown sand matrix	
Texture		Sandy loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak, fine subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Occasional fine and medium gravels		
Transition	Abrupt	Abrupt		
pH/Resistance 16°C (ohm)		8,4/25		
Sample No.				

Comments: Moderate surface microrelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 6 Parent material Windblown alluvium Location/airphoto/map
 Landform Dune field Soil form Fernwood Soil series/phase Langebaan
 Vegetation/land use Very sparse tuft grass and scrub Observer and date TCP 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Regic sand			
Extent (cm-cm)	0 - 120+			
Munsell colour	7.5 YR 4/4			
Colour description	Brown			
Texture	Sand			
Sand grade	Medium			
% Clay	0 - 6			
Consistency	Loose			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Excessive			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition				
pH/Resistance 16°C (ohm)	8,3/2100			
Sample No.				

Comments: Major microrelief present; sands mobile; no A-horizon developed.....

Profile No. 7..... Parent material ..Shale..... Location/airphoto/map
 LandformMiddle.slope..... Soil FormMispah..... Soil series/phase Mispah.....
 Vegetation/land useSparse.tuft.grass.and.scrub..... Observer and date RRM..27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 25	25+		
Munsell colour	7.5YR 5/4			
Colour description	Brown			
Texture	Gravelly sandy loam			
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Weak, fine to medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant gravel			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8, 1/800			
Sample No.	X			

Comments: ..Abundant surface gravel and boulders.....

Neckartal Irrigation Scheme : soil profile record sheet

Profile No. 8 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Calueque (stony phase)
 Vegetation/land use Desert scrub and tuft grass Observer and date RRM. 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B	Weathering shale	
Extent (cm-cm)	0 - 20	20 - 110	110 - 170+	
Munsell colour	10 YR 4/4	2.5 Y 4/2		
Colour description	Dark yellowish brown	Dark greyish brown		
Texture	Gravelly sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	6 - 15		
Consistency	Friable	Friable to slightly hard		
Structure	Moderate, fine, sub-angular, blocky	Moderate, fine, sub-angular, blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Occasional medium CaCO ₃	Abundant nodular & diffuse CaCO ₃		
% Stone and size	Abundant shale gravel	Abundant c.m.f. gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,0/670	7,7/100		
Sample No.	X	X		

Comments: Numerous gravels and boulders on surface; severely eroded.

Wickham Irrigation Scheme : Soil Profile Record Sheet

Profile No. 9 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Caluque
 Vegetation/land use Sparse tuft grasses and scrub Observer and date RRM, 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Stratified alluvium		
Extent (cm-cm)	0 - 40	40 - 250+		
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown		
Texture	Loamy sand	Fine and medium		
Sand grade	Coarse	gravel in a loamy		
% Clay	6 - 15	sand matrix		
Consistency	Slightly hard			
Structure	Weak, fine to medium, subangular, blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	Occasional fine nodular & diffuse CaCO ₃		
% Stone and size	Occasional fine gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,0/1000	8,1/1000		
Sample No.	X			

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.10..... Parent material Location/airphoto/map
 LandformAlluvial fan..... Soil form Oakleaf..... Soil series/phase Calueque (stony phase, saline)
 Vegetation/land use .Tuft grass and scrub..... Observer and date RRM 27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Stratified alluvium		
Extent (cm-cm)	0 - 40	40 - 250+		
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Gravelly loam	Fine and medium		
Sand grade	Coarse	shale fragments in a		
% Clay	6 - 15	sandy loam matrix		
Consistency	Friable			
Structure	Moderate, medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional nodular & diffuse CaCO ₃	Occasional nodular & diffuse CaCO ₃		
% Stone and size	Abundant medium and fine shale gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,3/33	7,6/50		
Sample No.				

Comments: Abundant surface gravel and boulders; severely eroded

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.11..... Parent material . Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase . Calueque
 Vegetation/land use .. Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 30	30 - 250+		
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown		
Texture	Loamy sand	Fine and medium		
Sand grade	Coarse	gravel in a sandy		
% Clay	6 - 15	loam matrix		
Consistency	Slightly hard			
Structure	Weak to moderate, fine to medium, subangular blocky, tending platy			
Mottles	Nil			
Roots	Abundant			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine gravel	Occasional fine nodular & diffuse CaCO ₃		
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,8/730	8,0/760		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 12 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use .. Tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Stratified alluvium		
Extent (cm-cm)	0 - 65	65 - 250+		
Munsell colour	10 YR 4/4	Alternating fine and coarse shale gravels in		
Colour description	Dark yellowish brown	a fine loamy sand matrix		
Texture	Sandy loam	with occasional cobble lenses		
Sand grade	Coarse	6 - 15		
% Clay	15 - 35			
Consistency	Slightly hard			
Structure	Moderate, medium to coarse, subangular blocky, tending platy			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant pebbles and occasional cobbles			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,8/750	8,1/780		
Sample No.	X	X		

Comments: No A horizon present due to erosion, but abundant surface
 gravels and cobbles.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 13 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan (lower edge) Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 25	25 - 95	95+	
Munsell colour	10 YR 3/6	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Sandy loam		
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Slightly friable to hard	Hard		
Structure	Moderate, fine to medium, subangular, blocky	Moderate, fine to medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Numerous		
Permeability	Rapid	Moderate		
Seepage	Nil	Nil		
Concretions	Nil	Occasional nodular & diffuse CaCO ₃		
% Stone and size	Numerous fine & medium gravel	Abundant fine & medium gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	7,8/800	8,0/760		
Sample No.	X	X		

Comments: Abundant gravels and boulders on surface.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...14..... Parent material Colluvium..... Location/airphoto/map
 LandformAlluvial fan..... Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use ..Very sparse tuft grass..... Observer and date RRM..27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 15	15 - 110	110 - 250+	
Munsell colour	10 YR 4/6	10YR 5/4		
Colour description	Dark yellowish brown	Yellowish brown		
Texture	Sandy loam	Sandy clay loam		
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35		
Consistency	Hard	Slightly hard		
Structure	Platy	Moderate, fine to medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Moderate	Moderate		
Seepage	Nil	Nil		
Concretions	Nil	Abundant nodular & diffuse CaCO ₃		
% Stone and size	Occasional fine gravel	Abundant fine shale gravel		
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	7,4/800	7,5/130		
Sample No.				

Comments: Abundant surface cobbles and gravels.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .15..... Parent material .. Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use .. Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 50	50 - 250+		
Munsell colour	10 YR 4/4	2.5 Y 4/2		
Colour description	Dark yellowish brown	Dark greenish brown sandy loam tonguing into		
Texture	Sandy loam	loam tonguing into weathering shale		
Sand grade	Medium			
% Clay	15 - 35	15 - 35		
Consistency	Slightly hard			
Structure	Moderate, fine, sub-angular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Moderate			
Seepage	Nil			
Concretions	Frequent diffuse & nodular CaCO ₃	Frequent diffuse & nodular CaCO ₃		
% Stone and size	Occasional fine gravel			
Transition	Gradual (tonguing)			
pH/Resistance 16°C (ohm)	7,9/350	7,8/300		
Sample No.	X	X		

Comments: Abundant surface gravel and cobbles.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.16..... Parent material Alluvium Location/airphoto/map
 Landform River terrace Dundee Soil series/phase Dundee (gravelly)
 Vegetation/land use Sparse grass tufts and bush Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium	Nama shale	
Extent (cm-cm)	0 - 40	40 - 250	250+	
Munsell colour	7.5 YR 4/4	Pebbles and boulders		
Colour description	Brown	in a sandy matrix		
Texture	Sand			
Sand grade	Medium			
% Clay	0 - 6			
Consistency	Loose			
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Excessive			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine pebbles			
Transition	Abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 17 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse riverine scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	B-Stratified alluvium			
Extent (cm-cm)	0 - 200+			
Munsell colour	10 YR 4/3			
Colour description	Brown			
Texture	Loamy sand			
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Friable			
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional medium & fine gravel			
Transition	-			
pH/Resistance 16°C (ohm)	8,1/570			
Sample No.	X			

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 18 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Celueque
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM..27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 40	40 - 200+		
Munsell colour	10 YR 4/4	Greyish weathering		
Colour description	Dark yellowish brown	shale with tongues		
Texture	Sandy loam	of above horizon		
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Moderate, fine, sub-angular, blocky, tending platy			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	CaCO ₃ along tongues and in shale		
% Stone and size	Numerous fine gravel			
Transition	Gradual (tongueing)			
pH/Resistance 16°C (ohm)	8,0/680	7,4/140		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .19..... Parent material Colluvium..... Location/airphoto/map
 Landform Alluvial fan..... Soil form Oakleaf..... Soil series/phase Calueque
 Vegetation/land use Sparse tuft grass and scrub..... Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 35	35 - 250+		
Munsell colour	10 YR 4/3	Grey, yellowish brown and reddish brown weathering		
Colour description	Brown	shale with tongues of		
Texture	Sandy loam	above horizon		
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Weak to moderate, fine to medium, subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional nodular CaCO ₃	CaCO ₃ in tongues		
% Stone and size	Occasional fine gravel			
Transition	Fairly abrupt (tongueing)			
pH/Resistance 16°C (ohm)	8,0/1000	7,4/170		
Sample No.				

Comments: Occasional surface boulders.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 20 Parent material Colluvium Location/airphoto/map
 Alluvial fan Soil form Oakleaf Soil series/phase Calueque
 Vegetation/land use Very sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 40	40 - 200+		
Munsell colour	10 YR 3/3	Grey, reddish brown and		
Colour description	Dark brown	yellowish brown weathering		
Texture	Sandy loam	shale with tongues of		
Sand grade	Coarse	sandy clay loam		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard			
Structure	Weak, fine, subangular, blocky			
Mottles	Nil			
Roots	Abundant			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional nodular CaCO ₃	Abundant CaCO ₃		
% Stone and size	Frequent fine gravel			
Transition	Fairly abrupt (tongueing)			
pH/Resistance 16°C (ohm)	7,9/680	7,8/260		
Sample No.	X	X		

Comments: Occasional surface boulders

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 21..... Parent material Gully wash..... Location/airphoto/map

Landform Shallow gully..... Soil form Oakleaf..... Soil series/phase Calneque.....

Vegetation/land use Sparse grass..... Observer and date RRM. 29/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic	Weathering shale	
Extent (cm-cm)	0 - 40	40 - 120	120+	
Munsell colour	10 YR 3/6	Shale gravel with tongues of dark yellowish brown		
Colour description	Dark yellowish brown			
Texture	Sandy loam			
Sand grade	Coarse	sandy loam		
% Clay	15 - 35			
Consistency	Slightly hard			
Structure	Moderate, medium, sub- angular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine, medium & coarse gravel			
Transition	Tongueing			
pH/Resistance 16°C (ohm)	7, 8/220			
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 22 Parent material Colluvium Location/airphoto/map
 Lower slope Soil form Soil series/phase Okavango
 Landform Sparse scrub (Eroded area near broken watering tank) Observer and date TCP 28/1/87
 Vegetation/land use

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified Surface Wash	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 10	10 - 50	50 - 180+	
Munsell colour		10YR: 5/4		
Colour description		Yellowish brown	Grey weathering	
Texture		Sandy loam	shale with CaCO ₃	
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak fine subangular block tending coarse prismatic		
Mottles		Nil		
Roots		Few		
Permeability		Moderate		
Seepage		Nil		
Concretions		Frequent diffuse CaCO ₃		
% Stone and size		Frequent fine shale gravel		
Transition		Abrupt		
pH/Resistance 16°C (ohm)		8,4/1000		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 23 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use . Sparse scrub and grass tufts and occasional Acacia trees Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 160			
Munsell colour	Layers of loamy			
Colour description	and gravelly sand			
Texture				
Sand grade				
% Clay				
Consistency				
Structure				
Mottles				
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine, medium & coarse shale gravel			
Transition	0 - 50	50 - 160		
pH/Resistance 16°C (ohm)	9.0 / 1500	7.6 / 100		
Sample No.				

Comments: ... Significant surface microrelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 24..... Parent material Shale..... Location/airphoto/map

Landform ...Lower slope..... Soil form Mispah..... Soil series/phase Mispah.....

