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Innovative Solutions. Sustainable Outcomes.

Kings Forest (Precinct 1) Proposed Service

PRELIMINARY ENGINEERING REPORT

Address:	Tweed Coast Road Chinderah
Lot & RP Description:	Lot 7 DP875447
Local Government:	Tweed Shire Council
Prepared for:	Project 28 Pty Ltd
Prepared by:	**Mortons – Urban Solutions** Level 2, 19 Short Street (PO Box 2484) Southport Qld 4215 Ph: (07) 5571 1099 Fax: (07) 5571 1088 Email: mortons@urbansolutions.net.au

DATE: 5 MAY 2015

CIVIL ENGINEERING TOWN PLANNING PROJECT COORDINATION

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Project 28 Pty Ltd

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Property Address:
Tweed Coast Road,
Chinderah

Real Property Description/s:
Lot 7 on DP875447

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1.0 INTRODUCTION

This Preliminary Engineering Report has been prepared by Mortons - Urban Solutions on behalf of *Project 28 Pty Ltd* and is supplied as supporting information to the S75W modification to MP06_0318 and MP08_0194 application(s) over the Kings Forest Development - Tweed Coast Road, Cudgen (Lot 7 DP875447). The proposed service station is to replace the rural supplies development currently approved under MP08_0194. The site is located on the eastern side of Tweed Coast Road in the area known as Precinct 1 under the Master Plan for the Kings Forest Development.

The proposal is for development of a Service Station. The Service Station will comprise a technically defined two (2) storey building with a total GFA of 2,026m^2 GFA. This GFA includes a station shop, six (6) food tenancies and associated dining area. Two (2) of the food tenancies will be provided with drive through facilities.

The Service Station will provide eight (8) car fuelling points under a technically defined two (2) storey canopy and two truck filling points under a technically defined two (2) storey canopy. The service station will sell a full range of fuels including E10 unleaded, 91 octane unleaded, 95 octane unleaded, 98 octane unleaded, diesel, premium diesel and autogas

Mortons - Urban Solutions provides this Preliminary Engineering Report in association with the following consultants:

Consultant	Responsibilities
Planit Consulting	Town Planners
Bitzios Consulting	Traffic Engineers

2.0 THE SITE AND ITS CONTEXT

The subject site is located on the eastern side of Tweed Coast Road and is triangular in shape with irregular boundaries bordering Cudgen Creek as shown in ***Figure 1***. The proposed site of the service station has been has been previously cleared of vegetation and is relatively flat in nature. The majority of drainage from the site sheet flows toward the south with overland flow towards Cudgen Creek.

The proposed service station is to be located on part of the lot only.

2.1 Real Property Descriptions

The Real Property Description of the site is Lot 7 DP 875447 and has an area of 7.5876 hectares.

Figure 1: Locality Plan

2.2 Site Analysis and Surrounds

2.2.1 Topography, Drainage and Dams

The proposed development site is located on the eastern side of Tweed Coast Road and is relatively flat in nature. The majority of the current drainage sheet flows to the south towards Cudgen Creek.

2.2.2 Geotechnical Investigation

No geotechnical investigation of the site has