Vegetation/land use .Sparse grass tufts and scrub (Eroded area)..... Observer and date TCP 28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified Surface Wash	Orthic A	Weathering shale	
Extent (cm-cm)	0 - 10	10 - 40	40 - 120+	
Munsell colour		10YR 4/3		
Colour description		Brown		
Texture		Sandy loam		
Sand grade		Coarse		
% Clay		6 - 15		
Consistency		Friable to slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Abundant fine & medium shale gravel		
Transition	Abrupt	Abrupt		
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 25 Parent material Alluvium Location/airphoto/map
 Landform ... River terrace Soil form Dundee ° Soil series/phase Dundee (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 210+			
Munsell colour				
Colour description	Sandy loam and gravelly sand			
Texture				
Sand grade				
% Clay				
Consistency				
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine, medium & coarse shale gravel			
Transition				
pH/Resistance 16°C (ohm)	0 - 50 7, 5/32	150 - 210 7, 6/55		
Sample No.				

Comments: Moderate surface microrelief.

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 26 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub TCP 28/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified gravelly surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 160		
Munsell colour		10 YR 5/3		
Colour description		Brown		
Texture		Sandy clay loam		
Sand grade		Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak fine subangular blocky tending coarse prismatic		
Mottles		Nil		
Roots		Few		
Permeability		Rapid to moderate		
Seepage		Nil		
Concretions		Abundant diffuse CaCO ₃		
% Stone and size				
Transition	Abrupt			
pH/Resistance 16°C (ohm)		30 - 80 7,8/42		
Sample No.				

Comments: Moderate surface microrelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 27 Parent material Colluvium Location/airphoto/map (Stony phase)
 Landform Lower slope Soil form Oakleaf Soil series/phase Calueque
 Vegetation/land use Sparse scrub (Eroded area) Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 90	90 - 160+	
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown		
Texture	Sandy loam	Sandy loam	Fine medium and	
Sand grade	Coarse	Coarse	coarse shale in	
% Clay	6 - 15	6 - 15	matrix of dark yellowish	
Consistency	Slightly hard	Hard	brown sandy loam	
Structure	Weak fine subangular blocky tending platy	Weak fine to medium subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse CaCO ₃		
% Stone and size	Abundant fine and medium shale gravel	Abundant fine, medium & coarse shale gravel		
Transition	Fairly abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)	7,8/430	7,6/92		
Sample No.	X	X		

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 28 Parent material Alluvium Location/airphoto/map
 Terrace Soil form Dundee Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Stratified alluvium		
Extent (cm-cm)	0 - 20	20 - 160+		
Munsell colour	10 YR 4/3	Alternating gravelly		
Colour description	Brown	loamy sand and sand		
Texture	Loamy sand	layers		
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Friable			
Structure	Apedal tending platy			
Mottles	Nil	Nil		
Roots	Numerous	Numerous		
Permeability	Very rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Frequent fine and medium shale gravel	Abundant fine, medium & coarse shale gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,9/1900	100 - 160 8,6/1600		
Sample No.				

Comments: Substantial surface microrelief.

Neckartal Irrigation Scheme: Soil Profile Record Sheet

Profile No. 29 Parent material Shale/colluvium Location/airphoto/map
 Landform Middle slope Soil form Mispah Soil series/phase Mispah
 Vegetation/land use Very sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 10			
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Clay loam			
Sand grade	Fine			
% Clay	15 - 35			
Consistency	Slightly hard			
Structure	Moderate, medium, sub-angular blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Moderate			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Frequent shale gravel			
Transition	Abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Abundant surface gravel and boulders.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...30..... Parent material Colluvium..... Location/airphoto/map

LandformUpper pediment..... Soil formOakleaf..... Soil series/phase Calueque.....

Vegetation/land use ..Sparse scrub..... Observer and date RRM 27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 50	50 - 200+		
Munsell colour	10 YR 3/4	Olive grey		
Colour description	Dark yellowish brown	Weathering shale		
Texture	Loamy sand	with a few tongues		
Sand grade	Coarse	of loamy sand		
% Clay	6 - 15			
Consistency	Friable			
Structure	Weak, medium, sub-angular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional small nodular CaCO ₃	Abundant CaCO ₃		
% Stone and size	Occasional gravel			
Transition	Fairly abrupt (tongueing)			
pH/Resistance 16°C (ohm)	8,1/660			
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...31..... Parent material Colluvium..... Location/airphoto/map

Landform ...Pediment..... Soil formOakleaf..... Soil series/phase .Caluèque.....

Vegetation/land use Sparse scrub..... Observer and date RRM 27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2			
Extent (cm-cm)	0 - 60			
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Loamy sand			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Weak, fine, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional fine nodular CaCO ₃			
% Stone and size	Abundant fine & medium gravel			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,2/1000			
Sample No.				

Comments:

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Neckertal Irrigation Scheme : soil Profile record sheet

Profile No. 32 Parent material Shale/Collurium Location/airphoto/map
 Landform Middle slope Mispah Soil series/phase Mispah
 Vegetation/land use Sparse scrub RRM 27/1/87
 Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 20	20 +		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Sandy loam			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Moderate, fine, sub-angular blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine and medium gravel			
Transition	Abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Scattered gravels and boulders on surface.

Neckartal Irrigation Scheme : soil profile record sheet

Profile No. .33..... Parent material .Shale/Colluvium..... Location/airphoto/map
 Landform Middle slope..... Soil form Mispah..... Soil series/phase Muden
 Vegetation/land use Sparse scrub..... Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 20	20 +		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Sandy loam			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Moderate, fine to medium, subangular, blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional fine CaCO ₃			
% Stone and size	Abundant fine gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Scattered gravel and boulders on surface.....

Reconnaissance Investigation Summary - Soil Profile Record Sheet

Profile No. 34 Parent material Gully wash Location/airphoto/map
 Landform Channel bed Soil form Oakleaf Soil series/phase Calueque
 Vegetation/land use Sparse tuft grass and scrub Observer and date RPM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 50	50 - 250		
Munsell colour	10 YR 4/6	Grey, yellowish brown		
Colour description	Dark yellowish brown	and reddish brown		
Texture	Sandy loam	weathering shale with		
Sand grade	Coarse	tongues of sandy		
% Clay	6 - 15	clay loam		
Consistency	Slightly hard			
Structure	Weak, fine to medium, subangular blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	CaCO ₃ in shale		
% Stone and size	Abundant fine & medium gravel			
Transition	Tongueing			
pH/Resistance 16°C (ohm)	8, 1/620	7, 7/450		
Sample No.	X	X		

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 35..... Parent material Colluvium/shale..... Location/airphoto/map

LandformLower slope..... Soil form Oakleaf..... Soil series/phase Okavango

Vegetation/land use ...Sparse scrub..... Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 50	50 - 200		
Munsell colour	10 YR 4/4	Grey, yellowish brown		
Colour description	Dark yellowish brown	and reddish-brown		
Texture	Sand	weathering shale with		
Sand grade	Medium	tongues of clay loam		
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Slightly platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	Abundant CaCO ₃		
% Stone and size	Occasional fine & medium gravel			
Transition	Tonguing (deep)			
pH/Resistance 16°C (ohm)	8,2/1500	7,7/430		
Sample No.	X	X		

Comments: Scattered gravel and boulders on surface

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 36 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 60	60 - 200+	
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Sandy loam	Fine, medium and coarse gravel in a sandy loam matrix	
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard	Friable to slight hard		
Structure	Moderate, medium, sub-angular, blocky tending platy	Moderate, fine to medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Occasional nodular & diffuse CaCO ₃		
% Stone and size	Frequent fine and medium gravel	Abundant fine & medium gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	7,9/1100	8,1/700		
Sample No.	X	X	X	X

Comments: Substantial microrelief on surface

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .37..... Parent material Alluvium Location/airphoto/map

LandformRiver terrace..... Soil form Dundee Soil series/phase Dundee

Vegetation/land use ..Very sparse scrub..... Observer and date RRM 27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 40	40 - 250+		
Munsell colour	10 YR3/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Gravelly loamy sand	Fine, medium and coarse		
Sand grade	Coarse	gravel in a sandy		
% Clay	6 - 15	clay loam matrix (15 -35 day)		
Consistency	Friable			
Structure	Weak, medium subangular blocky, tending platy	Slightly cemented		
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil	Abundant diffuse & nodular CaCO ₃		
% Stone and size	Abundant fine, medium & coarse shale gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,3/700	8,1/620		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 38
 Landform Lower river terrace
 Vegetation/land use Sparse scrub & grass tussocks; occasional Acacia trees.

Parent material Alluvium
 Soil form Dundee
 Sparse scrub & grass tussocks; occasional Acacia trees.

Location/airphoto/map Dundee
 Soil series/phase Dundee
 Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvium		
Extent (cm-cm)	0 - 50	50 - 250+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Loamy sand			
Sand grade	Fine	Fine medium and coarse gravel in a loamy sand matrix		
% Clay	6 - 15			
Consistency	Friable			
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,8/1500	8,2/1000		
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 39 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse scrub and tussocks Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 30	30 - 250+		
Munsell colour	10 YR 4/4	10YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Loamy sand	Alternating fine, medium and coarse		
Sand grade	Medium			
% Clay	6 - 15	gravels in a loamy sand matrix		
Consistency	Slightly hard			
Structure	Weak, medium, subangular blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil	CaCO ₃ near base		
% Stone and size	Frequent fine and medium gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,4/1000	i,2/940		
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 40 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Calaque (shallow)
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	C-Lithocutanic		
Extent (cm-cm)	0 - 20	20 - 250		
Munsell colour	10 YR 4/4	Weathering grey shale		
Colour description	Dark yellowish brown	with tongues of sandy		
Texture	Sandy loam	loam		
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Weak, medium, subangular, blocky, tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	Abundant CaCO ₃		
% Stone and size	Frequent medium and fine gravel			
Transition	Tongueing			
pH/Resistance 16°C (ohm)	8,0/520	7,9/500		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 41 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 35	35 - 150	150+	
Munsell colour	10 YR 4/4	10 YR 5/6		
Colour description	Dark yellowish brown	Yellowish brown		
Texture	Sandy clay loam	Sandy clay loam	Fine, medium and coarse	
Sand grade	Coarse	Coarse	gravel in a sandy clay	
% Clay	15 - 35	15 - 35	loam matrix	
Consistency	Slightly hard	Hard		
Structure	Weak, fine, subangular, blocky, tending platy	Weak, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Moderate	Moderate		
Seepage	Nil	Nil		
Concretions	Nil	Numerous nodular CaCO ₃		
% Stone and size	Occasional fine gravel	Occasional fine & medium gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	8,0/780	8,2/650	8,2/700	
Sample No.	X	X	X	

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 42 Parent material .. Colluvium Location/airphoto/map
 Landform .. Middle slope Soil form Oakleaf Soil series/phase .. Limpopo
 Vegetation/land use .. Sparse tuft grass and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 60	60 - 250		
Munsell colour	10 YR 4/4	10 YR 4/6		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Loamy sand	Sandy clay loam		
Sand grade	Medium	Coarse		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard	Hard		
Structure	Weak, fine to medium subangular blocky	Moderate medium subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Moderate		
Seepage	Nil	Nil		
Concretions	Nil	Abundant fine nodular CaCO ₃		
% Stone and size	Occasional medium and fine gravel	Occasional medium and fine gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,3/1200	8,1/780		
Sample No.	X	X		

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 43 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace... Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Tuft grasses and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified wash	Orthic A	Neocutanic B2	Stratified alluvium
Extent (cm-cm)	0 - 30	30 - 40	40 - 140	140 - 220+
Munsell colour		10 YR 5/6	10 YR 5/6	
Colour description		Yellowish brown	Yellowish brown	
Texture		Sandy clay loam	Sandy clay loam	Fine and medium
Sand grade		Fine	Coarse	gravel in a sandy
% Clay		15 - 35	15 - 35	loam matrix
Consistency		Hard	Hard	
Structure		Moderate, medium, sub- angular blocky, tending platy	Moderate, medium, sub- angular, blocky	
Mottles		Nil	Nil	
Roots		Few	Nil	
Permeability		Moderate	Moderate - rapid	
Seepage		Nil	Nil	
Concretions		Nil	Numerous fine nodular CaCO ₃	Abundant coarse, medium and fine gravel
% Stone and size		Occasional fine gravel	Occasional fine gravel	
Transition		Fairly abrupt	Gradual	
pH/Resistance 16°C (ohm)		8,1/900	8,0/560	7,9/650
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 44 Parent material Alluvium Location/airphoto/map
 Landform Inner edge of river terrace Soil form Oakleaf Soil series/phase Limpopo (gravelly)
 Vegetation/land use Sparse scrub Observer and date RRM.27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 15	15 - 70		
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Gravelly sandy loam		
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35		
Consistency	Hard	Slightly hard/friable		
Structure	Weak, fine, subangular, blocky, tending platy	Apedal (gravelly)		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Numerous nodular & diffuse CaCO ₃		
% Stone and size	Occasional fine & medium gravel	Abundant coarse, medium and fine gravel		
Transition	Fairly abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 45 Parent material Gully wash Location/airphoto/map
 Landform Gully Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 40	40 - 220+	
Munsell colour		10 YR 4/4	10 YR 4/6	
Colour description		Dark yellowish brown	Dark yellowish brown	
Texture		Sandy clay loam	Sandy clay loam	
Sand grade		Coarse	Coarse	
% Clay		15 - 35	15 - 35	
Consistency		Hard	Hard	
Structure		Weak, fine to medium subangular, blocky	Apedal	
Mottles		Nil	Nil	
Roots		Few	Nil	
Permeability		Rapid	Moderate	
Seepage		Nil	Nil	
Concretions		Occasional nodular & diffuse CaCO ₃	Abundant fine nodular & diffuse CaCO ₃	
% Stone and size		Occasional fine gravel	Abundant fine & medium gravel	
Transition		Gradual	-	
pH/Resistance 16°C (ohm)		8,4/800	8,1/160	
Sample No.		X	X	

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 46 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Soil series/phase Jczini
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 70	70 - 220+	
Munsell colour		10 YR 4/4	Yellowish brown	
Colour description		Dark yellowish brown	Fine and medium	
Texture		Sandy loam	shale gravel in a	
Sand grade		Fine	clay loam matrix	
% Clay		15 - 35		
Consistency		Slightly hard		
Structure		Moderate fine to medium subangular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Frequent fine gravel		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		8,3/900	8,1/550	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 47 Parent material Alluvium Location/airphoto/map
 Landform .. Lower river terrace .. Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Very sparse tuft grass Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Gravelly gypcrete		
Extent (cm-cm)	0 - 200	200+		
Munsell colour				
Colour description	Yellowish brown			
Texture	Gravelly sandy			
Sand grade	Loam			
% Clay	6 - 15			
Consistency	Friable	Hard rock		
Structure				
Mottles				
Roots	Numerous			
Permeability	Rapid			
Seepage				
Concretions				
% Stone and size	Abundant coarse, medium & fine gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	7,9/300	7,8/100		
Sample No.				

Comments: .. Abundant gravel and cobbles on surface

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 48 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Occasional Acacia trees and tuft grasses Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 200			
Munsell colour				
Colour description	Yellowish brown			
Texture	Sand			
Sand grade	Medium and coarse			
% Clay	0 - 6			
Consistency	Friable			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Excessive			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Frequent fine & medium gravel			
Transition				
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Moderate surface microrelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 49 Parent material Alluvium Location/airphoto/map
 Landform ..River terrace..... Soil form Oakleaf Soil series/phase Jozini (gravelly).....
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 120	120 - 220+	
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown	Yellowish brown	
Texture	Sandy loam	Sandy loam	Fine, medium and coarse gravel in	
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35	matrix of sandy loam	
Consistency	Hard	Hard		
Structure	Platy	Moderate, medium, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Moderate - rapid	Moderate - rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil	Nil	
% Stone and size	Occasional fine gravel	Abundant fine and medium gravel		
Transition	Fairly abrupt	Gradual		
pH/Resistance 16°C (ohm)	8,2/650	8,3/900	7,4/320	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 50 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified Alluvium		
Extent (cm-cm)	0 - 40	40 - 200+		
Munsell colour	10YR 4/4			
Colour description	Dark yellowish brown	Yellowish brown		
Texture	Sandy loam	Fine, medium and coarse gravel in a		
Sand grade	Coarse			
% Clay	6 - 15	sandy loam matrix		
Consistency	Slightly hard			
Structure	Weak, medium, subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	Nil		
% Stone and size	Numerous fine & medium gravels			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,8/650	7,8/450		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 51 Parent material Colluvium Location/airphoto/map
 Landform ... Alluvial fan Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse tuft grasses and scrub Observer and date RRM 27/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 35	35 - 250+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown	Yellowish brown		
Texture	Sandy loam	Fine, medium and coarse		
Sand grade	Coarse	gravel in a sandy		
% Clay	6 - 15	loam matrix		
Consistency	Slightly hard			
Structure	Moderate medium sub-angular blocky tending platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil	Nil		
% Stone and size	Numerous fine & medium gravels			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,6/300	7,9/600		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .52..... Parent material Alluvium..... Location/airphoto/map

Landform .River terrace..... Soil formOakleaf..... Soil series/phase Limpopo.....

Vegetation/land use Sparse tuft grass and scrub..... Observer and date RRM..27/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified Alluvium	
Extent (cm-cm)	0 - 15	15 - 120	120 - 230+	
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Sandy loam	Coarse, medium and fine	
Sand grade	Fine	Medium	gravel in yellowish	
% Clay	6 - 15	15 - 35	brown loamy sand	
Consistency	Hard	Hard	matrix	
Structure	Platy	Weak, fine, subangular blocky, tending prismatic		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid - moderate	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil	Nil	
% Stone and size	Occasional fine & medium gravel	Occasional fine & medium gravel		
Transition	Fairly abrupt	Gradual		
pH/Resistance 16°C (ohm)	8,3/1600	8,0/600	8,1/1000	
Sample No.	X	X	X	

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 53 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Jozini
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP..28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 80	80 - 190+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Abundant fine medium	
Texture		Sandy loam	and coarse gravel in	
Sand grade		Medium	matrix of dark yellowish	
% Clay		15 - 35	brown loamy sand	
Consistency		Slightly hard		
Structure		Weak fine to medium subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Frequent fine and medium shale gravel		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8,2/500	8,1/900	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 54 Parent material Alluvium Location/airphoto/map
 Landform Lower terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified gravelly surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 50	50 - 200+	
Munsell colour		10 YR 4/4	Fine medium and coarse shale gravel	
Colour description		Dark yellowish brown	in matrix of dark yellowish brown	
Texture		Sandy loam		
Sand grade		Medium		
% Clay		6 - 15	loamy sand	
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine shale gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		8,3/720	8,0/680	
Sample No.				

Comments: Substantial surface microrelief.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.55 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Okavango
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP. 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 70	70 - 180+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Fine medium and	
Texture		Sandy loam	coarse shale gravel	
Sand grade		Medium	in matrix of dark	
% Clay		6 - 15	yellowish brown	
Consistency		Hard	loamy sand	
Structure		Moderate medium sub- angular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Occasional fine & medium shale gravel		
Transition		Gradual		
pH/Resistance 16°C (ohm)		7,9/600	7,8/520	
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 56 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Jozini
 Vegetation/land use Sparse grass tufts and scrub Observer and date ICP..28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 70	70 - 200+	
Munsell colour	10 YR 4/3	10 YR. 4/4	Fine medium and	
Colour description	Brown	Dark yellowish brown	coarse shale gravel	
Texture	Sandy loam	Sandy loam	in matrix of dark	
Sand grade	Fine	Medium	yellowish brown	
% Clay	6 - 15	15 - 35	loamy sand	
Consistency	Slightly hard	Hard		
Structure	Platy	Weak medium sub-angular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Occasional fine shale gravel	Occasional medium and fine shale gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	8,4/1000	8,1/460	7,8/420	
Sample No.	X	X		

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 57 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Jozini
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 100	100 - 200+	
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown	Fine, medium and coarse shale gravel	
Texture	Loamy sand	Sandy loam	in matrix of dark yellowish brown loamy sand	
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Friable	Hard		
Structure	Weak, fine subangular blocky, tending platy	Moderate medium sub-angular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Numerous fine gravel	Occasional fine & medium gravels		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)		8,0/700	7,8/190	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ..58..... Parent material .Alluvium..... Location/airphoto/map
 Landform .River terrace..... Soil formOakleaf..... Soil series/phase .Vaal river.....
 Vegetation/land use .Sparse grass tufts and scrub..... Observer and date .TCP 28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 80	80 - 200	
Munsell colour		10 YR 4/4	Fine medium and	
Colour description		Dark yellowish brown	coarse shale in	
Texture		Sandy loam	dark yellowish	
Sand grade		Fine	brown sandy loam matrix	
% Clay		6 - 15		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine shale gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,3/940	8,0/700	
Sample No.		X		

Comments: Severe surface microrelief

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.59..... Parent material Alluvium..... Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 210			
Munsell colour	Fine, medium and			
Colour description	coarse gravel in dark			
Texture	yellowish brown loamy			
Sand grade	sand matrix			
% Clay				
Consistency	Friable to slightly hard			
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size				
Transition				
pH/Resistance 16°C	0 - 50	150 - 210		
(ohm)	8,2/1000	8,1/780		
Sample No.				

Comments: Moderate surface microrelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 60 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 220	
Munsell colour		10 YR 4/3		
Colour description		Brown	Fine medium and coarse	
Texture		Sandy loam	shale gravel in dark	
Sand grade		Coarse	yellowish brown loamy	
% Clay		6 - 15	sand matrix	
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Abundant fine medium & coarse shale gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7,8/350	7,8/180	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 61 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Lithocutanic C	
Extent (cm-cm)	0 - 15	15 - 60	60 - 230	
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown	Greyish, reddish and yellowish brown weathering	
Texture	Sandy loam	Sandy clay loam	shale with abundant gypsum crystals and tongues of dark yellowish brown clay loam	
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Friable	Hard		
Structure	Moderate platy	Moderate medium sub-angular blocky, tending prismatic		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse CaCO ₃		
% Stone and size	Occasional fine shale gravel	Occasional fine shale gravel		
Transition	Fairly abrupt	Tongueing		
pH/Resistance 16°C (ohm)	8, 1/450	7, 5/55	7, 6/58	
Sample No.	X	X	X	

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 62 Parent material .. Colluvium Location/airphoto/map
 Landform .. Lower slope Soil form Oakleaf Soil series/phase Jozini
 Vegetation/land use . Sparse grass tufts and scrub Observer and date TCR.28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 210	
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown	Fine medium and coarse gravel in dark yellowish	
Texture	Sandy loam	Sandy loam		
Sand grade	Medium	Medium	brown loamy sand matrix	
% Clay	6 - 15	15 - 35		
Consistency	Friable	Hard		
Structure	Weak platy	Weak to moderate fine subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Occasional fine gravel	Occasional fine and medium gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,2/1300	8,3/1000	7,9/240	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .63 Parent material .Alluvium..... Location/airphoto/map
 Landform .River terrace Soil form .Dundee Soil series/phase Dundee
 Vegetation/land use .Sparse scrub Observer and date .TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type				
Extent (cm-cm)	0 - 190+			
Munsell colour	Alternating layers of			
Colour description	fine and medium shale			
Texture	gravels in matrix of			
Sand grade	dark yellowish brown			
% Clay	sand and silty clay			
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	0 - 40 8,6/1600	40 - 60 8,2/780		
Sample No.	Sandy layer	Clayey layer		
	X	X		

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme: Soil Profile Record Sheet

Profile No. 64 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Occasional scrub and sparse grass tufts Observer and date TCP..28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 190			
Munsell colour	Alternating layers			
Colour description	of loamy sand and			
Texture	gravelly sand			
Sand grade				
% Clay				
Consistency				
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine medium and coarse gravel			
Transition				
pH/Resistance 16°C (ohm)	0 - 50 8,1/1400	150 - 190 8,3/1200		
Sample No.				

Comments: Significant surface microrelief

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 65 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Okavango (saline)
 Vegetation/land use Sparse grass tyfts and scrub Observer and date TCP..28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 60	60 - 230+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Sandy loam	Fine medium and coarse		
Sand grade	Medium	shale gravel in dark		
% Clay	6 - 15	yellowish brown loamy		
Consistency	Slightly hard	sand matrix with frequent		
Structure	Weak fine subangular blocky	CaCO ₃		
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Abundant diffuse CaCO ₃			
% Stone and size	Numerous fine and medium shale gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,6/82	7,8/55		
Sample No.	X			

Comments: ..Some fine and medium surface gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 66 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Frequent grass tufts and sparse scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 170+		
Munsell colour	10 YR 4/3	10 YR 4/4		
Colour description	Brown	Dark yellowish brown		
Texture	Sandy loam	Sandy clay loam		
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Friable	Hard		
Structure	Weak fine subangular blocky, tending platy	Moderate medium sub-angular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse CaCO ₃		
% Stone and size	Abundant fine gravel	Occasional fine & medium shale gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,1/900	7,7/370		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 67 Parent material Colluvium Location/airphoto/map
 Landform .Lower slope..... Soil formOakleaf..... Soil series/phase 0kayango.(saline).....
 Vegetation/land use ..Bare area within sparse scrub and grass tufts..... Observer and date TCP...28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 60	60 - 180+	
Munsell colour		10 YR 4/3		
Colour description		Brown	Fine and medium gravel	
Texture		Sandy loam	in brown loamy sand	
Sand grade		Medium	matrix	
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Diffuse CaCO ₃		
% Stone and size		Abundant fine shale gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7, 3/33	7, 6/40	
Sample No.				

Comments:
 Surface fine shale gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 68 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Orthic A	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 40	40 - 180+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown		
Texture		Loamy sand	Fine medium and coarse	
Sand grade		Medium	shale gravel in dark	
% Clay		6 - 15	yellowish brown loamy	
Consistency		Friable to slightly hard	sand matrix with	
Structure		Weak fine subangular blocky	occasional CaCO ₃ nodules	
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine shale gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7,8/280	8,0/780	
Sample No.				

Comments: Significant surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 69 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 90	90 - 175+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Fine medium and coarse	
Texture		Loamy sand	shale gravel in dark	
Sand grade		Fine	yellowish brown sandy	
% Clay		6 - 15	Loam matrix	
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine shale gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8, 3/920	7, 9/400	
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 70 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil Form Oakleaf Soil series/phase Venda (stony)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 10	10 - 60	60+	
Munsell colour	10 YR 4/3	10 YR 4/3		
Colour description	Brown	Brown	Weathering shale	
Texture	Loamy sand	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	6 - 15		
Consistency	Friable	Friable		
Structure	Weak platy	Weak fine subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Numerous		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Abundant fine shale gravel	Abundant fine medium and coarse shale gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,2/1000	8,2/420		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 71 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 210+			
Munsell colour				
Colour description	Sandy gravel			
Texture	and sand			
Sand grade	layers			
% Clay				
Consistency				
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine medium and coarse gravel			
Transition				
pH/Resistance 16°C (ohm)	0 - 50 8,1/1000	150 - 210 8,7/930		
Sample No.				

Comments: Significant surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 72 Parent material Shale Location/airphoto/map
 Landform Middle slope Soil form Mispah Soil series/phase Mispah
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Weathering shale		
Extent (cm-cm)	0 - 20	20 - 150+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown			
Texture	Sandy loam			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Weak fine to medium subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine & medium shale gravel			
Transition	Fairly abrupt with tongues			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 73 Parent material Shale Location/airphoto/map
 Landform . Middle slope Soil form Mispah Soil series/phase . Mispah
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 15 10 YR 4/4	15 - 170+		
Munsell colour	Dark yellowish brown			
Texture	Sandy loam			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Weak fine subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine and medium shale gravel			
Transition	Fairly abrupt tonguing			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 74..... Parent material Shale..... Location/airphoto/map
 Landform Middle slope..... Soil form Oakleaf..... Soil series/phase Venda.....
 Vegetation/land use Sparse grass tufts and scrub..... Observer and date TCP 28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 20	20 - 60	60 - 170+	
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	6 - 15		
Consistency	Friable	Friable		
Structure	Weak fine subangular blocky, tending platy	Weak fine subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Abundant fine & medium shale gravel	Abundant fine & medium shale gravel		
Transition	Gradual	Fairly abrupt tonguing		
pH/Resistance 16°C (ohm)	8,0/650	7,8/370		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 78 Parent material Colluvium Location/airphoto/map
 Landform Depression in middle slope Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 50	50 - 175+	
Munsell colour		10 YR 4/3		
Colour description		Brown	Gravelly loamy sand	
Texture		Sandy loam		
Sand grade		Coarse		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil	Nil	
Roots		Numerous	Numerous	
Permeability		Rapid	Very rapid	
Seepage		Nil	Nil	
Concretions		Nil	Nil	
% Stone and size		Abundant fine & medium shale gravel	Abundant fine & medium shale gravel	
Transition		Gradual		
pH/Resistance 16°C (ohm)		7,9/940	8,0/920	
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 79 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 190+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Fine, medium and coarse	
Texture		Sandy loam	shale gravel in dark	
Sand grade		Coarse	yellowish brown sandy	
% Clay		6 - 15	loam matrix	
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Abundant fine & medium shale gravel		
Transition	Abrupt	Gradual to fairly abrupt		
pH/Resistance 16°C (ohm)		7,8/1000	7,9/620	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ..80..... Parent material ...Colluvium..... Location/airphoto/map

Landform ..Lower slope..... Soil formOakleaf..... Soil series/phase ..Venda.....

Vegetation/land use ..Grass tufts and occasional scrub..... Observer and date ..TCP 28/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 15	15 - 120	120 - 180+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown		
Texture		Sandy loam		
Sand grade		Coarse		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Abundant fine & medium shale gravel		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8, 1/900	7, 9/850 (60 - 120)	
Sample No.		X		

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 81 Parent material Colluvium and shale Location/airphoto/map
 Landform Middle slope Soil form Glenrosa Soil series/phase Lomondo
 Vegetation/land use Grass tufts and sparse scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Lithocutanic B	C	
Extent (cm-cm)	0 - 15 10 YR 4/3	15 - 70	Weathering shale	
Munsell colour	Brown	Abundant fine medium and coarse shale		
Colour description	Sandy loam	gravel with tongues of sandy loam, frequent		
Texture	Coarse	CaCO ₃ nodules		
Sand grade	6 - 15			
% Clay	Friable			
Consistency	Weak medium subangular blocky tending platy			
Structure	Nil			
Mottles	Numerous			
Roots	Rapid			
Permeability	Nil			
Seepage	Occasional diffuse CaCO ₃			
Concretions	Abundant fine & medium shale gravel			
% Stone and size	Tongueing	Tongueing		
Transition				
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Abundant surface gravel and boulders

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 82 Parent material Colluvium/shale Location/airphoto/map
 Landform Middle slope Soil form Mispah Soil series/phase Mispah
 Vegetation/land use Grass tufts and sparse scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Weathering shale		
Extent (cm-cm)	0 - 30	30 - 180+		
Munsell colour	10 YR 4/3			
Colour description	Brown			
Texture	Sandy loam			
Sand grade	Coarse			
% Clay	6 - 15			
Consistency	Friable to slightly hard			
Structure	Weak fine subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine & medium shale gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Abundant surface gravel and boulders

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 83 Parent material Colluvium Location/airphoto/map
 Landform Middle slope Soil form Oakleaf Soil series/phase Calueque
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Lithocutanic C		
Extent (cm-cm)	0 - 60	60 - 280+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown	Tongueing dark yellowish		
Texture	Sandy loam	brown sandy loam into		
Sand grade	Coarse	weathering shale		
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Weak fine subangular blocky			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine shale gravel			
Transition	Fairly abrupt, tongueing			
pH/Resistance 16°C (ohm)	7, 8/920	7, 8/780		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 84 Parent material Alluvium Location/airphoto/map
 Landform Lower slope Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub (Top end of airstrip) Observer and date TCP..28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Weathering shale		
Extent (cm-cm)	0 - 60	60 - 180		
Munsell colour				
Colour description	Abundant fine medium and coarse shale gravel			
Texture	in matrix of dark yellowish brown			
Sand grade	sandy loam			
% Clay				
Consistency				
Structure				
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Abundant fine medium & coarse gravel			
Transition	Abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Local outwash area

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 85 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Lithocutanic C		
Extent (cm-cm)	0 - 40	40 - 170+		
Munsell colour	10 YR 4/3	Weathering shale		
Colour description	Brown	with brown sandy clay		
Texture	Sandy clay loam	loam tongues		
Sand grade	Coarse			
% Clay	15 - 35			
Consistency	Hard			
Structure	Weak fine subangular blocky tending prismatic			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Occasional diffuse CaCO ₃			
% Stone and size	Occasional fine shale gravel			
Transition	Tongueing			
pH/Resistance 16°C (ohm)	7,2/55	7,7/40		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 86 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass tufts and scrub Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 175+		
Munsell colour	10 YR 4/4	10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	Sandy loam	Sandy clay loam		
Sand grade	Medium	Medium		
% Clay	6 - 15	15 - 35		
Consistency	Slightly hard	Hard		
Structure	Moderate platy	Moderate medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Moderate		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse CaCO ₃ and gypsum crystals		
% Stone and size	Occasional fine gravel	Abundant fine & medium shale gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,0/110	7,6/35		
Sample No.				

Comments: Frequent surface gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 87. Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Sparse grass tufts and scrub with occasional low trees Observer and date TCP 28/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified colluvium	
Extent (cm-cm)	0 - 10	10 - 50	50 - 180+	
Munsell colour	10 YR 4/4	10 YR 4/3		
Colour description	Dark yellowish brown	Brown	Fine medium and coarse	
Texture	Loamy sand	Loamy sand	shale gravel in a	
Sand grade	Medium	Coarse	brown loamy sand matrix	
% Clay	6 - 15	6 - 15		
Consistency	Friable	Slightly hard		
Structure	Weak fine subangular blocky tending platy	Weak fine to medium subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Numerous		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Occasional fine shale gravel	Abundant fine & medium shale gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	8,1/1000	8,4/230	8,2/380	
Sample No.				

Comments:

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Profile No. 88
 Landform River terrace
 Vegetation/land use Sparse tuft grass and scrub

Parent material Alluvium
 Soil form Oakleaf

Location/airphoto/map
 Soil series/phase Limpopo (saline)
 Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 150	150 - 180+	
Munsell colour		7.5 YR 5/4		
Colour description		Brown	Fine, medium and coarse gravel in a sandy matrix	
Texture		Sandy loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard (cemented)		
Structure		Weak, fine to medium, subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Moderate		
Seepage		Nil		
Concretions		Abundant diffuse CaCO ₃		
% Stone and size		Occasional fine & medium gravel		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		7.9/70		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 89 Parent material Gully wash Location/airphoto/map
 Landform Lower slope/gully Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Orthic A	Neocutanic B2	Stratified alluvium
Extent (cm-cm)	0 - 10	10 - 20	20 - 140	140 - 200+
Munsell colour		5 Y 4/3	10 YR 4/4	
Colour description		Olive	Dark yellowish brown	Fine, medium and coarse gravel in a sandy matrix
Texture		Sandy loam	Sandy loam	
Sand grade		Fine	Medium	
% Clay		15 - 35	15 - 35	
Consistency		Hard (cemented)	Hard	
Structure		Coarse prismatic	Weak to moderate medium, subangular, blocky	
Mottles		Nil	Nil	
Roots		Nil	Nil	
Permeability		Moderate	Moderate	
Seepage		Nil	Nil	
Concretions		Abundant diffuse CaCO ₃	Abundant diffuse & nodular CaCO ₃	
% Stone and size		Nil	Nil	
Transition		Abrupt	Abrupt	
pH/Resistance 16°C (ohm)		8, 1/32	8, 4/62	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 90 Parent material Gully wash Location/airphoto/map
 Landform Shallow gully Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 40	40 - 130	130 - 260+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Brown sand with	
Texture		Sandy loam	occasional fine	
Sand grade		Medium	gravel lenses	
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak, medium, subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant diffuse CaCO ₃		
% Stone and size		Occasional fine gravel		
Transition		Fairly abrupt		
pH/Resistance 16°C (ohm)		8,3/95		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 91 Parent material Colluvium Location/airphoto/map
 Landform Lower slope/Gully Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Sparse grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 230+		
Munsell colour		5 Y 4/3		
Colour description		Olive		
Texture		Sandy clay loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure	Incipient prismatic structure	Moderate, fine, subangular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Moderate to slow		
Seepage		Nil		
Concretions		Frequent diffuse & nodular CaCO ₃		
% Stone and size		Occasional fine, medium & coarse gravel		
Transition				
pH/Resistance 16°C (ohm)	7,3/54	7,8/35		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 92 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Weathering shale	
Extent (cm-cm)	0 - 30	30 - 110	110 - 240+	
Munsell colour		2.5 Y 4/2		
Colour description		Dark greyish brown		
Texture		Sandy clay loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate, fine, sub-angular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Moderate		
Seepage		Nil		
Concretions		Numerous fine nodular CaCO ₃		
% Stone and size		Abundant fine gravel		
Transition		Pongueing		
pH/Resistance 16°C (ohm)		7,8/400		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

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Profile No. 93 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use Very sparse tuft grass Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 90	90 - 230+	
Munsell colour	2.5 Y 4/2	7.5 YR 4/4		
Colour description	Dark greyish brown	Brown	Fine, medium and	
Texture	Sandy loam	Sandy loam	coarse gravel and	
Sand grade	Medium	Medium	boulders in a brown	
% Clay	15 - 35	15 - 35	sand matrix	
Consistency	Hard	Hard (cemented)		
Structure	Platy, tending coarse prismatic	Weak, fine subangular blocky, tending coarse prismatic		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Frequent diffuse CaCO ₃		
% Stone and size	Frequent fine gravel	Occasional fine gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	7,7/82	7,8/80		
Sample No.				

Comments: Fine gravel covering surface.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .94..... Parent material Alluvium Location/airphoto/map
 Landform .. River terrace..... Soil form Oakleaf Soil series/phase Limpopo (saline)
 Vegetation/land use .. Very sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 140	140 - 210+	
Munsell colour	10 YR 4/6	7.5 YR 4/4		
Colour description	Dark yellowish brown	Brown	Fine, medium and coarse gravel and boulders in brown sand matrix	
Texture	Sandy loam	Sandy loam		
Sand grade	Fine	Fine		
% Clay	15 - 35	15 - 35		
Consistency	Hard	Hard (cemented)		
Structure	Platy tending coarse prismatic	Weak, fine, subangular, blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Occasional diffuse CaCO ₃	Frequent diffuse CaCO ₃		
% Stone and size	Occasional coarse gravel	Occasional coarse gravel		
Transition	Gradual	Abrupt		
pH/Resistance 16°C (ohm)	7,7/25	8,4/37		
Sample No.	X	X		

Comments: Scattered gravel and cobbles on surface

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 95 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Coarse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 220			
Munsell colour	7.5 YR 4/4			
Colour description	Brown			
Texture	Loamy sand			
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Friable			
Structure	Bedded			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Lens of gravel 160-170			
Transition				
pH/Resistance 16°C (ohm)	0 - 30 : 9,2/1800			
Sample No.				

Comments: Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 96 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 90	90 - 230+		
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown	Fine, medium and		
Texture	Loamy sand	coarse gravel and		
Sand grade	Fine	occasional pebbles		
% Clay	6 - 15	in a brown sand		
Consistency	Friable - slightly hard	matrix		
Structure	Weak, fine to medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/2300			
Sample No.				

Comments: Substantial surface microrelief.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 97 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Jozini
 Vegetation/land use Sparse scrub Observer and date RBM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 35	35 - 130	130 - 210+	
Munsell colour		10 YR 4/3		
Colour description		Brown	Coarse gravel,	
Texture		Sandy loam	pebbles and	
Sand grade		Medium	boulders in a	
% Clay		15 - 35	brown sand matrix	
Consistency		Hard		
Structure		Weak, fine, subangular, blocky		
Mottles		Nil		
Roots		Few		
Permeability		Very rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition		Abrupt		
pH/Resistance 16°C (ohm)		7,6/100		
Sample No.				

Comments: Moderate surface microrelief and surface gravel layer.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 98 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace... Soil form Dundee Soil series/phase Dundee.
 Vegetation/land use Sparse tuft grass and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 240			
Munsell colour				
Colour description	Brown loamy sand			
Texture	with layers of fine, medium and coarse			
Sand grade				
% Clay	gravel			
Consistency				
Structure				
Mottles				
Roots				
Permeability				
Seepage				
Concretions	Calcic layers below 50cm			
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	0 - 40 9,4/1000	150 - 180 8,0/120		
Sample No.				

Comments:
 Substantial surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 99 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Pollock
 Vegetation/land use Sparse Acacia trees and scrub Observer and date RRM 29/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 50	50 - 280		
Munsell colour	5 YR 4/6			
Colour description	Yellowish red	Coarse, medium and		
Texture	Sandy loam	fine gravel in a		
Sand grade	Coarse	matrix of yellowish		
% Clay	6 - 15	red sandy loam		
Consistency	Friable to slightly hard			
Structure	Weak, medium, subangular, blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Frequent fine and medium gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,3/2300	8,3/1200		
Sample No.				

Comments: Scattered gravel and cobbles on surface.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 100 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 180+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy	Brown	Interbedded loamy and	
Texture	sand	Sandy loam	gravelly sand layers	
Sand grade		Fine	with fine medium and	
% Clay		6 - 15	coarse gravel pebbles	
Consistency		Friable	and boulders	
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8,5/1400		
Sample No.				

Comments: Significant surface microrelief.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 101 Parent material Alluvium Location/airphoto/map
 Landform Lower river terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 150+			
Munsell colour	10 YR 4/3			
Colour description	Brown			
Texture	Sand			
Sand grade	Fine			
% Clay	0 - 6			
Consistency	Friable, slightly cemented			
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine medium & coarse gravel in lenses			
Transition	Boulders at bottom.			
pH/Resistance 16°C (ohm)	8,7/1300			
Sample No.	X			

Comments: Dune field. Very substantial surface macrorelief.

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 102 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Venda
 Vegetation/land use Very sparse grass tufts and scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified colluvium	
Extent (cm-cm)	0 - 20	20 - 140	140 - 220+	
Munsell colour		10 YR 4/4		
Colour description	Dark yellowish brown	Dark yellowish brown		
Texture	gravelly sandy loam	Sandy loam	Fine medium and coarse	
Sand grade		Coarse	gravel in brown sand	
% Clay		6 - 15	matrix	
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Abundant fine, medium & coarse gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7,9/580	7,8/500	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 103 Parent material . Colluvium Location/airphoto/map
 Landform ... Lower slope Soil form Oakleaf Soil series/phase . Limpoppo.(saline)
 Vegetation/land use Sparse scrub and grass tufts Observer and date . TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 70	70 - 210	
Munsell colour	2.5 YR 4/2	10 YR 5/4		
Colour description	Dark greyish brown	Yellowish brown	Fine medium and	
Texture	Sandy loam	Sandy loam	coarse gravel in	
Sand grade	Coarse	Coarse	brown sand matrix	
% Clay	6 - 15	15 - 35		
Consistency	Hard to cemented	Hard		
Structure	Moderate platy tending coarse prismatic	Moderate medium sub-angular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid to moderate		
Seepage	Nil	Nil		
Concretions	Nil	Numerous fine nodular CaCO ₃		
% Stone and size	Occasional fine gravel	Abundant fine, medium and coarse gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	7,3/18	8,0/100		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 104 Parent material Alluvium Location/airphoto/map Dundee
 Landform Lower river terrace Soil form Dundee Soil series/phase TCP 30/1/87
 Vegetation/land use Occasional scrub and grass tufts Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified Alluvium			
Extent (cm-cm)	0 - 170+			
Munsell colour	10 YR 5/4			
Colour description	Yellowish brown			
Texture	Sand			
Sand grade	Fine			
% Clay	0 - 6			
Consistency	Friable			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Occasional fine nodular CaCO ₃ lenses of fine gravel & pebbles, gravel & boulders at base			
% Stone and size				
Transition	8,6/1200			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Dune field - Substantial surface macrorelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.105..... Parent material Alluvium..... Location/airphoto/map Calueque (saline).....
 Landform ..River terrace..... Soil form Oakleaf Soil series/phase TCP 30/1/87.....
 Vegetation/land use Sparse grass tufts and scrub..... Observer and date

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 80	80 - 220+	
Munsell colour	10 YR 5/3	7.5 YR 4/4		
Colour description	Brown	Brown	Fine medium coarse gravel	
Texture	Sandy loam	Loamy sand	and pebbles in matrix	
Sand grade	Coarse	Coarse	of brown loamy sand	
% Clay	15 - 35	6 - 15		
Consistency	Hard cemented	Slightly hard to hard		
Structure	Platy tending coarse prismatic	Weak medium subangular blocky		
Mottles	Nil	Nil		
Roots	Nil	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Occasional fine medium and coarse gravel	Abundant fine & medium gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,8/65	8,2/55	8,3/76	
Sample No.				

Comments: Bare gravel area on edge of dunefield

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 106 Parent material Alluvium Location/airphoto/map
 Landform ..River.terrace Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse grass tufts and scrub with very occasional Observer and date TCP 30/1/87
 Acacia trees (dead)

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 90	90 - 240+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown sand and fine gravel	Brown	Fine medium and coarse gravel, pebbles and boulders in matrix of brown sand	
Texture		Sandy loam		
Sand grade		Fine		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine gravel		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8, 3/1000		
Sample No.		X		

Comments: Dune field - severe surface macrorelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 107 Parent material Colluvium Location/airphoto/map
 Landform ..lower slope..... Soil form Oakleaf Soil series/phase Okavango
 Vegetation/land use .. Sparse grass tufts and scrub - bare ground Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified colluvium	
Extent (cm-cm)	0 - 20	20 - 120	120 - 190+	
Munsell colour		10 YR 4/4		
Colour description		Dark yellowish brown	Fine medium and coarse gravel in matrix brown loamy sand	
Texture	Fine and medium gravel in matrix of brown loamy sand	Sandy loam		
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional fine nodular CaCO ₃		
% Stone and size		Occasional fine gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8, 1/750		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ... 108 Parent material Alluvium Location/airphoto/map
 Landform ... Lower terrace Soil form Dundee Soil series/phase Dundee (saline)
 Vegetation/land use ... Sparse scrub and grass tufts and occasional Observer and date ... TCP 30/1/87
 Acacia trees (dead)

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified Alluvium	Stratified Alluvial Gravel		
Extent (cm-cm)	0 - 110	110 - 170+		
Munsell colour	7.5 YR 5/4			
Colour description	Brown	Fine medium coarse gravel		
Texture	Loamy sand	pebbles, boulders in		
Sand grade	Fine	matrix of calcified		
% Clay	6 - 15	cemented brown sandy		
Consistency	Friable to slight hard	loam		
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Frequent diffuse CaCO ₃			
% Stone and size	Nil			
Transition	Gradual			
pH/Resistance 16°C (ohm)	7,6/60	7,6/100		
Sample No.				

Comments: Dune field - Substantial surface macrorelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 109 Parent material Colluvium Location/airphoto/map
 Landform .. Lower slope Soil form Oakleaf Soil series/phase Limpopo (Gypsic., saline) ..
 Vegetation/land use .. Bare ground Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B ₂	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 100	100 - 170	
Munsell colour	5 YR 4/6	7.5 YR 5/6		
Colour description	Yellowish red	Strong brown	Brown sand and fine	
Texture	Sandy loam	Sandy clay loam	gravel cemented with	
Sand grade	Medium	Medium	gypsum	
% Clay	6 - 15	15 - 35		
Consistency	Friable	Hard to cemented		
Structure	Weak fine subangular blocky	Moderate medium sub-angular blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Abundant fine nodular & diffuse CaCO ₃	Abundant diffuse & nodular CaCO ₃ & gypsum crystals		
% Stone and size	Nil	Occasional fine & medium gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	7,9/13	7,2/6		
Sample No.				

Comments: Surface fine and medium gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .110..... Parent material ..Alluvium..... Location/airphoto/map
 Landform ..River terrace..... Soil form Oakleaf..... Soil series/phase .Limpopo.....
 Vegetation/land use ..Sparse scrub and herbs..... Observer and date ..TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 190+	
Munsell colour		10 YR 4/4		
Colour description	Brown sand and fine gravel	Brown		
Texture		Loam	Fine medium and coarse gravels and pebbles in	
Sand grade		Medium	brown sand matrix	
% Clay		15 - 35		
Consistency		Slightly hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant diffuse CaCO ₃		
% Stone and size		Nil		
Transition	Abrupt	Abrupt		
pH/Resistance 16°C (ohm)		9,2/2100	8,5/600	
Sample No.				

Comments: ..Substantial surface microrelief.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...111..... Parent material Colluvium..... Location/airphoto/map
 Landform ..Lower slope..gully.. Soil formOakleaf..... Soil series/phase Limpopo.(saline).....
 Vegetation/land use ..Sparse scrub..... Observer and date .TCP..30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 80	80 - 160+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown sand and fine gravel	Brown	Fine medium and coarse gravel in brown sandy loam matrix with nodular CaCO ₃	
Texture		Loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Occasional fine gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,1/53		
Sample No.				

Comments: ..Moderate surface microrelief.....

weckarlar Irrigation Scheme : Soil Profile Record Sheet

Profile No. 112 Parent material Colluvium Location/airphoto/map
 Landform Lower slope - gully... Soil form Oakleaf Soil series/phase Okavango
 Vegetation/land use Sparse scrub grass tufts and occasional small trees Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 70	70 - 170+		
Munsell colour		7.5 YR 4/4		
Colour description		Brown		
Texture	Brown sand and fine gravel	Sandy loam		
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Frequent fine and medium gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,3/1000		
Sample No.				

Comments: Surface fine gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 113 Parent material Alluvium Location/airphoto/map
 Landform ..River terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use ..Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium	Stratified alluvial gravel	
Extent (cm-cm)	0 - 60	60 - 160	160 - 210+	
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Brown loamy	Fine medium and coarse	
Texture	Sandy loam	sand	gravel, pebbles and	
Sand grade	Medium		boulders in brown	
% Clay	6 - 15		sand matrix	
Consistency	Friable			
Structure	Weak medium subangular blocky	Apedal		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Nil	Nil		
Transition	Fairly abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,3/1200	8,1/300		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...114..... Parent material Alluvium..... Location/airphoto/map

Landform ..River terrace..... Soil form ..Oakleaf..... Soil series/phase ..Levubu.....

Vegetation/land use ..Sparse scrub and grass tufts..... Observer and date ..TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 70	70 - 190+	
Munsell colour	7.5 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown	Fine medium and coarse	
Texture	Sandy loam	Sandy loam	gravel and pebbles and	
Sand grade	Medium	Medium	boulders in brown sand	
% Clay	6 - 15	6 - 15	matrix	
Consistency	Friable	Friable		
Structure	Platy	Weak fine subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Numerous		
Permeability	Very rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Occasional fine gravel	Abundant fine & medium gravel lenses		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,6/2300	7,6/1400	8,4/1600	
Sample No.				

Comments:
 Substantial surface microrelief and gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 115 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 140	140 - 210+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine medium and coarse		
Texture	Loamy sand	gravel, pebbles and		
Sand grade	Coarse	boulders in brown		
% Clay	6 - 15	sand matrix		
Consistency	Friable			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Frequent lenses of fine and medium gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,6/2000			
Sample No.				

Comments: Moderate surface microrelief

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Profile No. 116 Parent material Alluvium Location/airphoto/map
 Landform River terrace - edge of playa. Soil form Oakleaf Soil series/phase Allanridge
 Vegetation/land use Sparse scrub and herbs Observer and date TQP.. 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 150	150 - 200+	
Munsell colour	7.5 YR 5/4	7.5 YR 4/4		
Colour description	Brown	Brown	Fine medium and coarse	
Texture	Sandy loam	Sandy loam	gravel, pebbles and boulders in brown	
Sand grade	Fine	Fine		
% Clay	6 - 15	6 - 15	sand matrix	
Consistency	Slightly hard	Slightly hard		
Structure	Platy tending prismatic	Weak medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Occasional fine nodular CaCO ₃		
% Stone and size	Nil	Nil		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	8,2/300	7,9/330		
Sample No.	X	X		

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 117 Parent material . Colluvium Location/airphoto/map
 Landform . Lower slope - gully Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 80	80 - 180+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand	Brown	Fine and medium gravel	
Texture		Sandy loam	in brown sandy loam	
Sand grade		Medium	matrix	
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Scattered nodular and diffuse CaCO ₃		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,0/85		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 118 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Vaalriver
 Vegetation/land use Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2	Stratified Alluvium	
Extent (cm-cm)	0 - 40	40 - 140	140 - 160+	
Munsell colour	7.5 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown	Fine medium and coarse	
Texture	Sandy loam	Sandy loam	gravel in matrix of	
Sand grade	Medium	Fine	brown sandy loam	
% Clay	6 - 15	6 - 15		
Consistency	Slightly hard	Slightly hard		
Structure	Weak medium subangular blocky	Weak medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Nil	Frequent fine gravel		
Transition	Gradual	Fairly abrupt		
pH/Resistance 16°C (ohm)	8,3/2200	8,1/1800		
Sample No.	X	X		

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ... 119 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvial grave	
Extent (cm-cm)	0 - 15	15 - 120	120 - 200+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand	Brown	Fine medium and coarse gravel, pebbles and boulders in brown sand matrix	
Texture		Sandy loam		
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt	Fairly abrupt		
PH/Resistance 16°C (ohm)		7,9/450		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 120 Parent material Alluvium Location/airphoto/map
 Landform ..River terrace Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse scrub and grass tufts, with occasional small trees Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 60	60 - 190+		
Munsell colour		7.5 YR 5/4		
Colour description	Brown silt	Brown		
Texture		Sandy clay loam		
Sand grade		Fine		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Nil		
Permeability		Rapid		
Seepage		Nil		
Concretions		Scattered diffuse CaCO ₃		
% Stone and size		Nil		
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,1/950	7,9/460		
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No.121.....⁶ Parent material Colluvium Location/airphoto/map
 Landform .Lower slope..... Soil form Oakleaf Soil series/phase Letaba (stony and gypsic).
 Vegetation/land use .. Sparse grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified colluvium	
Extent (cm-cm)	0 - 10	10 - 60	60 - 190+	
Munsell colour		5 YR 4/6		
Colour description	Brown loamy sand	Yellowish red		
Texture	and fine gravel with	Sandy loam	Fine medium and coarse	
Sand grade	abundant nodular CaCO ₃	Coarse	gravel in brown sand	
% Clay		15 - 35	matrix cemented with	
Consistency		Hard	gypsum	
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Nil		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant diffuse and fine nodular CaCO ₃ & gypsum crystals		
% Stone and size		Abundant fine medium and coarse gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7, 8/440	8, 1/180	
Sample No.				

Comments: Surface fine and medium gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 122 Parent material Colluvium/shale Location/airphoto/map
 Landform Lower slope Soil form Mispah Soil series/phase Muden
 Vegetation/land use Scattered scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A			
Extent (cm-cm)	0 - 20	20 - 160+		
Munsell colour	10 YR 4/4	Weathering shale, much disturbed by gypsum crystal growth		
Colour description	Dark yellowish brown			
Texture	Sandy clay loam			
Sand grade	Coarse			
% Clay	15 - 35			
Consistency	Hard			
Structure	Moderate platy tending prismatic			
Mottles	Nil			
Roots	Few			
Permeability	Rapid to moderate			
Seepage	Nil			
Concretions	Occasional fine nodular CaCO ₃			
% Stone and size	Scattered fine and medium gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 123
 Landform .. lower slope
 Vegetation/land use .. Sparse scrub
 Parent material .. Alluvium
 Soil form .. Dundge
 Location/airphoto/map ..
 Soil series/phase .. Dundee
 Observer and date .. TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 100	100 - 220	220 - 240+	
Munsell colour	10 YR 4/4			
Colour description	Dark yellowish brown		Weathering shale	
Texture	Sandy loam			
Sand grade	Fine	Fine medium and coarse gravel in matrix of		
% Clay	15 - 35			
Consistency	Slightly hard to hard			
Structure	Weak platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	7,8/220		7,8/420	
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .124..... Parent material Alluvium..... Location/airphoto/map
 Landform .Lower river terrace (island). Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse grass tufts and scrub and occasional Acacia trees: Observer and date TCP...30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 90	90 - 240		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine medium and coarse		
Texture	Sand	gravel, pebbles and		
Sand grade	Fine	boulders in a matrix		
% Clay	0 - 6	of brown coarse sand		
Consistency	Loose to friable			
Structure	Apedal			
Mottles	Nil			
Roots	Numerous			
Permeability	Very rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Nil			
Transition	Abrupt			
pH/Resistance 16°C (ohm)	8,0/750			
Sample No.				

Comments: Dune field (Island) - Substantial surface macrorelief.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ..127..... Parent material Colluvium Location/airphoto/map
 Landform .Lower slope..... Soil Form Soil series/phase Letaba(stony & gypsic, saline)
 Vegetation/land use ..Bare ground..... Observer and date ..TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 100	100 - 175	
Munsell colour	5 YR 4/6	5 YR 4/6		
Colour description	Yellowish red	Yellowish red		
Texture	Sandy clay loam	Sandy clay loam	Fine medium and coarse	
Sand grade	Medium	Medium	gravel in brown sand	
% Clay	15 - 35	15 - 35	matrix cemented by	
Consistency	Hard	Slightly hard	gypsum	
Structure	Weak platy tending prismatic	Moderate fine to medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid to moderate	Rapid		
Seepage	Nil	Nil		
Concretions	Abundant diffuse CaCO ₃	Abundant diffuse & nodular CaCO ₃ & gypsum crystals		
% Stone and size	Occasional fine & medium gravel	Abundant fine medium & coarse gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	8,1/120	8,3/56	8,2/55	
Sample No.	X	X		

Comments: ..Surface fine and medium gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 148 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Letaba (stony & gypsic, saline)
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B ₂	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 70	70 - 160+	
Munsell colour	5 YR 4/6	5 YR 5/6		
Colour description	Yellowish red	Yellowish red		
Texture	Sandy loam	Sandy loam	Fine medium and coarse gravel and pebbles and	
Sand grade	Coarse	Coarse		
% Clay	15 - 35	15 - 35	boulders cemented by gypsum	
Consistency	Slightly hard	Slightly hard		
Structure	Moderate platy, tending prismatic	Moderate medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Abundant diffuse CaCO ₃	Abundant diffuse & nodular CaCO ₃ and gypsum		
% Stone and size	Abundant fine & medium gravel	Abundant fine, medium & coarse gravel		
Transition	Gradual	Gradual		
pH/Resistance 16°C (ohm)	7,6/46	7,7/77	7,6/64	
Sample No.				

Comments: Surface fine and medium gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .129 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub and occasional trees Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 180+			
Munsell colour				
Colour description	Alternating layers of			
Texture	brown sandy loam and			
Sand grade	fine medium and coarse			
% Clay	gravel, pebbles and			
Consistency	boulders in brown/.			
Structure	sand matrix			
Mottles				
Roots	Abundant			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	0 - 50 8,0/520			
Sample No.				

Comments: Dune field - Significant surface macrorelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...130 Parent material Colluvium Location/airphoto/map
 Landform . Alluvial fan Soil form Oakleaf Soil series/phase Jozini (saline)
 Vegetation/land use ... Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 80	80 - 220+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand and fine gravel	Brown	Alternating layers of yellowish brown and coarse and fine sand	
Texture		Sandy loam		
Sand grade		Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Moderate medium subangular blocky		
Mottles		Nil		
Roots		Nil		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		7,9/78		
Sample No.				

Comments: .. Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 131 Parent material Colluvium Location/airphoto/map
 Landform lower slope - gully Soil form Oakleaf Soil series/phase Calueque
 Vegetation/land use Sparse scrub Observer and date ICP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 15	15 - 60	60 - 180+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand	Brown	Fine medium and coarse	
Texture	and fine gravel	Sandy loam	gravel in brown loamy	
Sand grade		Coarse	sand with abundant diffuse	
% Clay		6 - 15	and nodular CaCO ₃	
Consistency		Slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,3/730		
Sample No.			8,0/1000	

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 132 Parent material Colluvium Location/airphoto/map
 Landform . Lower slope Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 150+		
Munsell colour	7.5 YR 4/4	7.5 YR 4/4		
Colour description	Brown	Brown		
Texture	Loamy sand	Sandy loam		
Sand grade	Fine	Medium		
% Clay	6 - 15	6 - 15		
Consistency	Friable	Slightly hard		
Structure	Apedal	Weak medium subangular blocky		
Mottles	Nil	Nil		
Roots	Numerous	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Nil		
% Stone and size	Nil	Occasional fine and medium gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,5/1800	8,3/1500		
Sample No.	X	X		

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .133..... Parent material Alluvium..... Location/airphoto/map

Landform River terrace..... Soil form Dundee..... Soil series/phase Dundee (saline).....

Vegetation/land use Sparse scrub..... Observer and date TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 60	60 - 180+		
Munsell colour	7.5 YR 4/4			
Colour description	Brown	Fine medium and coarse gravel, pebbles and boulders in brown sand matrix		
Texture	Sandy loam			
Sand grade	Fine			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Weak platy			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Abundant diffuse CaCO ₃			
% Stone and size	Fairly abrupt			
Transition	7,7/52			
pH/Resistance 16°C (ohm)				
Sample No.				

Comments: Dune field - Significant surface microrelief

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 134 Parent material Alluvium Location/airphoto/map Dundee
 Lower river terrace Soil form Dundee Soil series/phase Dundee
 Sparse scrub and occasional Acacia trees Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 210+			
Munsell colour				
Colour description	Alternating layers of			
Texture	yellowish brown sandy			
Sand grade	loam and fine medium			
% Clay	and coarse gravel pebbles			
Consistency	and boulders in matrix			
Structure	of brown sand			
Mottles				
Roots				
Permeability				
Seepage				
Concretions				
% Stone and size				
Transition				
pH/Resistance 16°C (ohm)	0 - 50 8,9/750			
Sample No.				

Comments: Dune field - Significant surface macrorelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 135 Parent material Alluvium Location/airphoto/map
 Landform Lower slope/dry playa. Soil form Oakleaf Soil series/phase Okayango.
 Vegetation/land use Bare ground Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B ₂ ₀	Stratified alluvium	
Extent (cm-cm)	0 - 5	5 - 70	70 - 230+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown sandy loam	Brown		
Texture		Sandy loam	Fine medium and coarse	
Sand grade		Medium	gravel in brown sand	
% Clay		6 - 15	matrix	
Consistency		Hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Nil		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		7,6/110		
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 136 Parent material Colluvium Location/airphoto/map
 Landform Alluvial fan Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 190			
Munsell colour	7.5 YR 4/4			
Colour description	Brown			
Texture	Sandy loam			
Sand grade	Medium			
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Apedal			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Lenses of fine and medium gravel			
Transition				
pH/Resistance 16°C (ohm)	8,0/1000			
Sample No.				

Comments: Surface fine gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. .137 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvial gravel (calicified)	
Extent (cm-cm)	0 - 10	10 - 100	100 - 170+	
Munsell colour		7.5 YR 4/4		
Colour description		Brown	Fine medium and coarse gravel and pebbles in calcified sand	
Texture	Brown sandy loam and fine gravel	Sandy loam		
Sand grade		Medium		
% Clay		15 - 35		
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant diffuse CaCO ₃		
% Stone and size		Occasional medium and fine gravel		
Transition	Abrupt	Abrupt		
pH/Resistance 16°C (ohm)		7,9/920	8,5/1100	
Sample No.				

Comments:

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 138 Parent material ..Alluvium..... Location/airphoto/map
 Landform ..Lower terrace..... Soil form Oakleaf Soil series/phase Allanridge
 Vegetation/land use Sparse scrub and herbs and occasional Acacia trees Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2 ₃	Stratified alluvium	
Extent (cm-cm)	0 - 20	20 - 110	110 - 210+	
Munsell colour		7.5 YR 4/4		
Colour description	Fine, medium and coarse	Brown	Fine medium and coarse	
Texture	gravel in brown sand	Sandy loam	gravel in brown sand	
Sand grade	matrix	Fine	matrix	
% Clay		6 - 15		
Consistency		Slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional fine nodular CaCO ₃		
% Stone and size		Occasional fine gravel		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8.2/720		
Sample No.				

Comments: Severe microrelief

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 139 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub and herbs Observer and date TCP..30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Stratified alluvium	Stratified alluvial gravel	
Extent (cm-cm)	0 - 15	15 - 160	160 - 210+	
Munsell colour		10 YR 5/4		
Colour description	Brown sand with	Yellowish brown		
Texture	occasional fine gravel	Clay loam		
Sand grade		Fine	Fine medium and coarse	
% Clay		15 - 35	gravel in brown sand	
Consistency		Slightly hard	matrix	
Structure		Apedal		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Nil		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8,0/680		
Sample No.		X		

Comments: Substantial microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ..140..... Parent material Alluvium..... Location/airphoto/map

Landform Lower terrace..... Soil form Dundee..... Soil series/phase Dundee.....

Vegetation/land use Occasional scrub, herbs and trees..... Observer and date TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium			
Extent (cm-cm)	0 - 220+			
Munsell colour	Yellowish brown sandy			
Colour description	loam containing frequent			
Texture	lenses of fine medium			
Sand grade	and coarse gravels and			
% Clay	pebbles in a brown sand			
Consistency	matrix			
Structure				
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size				
Transition	0 - 80			
pH/Resistance 16°C (ohm)	8,1/680			
Sample No.				

Comments: Substantial microrelief - Edge of dune field.....

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Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ..141..... Parent material Alluvium..... Location/airphoto/map
 Landform ..River terrace..... Soil form ..Oakleaf..... Soil series/phase ..Vaalriver.....
 Vegetation/land use ..Sparse scrub and herbs..... Observer and date ..TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B ₂	Stratified alluvial gravel	
Extent (cm-cm)	0 - 15	15 - 90	90 - 240+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand and fine gravel	Brown	Fine medium and coarse gravel and pebble lenses	
Texture		Loamy sand		
Sand grade		Fine	in brown sand matrix	
% Clay		6 - 15		
Consistency		Friable to slightly hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,3/1000		
Sample No.				

Comments: ..Significant surface microrelief (Edge of dune field).....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 142 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Dundee Soil series/phase Dundee
 Vegetation/land use Sparse scrub and herbs and occasional small Acacia trees. Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified alluvium	Stratified alluvial gravel		
Extent (cm-cm)	0 - 60	60 - 210		
Munsell colour	7.5 YR 4/4	Fine medium and coarse		
Colour description	Brown	gravel and pebbles and		
Texture	Loamy sand	boulders in brown fine		
Sand grade	Fine	sand matrix		
% Clay	6 - 15			
Consistency	Slightly hard			
Structure	Slightly platy			
Mottles	Nil			
Roots	Numerous			
Permeability	Rapid			
Seepage	Nil			
Concretions	Nil			
% Stone and size	Occasional fine medium and coarse gravel			
Transition	Fairly abrupt			
pH/Resistance 16°C (ohm)	8,2/830			
Sample No.				

Comments: Significant surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 143 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Hazelyood. (saline)
 Vegetation/land use Sparse scrub and herbs Observer and date TCP...30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A	Neocutanic B2		
Extent (cm-cm)	0 - 25	25 - 160		
Munsell colour	7.5 YR 5/6	5 YR 5/6		
Colour description	Strong brown	Yellowish red		
Texture	Sandy loam	Sandy loam		
Sand grade	Medium	Coarse		
% Clay	6 - 15	6 - 15		
Consistency	Hard	Hard		
Structure	Weak prismatic	Weak fine subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Nil		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Occasional diffuse CaCO ₃	Occasional diffuse CaCO ₃		
% Stone and size	Occasional fine gravel	Occasional fine gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,2/160	8,3/62		
Sample No.	X	X		

Comments:

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 144 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 10	10 - 70	70 - 190+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand and fine gravel	Brown	Fine medium and coarse gravel in brown sand	
Texture		Sandy loam		
Sand grade		Fine	matrix	
% Clay		15 - 35		
Consistency		Slightly hard to hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional nodular and diffuse CaCO ₃		
% Stone and size		Nil		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		7,7/130		
Sample No.				

Comments: Moderate surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 145 Parent material Alluvium Location/airphoto/map
 Landform River terrace Soil form Oakleaf Soil series/phase Levubu
 Vegetation/land use Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvial gravel	
Extent (cm-cm)	0 - 10	10 - 70	70 - 190+	
Munsell colour		7.5 YR 4/4		
Colour description	Brown loamy sand	Brown	Fine medium and coarse gravel pebbles and	
Texture		Loamy sand	boulders in brown sand matrix	
Sand grade		Medium		
% Clay		6 - 15		
Consistency		Friable to slightly hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Numerous		
Permeability		Rapid		
Seepage		Nil		
Concretions		Nil		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt	Fairly abrupt		
pH/Resistance 16°C (ohm)		8,7/1200		
Sample No.				

Comments:
 Significant surface microrelief

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. ...146..... Parent material Colluvium..... Location/airphoto/map
 Landform Lower slope...gully... Soil form Oakleaf Soil series/phase Letaba
 Vegetation/land use ...Sparse scrub and herbs..... Observer and date TCP 30/1/87.....

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2	Stratified alluvium	
Extent (cm-cm)	0 - 30	30 - 120	120 - 160+	
Munsell colour		5 YR 5/6		
Colour description	Brown loamy sand and fine gravel	Yellowish red	Fine and medium gravel in reddish brown sandy loam matrix	
Texture		Sandy loam		
Sand grade		Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak medium subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Occasional diffuse CaCO ₃		
% Stone and size		Occasional fine gravel		
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,2/1300		
Sample No.				

Comments: Moderate surface microrelief and fine gravel.....

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 147 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Letaba
 Vegetation/land use Sparse scrub and herbs Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Orthic A1	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 190+		
Munsell colour	7.5 YR 4/4	5 YR 4/6		
Colour description	Brown	Yellowish red		
Texture	Sandy loam	Sandy loam		
Sand grade	Coarse	Coarse		
% Clay	6 - 15	15 - 35		
Consistency	Hard	Hard		
Structure	Weak fine subangular blocky	Weak medium subangular blocky		
Mottles	Nil	Nil		
Roots	Few	Few		
Permeability	Rapid	Rapid		
Seepage	Nil	Nil		
Concretions	Nil	Abundant diffuse CaCO ₃		
% Stone and size	Occasional fine gravel	Abundant fine gravel		
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,3/1300	7,6/110		
Sample No.				

Comments: Surface fine gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 148 Parent material Colluvium Location/airphoto/map
 Lower slope Soil form Oakleaf Soil series/phase
 Vegetation/land use Sparse scrub and grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Neocutanic B2	Stratified alluvium		
Extent (cm-cm)	0 - 70	70 - 170+		
Munsell colour	5 YR 4/6			
Colour description	Yellowish red	Fine medium and coarse		
Texture	Sandy clay loam	gravel, pebbles and		
Sand grade	Coarse	boulders in brown loamy		
% Clay	15 - 35	sand and sand matrix		
Consistency	Hard			
Structure	Weak medium subangular blocky			
Mottles	Nil			
Roots	Few			
Permeability	Rapid			
Seepage	Nil			
Concretions	Abundant nodular CaCO ₃			
% Stone and size	Abundant medium and fine gravel			
Transition	Gradual			
pH/Resistance 16°C (ohm)	8,0/1000			
Sample No.				

Comments: Significant surface microrelief and gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 149 Parent material Colluvium Location/airphoto/map
 Landform lower slope - gully Soil form Oakleaf Soil series/phase Limpopo
 Vegetation/land use Sparse grass tufts Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 20	20 - 160+		
Munsell colour		7.5 YR 5/6		
Colour description		Strong brown		
Texture	Brown coarse sand	Sandy clay loam		
Sand grade	and fine gravel	Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant nodular CaCO ₃		
% Stone and size		Occasional fine medium and coarse gravel		
Transition				
pH/Resistance 16°C (ohm)		8,0/280		
Sample No.				

Comments: Surface gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 150 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oakleaf Soil series/phase Letaba
 Vegetation/land use Sparse thorn scrub and grass Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Neocutanic B2		
Extent (cm-cm)	0 - 30	30 - 180+		
Munsell colour		5 YR 5/6		
Colour description		Yellowish red		
Texture	Brown coarse sand	Sandy loam		
Sand grade	and fine gravel	Coarse		
% Clay		15 - 35		
Consistency		Hard		
Structure		Weak fine subangular blocky		
Mottles		Nil		
Roots		Few		
Permeability		Rapid		
Seepage		Nil		
Concretions		Abundant fine nodular & diffuse CaCO ₃		
% Stone and size		Occasional fine and medium gravel		
Transition	Abrupt			
pH/Resistance 16°C (ohm)		8,1/900		
Sample No.				

Comments: Fine and medium surface gravel

Neckartal Irrigation Scheme : Soil Profile Record Sheet

Profile No. 151 Parent material Colluvium Location/airphoto/map
 Landform Lower slope Soil form Oaklead Soil series/phase Letaba
 Vegetation/land use Occasional thorn scrub Observer and date TCP 30/1/87

Parameter	Horizon 1	Horizon 2	Horizon 3	Horizon 4
Horizon No. and type	Stratified surface wash	Orthic A	Neocutanic B2	
Extent (cm-cm)	0 - 15	15 - 40	40 - 180+	
Munsell colour		7.5YR 4/4	5 YR 4/6	
Colour description	Brown coarse sand	Brown	Yellowish red	
Texture	and fine gravel	Sandy clay loam	Sandy clay loam	
Sand grade		Coarse	Coarse	
% Clay		15 - 35	15 - 35	
Consistency		Hard	Hard	
Structure		Moderate medium sub-angular blocky tending prismatic	Moderate medium subangular blocky	
Mottles		Nil	Nil	
Roots		Few	Few	
Permeability		Rapid	Rapid	
Seepage		Nil	Nil	
Concretions		Nil	Abundant diffuse CaCO ₃ and gypsum crystals	
% Stone and size		Nil	Occasional fine gravel	
Transition	Abrupt	Gradual		
pH/Resistance 16°C (ohm)		8,0/120	8,1/86	
Sample No.		X	X	

Comments: Fine and medium surface gravel

ANALYTICAL RESULTS

Job Name: . NECKARTAL

Profile No.:

Date: 16/3/87

Series:

Sample No.	TPA1	A1	A4	A7	A7	
Horizon	0 - 30	30-180	20-120	35-110	110-230	
Particle Size Distribution:						
Pct. Fine Earth	94	95	97	99	98	
Coarse sand (2,0-0,5mm)	14	12	13	7	10	
Med. sand (0,5-0,2mm)	20	16	20	38	47	
Fine sand (0,2-0,02mm)	42	27	36	32	31	
Silt (0,02-0,002mm)	7	16	8	5	4	
Clay (<0,002mm)	17	29	23	18	8	
Net Extractable Cations:						
me/100g (ppm)						
Na	1,28	5,27	0,46	1,83	0,33	
K	0,28	0,26	0,20	0,16	0,11	
Ca	19,20	48,00	21,60	13,60	12,00	
Mg	0,33	2,17	0,62	0,35	0,32	
Al						
S Value	21,09	55,70	22,88	15,94	12,76	
T Value (C.E.C.)	8,65	17,20	16,60	12,75	6,10	
CEC per 100g clay	51	59	72	71	76	
Exch.Sodium percent	14,8	30,6		14,3		
Pct. Acid Saturation						
S.value per 100g clay	-	-	-	-	-	
pH.KCl						
pH.H ₂ O	8,1	7,6	8,0	8,0	8,8	
Resistance 16°C(ohms)	520	65	940	200	1500	
Phosphorous (ppm)						
Organic C (pct)						
ECe (S.P.E.) mS/m		810,8		223,0		
S.P.E. Soluble Na(me/100g)		2,03		0,46		

ANALYTICAL RESULTS

Job Name: NECKARTAL
 Date: 16/3/87

Profile No.:
 Series:

Sample No.	A9	A9	A20	A24	A24	A28
Horizon	0-20	20-150	20-130	10-45	45-110	0-100
Particle Size Distribution:						
Pct. Fine Earth	97	100	100	83	92	99
Coarse sand (2,0-0,5mm)	16	2	1	12	17	5
Med. sand (0,5-0,2mm)	26	5	15	16	23	11
Fine sand (0,2-0,02mm)	26	64	73	26	31	69
Silt (0,02-0,002mm)	9	10	4	13	10	6
Clay (<0,002mm)	23	19	7	33	19	9
Net Extractable Cations:						
me/100g (ppm)						
Na	3,79	1,97	0,27	1,38	4,36	1,29
K	0,36	0,22	0,12	0,23	0,20	0,14
Ca	13,60	17,20	10,80	11,60	14,80	18,40
Mg	0,50	0,53	0,42	0,72	0,77	0,50
Al						
S Value	18,25	19,92	11,61	13,93	20,13	20,33
T Value (C.E.C.)	15,40	16,05	4,65	13,95	12,40	6,75
CEC per 100g clay	67	84	66	42	65	75
Exch. Sodium percent	24,6	12,3		9,9	35,2	19,1
Pct. Acid Saturation						
S.value per 100g clay	-	-	-	42	-	-
pH.KCl						
pH.H ₂ O	7,5	7,9	7,9	7,7	7,6	9,1
Resistance 16°C(ohms)	16	30	1800	180	110	1000
Phosphorous (ppm)						
Organic C (pct)						
ECe (S.P.E.) mS/m	3648,6	1756,7		101,3	533,8	
S.P.E. Soluble Na(me/100g)	10,56	4,12		0,16	1,03	

ANALYTICAL RESULTS

Job Name: NECKARTAL
 Date: 16/3/87

Profile No.:
 Series:

Sample No.	A32	A38	A45	B2	B2	B2
Horizon	0-170	0-120	0-220	0-15	15-120	120-240
Particle Size Distribution:						
Pct. Fine Earth	100	100	99	85	82	90
Coarse sand (2,0-0,5mm)	2	1	6	13	11	19
Med. sand (0,5-0,2mm)	12	13	25	30	34	36
Fine sand (0,2-0,02mm)	74	79	62	28	29	24
Silt (0,02-0,002mm)	5	2	3	12	8	8
Clay (<0,002mm)	7	5	4	17	18	13
Net Extractable Cations:						
me/100g (ppm)						
Na	0,16	0,09	0,41	3,92	6,83	7,00
K	0,09	0,18	0,14	0,31	0,19	0,20
Ca	19,20	9,10	8,50	46,00	35,20	38,40
Mg	0,57	0,27	0,37	1,92	0,52	0,73
Al						
S Value	20,02	9,64	9,42	52,15	42,74	46,33
T Value (C.E.C.)	5,85	3,60	3,20	11,75	10,90	9,05
CEC per 100g clay	84	72	80	69	61	70
Exch. Sodium percent				33,4	62,7	77,3
Pct. Acid Saturation	-	-	-	-	-	-
S. value per 100g clay						
pH.KCl	8,6	8,7	9,2	8,1	8,4	8,3
pH.H ₂ O	1700	2000	1700	65	400	300
Resistance 16°C(ohms)						
Phosphorous (ppm)						
Organic C (pct)				878,4		
ECe (S.P.E.) mS/m				1,51		
S.P.E. Soluble Na(me/100g)						

ANALYTICAL RESULTS

Job Name: NECKARTAL

Profile No.:

Date: 16/3/87

Series:

Sample No.	12	12	13	13	15	15
Horizon	0-65	65-250	0-25	25-95	0-50	50-250
Particle Size Distribution:						
Pct. Fine Earth	84	89	89	97	95	89
Coarse sand (2,0-0,5mm)	23	35	14	14	15	19
Med. sand (0,5-0,2mm)	22	30	27	24	29	25
Fine sand (0,2-0,02mm)	29	20	41	37	35	28
Silt (0,02-0,002mm)	7	5	7	7	6	8
Clay (<0,002mm)	19	10	11	18	15	20
Net Extractable Cations:						
me/100g (ppm)						
Na	0,27	0,67	0,07	0,37	0,21	1,33
K	0,28	0,17	0,31	0,25	0,31	0,25
Ca	6,50	15,60	7,30	27,20	11,60	38,40
Mg	1,17	0,68	0,57	0,38	0,37	0,53
Al						
S Value	8,22	17,12	8,25	28,20	12,49	40,51
T Value (C.E.C.)	8,20	7,15	7,95	13,50	12,45	15,10
CEC per 100g clay	43	71	72	75	83	75
Exch. Sodium percent						
Pct. Acid Saturation						
S.value per 100g clay	43	-	75	-	83	-
pH.KCl						
pH.H ₂ O	7,8	8,1	7,8	8,0	7,9	7,8
Resistance 16°C(ohms)	750	780	800	760	350	300
Phosphorous (ppm)						
Organic C (pct)						
E _{Ce} (S.P.E.) mS/m						
S.P.E. Soluble Na(me/100g)						

ANALYTICAL RESULTS

Job Name: NECKARTAL
 Date: 16/3/87

Profile No.:
 Series:

Sample No.	34	34	35	35	36	36	36
Horizon	0-50	50-250	0-50	50-200	0-15	15-60	60-2
Particle Size Distribution:							
Pct. Fine Earth	86	58	97	53	93	86	44
Coarse sand (2,0-0,5mm)	26	32	7	15	12	15	44
Med. sand (0,5-0,2mm)	30	22	43	17	26	22	19
Fine sand (0,2-0,02mm)	25	15	42	19	43	38	17
Silt (0,02-0,002mm)	6	10	2	18	8	7	5
Clay (<0,002mm)	13	21	6	31	11	18	15
Net Extractable Cations:							
me/100g (ppm)							
Na	0,10	0,37	0,09	0,21	0,24	0,46	0,3
K	0,36	0,23	0,24	0,25	0,37	0,24	0,1
Ca	18,40	47,00	8,10	84,00	23,20	24,80	23,2
Mg	0,53	0,58	0,40	1,50	0,75	1,21	1,0
Al							
S Value	19,39	48,18	8,83	85,96	24,56	26,71	24,
T Value (C.E.C.)	8,10	15,70	3,80	19,85	7,05	13,10	8,
CEC per 100g clay	62	75	63	64	64	73	54
Exch. Sodium percent							
Pct. Acid Saturation							
S. value per 100g clay	-	-	-	-	-	-	-
pH.KCl							
pH.H ₂ O	8,1	7,7	8,2	7,7	7,9	8,1	8,1
Resistance 16°C(ohms)	620	450	1500	430	1100	700	820
Phosphorous (ppm)							
Organic C (pct)							
ECe (S.P.E.) mS/m							
S.P.E. Soluble Na(me/100g)							

ANALYTICAL RESULTS

Job Name:
 Date:
 NECKARTAL
 16/3/87

Profile No.:
 Series:

Sample No.	41	41	41	42	42	
Horizon	0-35	35-150	150+	0-60	60-250	
Particle Size Distribution:						
Pct. Fine Earth	87	96	56	95	95	
Coarse sand (2,0-0,5mm)	14	15	37	8	14	
Med. sand (0,5-0,2mm)	16	18	16	31	20	
Fine sand (0,2-0,02mm)	38	30	16	46	30	
Silt (0,02-0,002mm)	11	10	8	6	16	
Clay (<0,002mm)	21	27	23	9	20	
Net Extractable Cations:						
me/100g (ppm)						
Na	0,25	1,11	0,76	0,09	0,41	
K	0,27	0,20	0,19	0,31	0,18	
Ca	14,40	48,00	48,00	10,80	88,00	
Mg	1,42	1,92	2,08	0,92	1,42	
Al						
S Value	16,34	51,23	51,03	12,12	90,01	
T Value (C.E.C.)	14,10	16,05	17,00	6,10	11,45	
CEC per 100g clay	67	59	74	68	57	
Exch.Sodium percent						
Pct. Acid Saturation						
S.value per 100g clay	-	-	-	-	-	
pH.KCl						
pH.H ₂ O	8,0	8,2	8,2	8,3	8,1	
Resistance 16°C(ohms)	780	650	700	1200	780	
Phosphorous (ppm)						
Organic C (pct)						
ECe (S.P.E.) mS/m						
S.P.E. Soluble Na(me/100g)						

ANALYTICAL RESULTS

Job Name: NECKARTAL
 Date: 16/3/87

Profile No.:
 Series:

Sample No.	45	45	52	52	52	
Horizon	15-40	40-220	0-15	15-120	120-230	
Particle Size Distribution:						
Pct. Fine Earth	96	93	98	96	64	
Coarse sand (2,0-0,5mm)	16	23	5	10	39	
Med. sand (0,5-0,2mm)	23	25	26	32	31	
Fine sand (0,2-0,02mm)	34	25	52	35	17	
Silt (0,02-0,002mm)	6	7	5	4	4	
Clay (<0,002mm)	21	20	12	19	9	
Net Extractable Cations:						
me/100g (ppm)						
Na	1,33	5,09	0,05	0,16	0,22	
K	0,25	0,25	0,31	0,28	0,16	
Ca	12,80	29,60	7,70	9,50	19,60	
Mg	1,75	2,00	0,68	1,08	0,92	
Al						
S Value	16,13	36,94	8,74	11,02	20,90	
T Value (C.E.C.)	15,90	14,80	8,65	11,00	4,95	
CEC per 100g clay	76	74	72	58	55	
Exch. Sodium percent		34,4				
Pct. Acid Saturation						
S. value per 100g clay	77	-	73	58	-	
pH.KCl						
pH.H ₂ O	8,4	8,1	8,3	8,0	8,1	
Resistance 16°C (ohms)	800	160	1600	600	1000	
Phosphorous (ppm)						
Organic C (pct)						
ECe (S.P.E.) mS/m		310,8				
S.P.E. Soluble Na (me/100g)		0,65				

NECKARTAL SOIL SURVEY

ANALYSES OF SATURATED PASTE EXTRACT

Sample A (Comprising soils from pits A1, A9, A24 and 94)

Conductivity (mS/m): 3043,5

Cations (me/litre):

Na	226,0
K	0,9
Ca	61,0
Mg	<u>4,7</u>
Total	<u>292,6</u>

Anions (me/litre):

Cl	206,0
HCO ₃	4,0
SO ₄	<u>84,8</u>
Total	<u>294,8</u>

NECKARTAL SOIL SURVEY
ANALYSES OF SATURATED PASTE EXTRACT

Sample B (Comprising soils from pits B2, 127, 143 and 151)

Conductivity (mS/m): 1238,0

Cations (me/litre):

Na	95,0
K	0,4
Ca	19,2
Mg	<u>4,8</u>
Total	<u>119,4</u>

Anions (me/litre):

Cl	41,0
HCO ₃	4,0
SO ₄	<u>75,2</u>
Total	<u>120,2</u>

NECKARTAL SOIL SURVEY

TRACE ELEMENT ANALYSES

<u>SAMPLE NO.</u>	<u>P (mg/kg)</u>	<u>Zn (mg/kg)</u>
TP A4 20 - 120	11	4,8
A9 0 - 20	22	3,6
A28 0 - 100	15	5,2
B2 0 - 15	10	1,2
B13 0 - 30	10	3,2
8 0 - 20	0	1,6
13 0 - 25	13	3,6
20 0 - 40	12	1,6
35 0 - 50	15	3,6
41 0 - 35	12	3,6
52 0 - 15	17	1,6
61 0 - 15	22	1,2
94 0 - 20	19	4,0
116 0 - 30	24	3,2
132 0 - 30	37	2,4
143 0 - 25	19	3,2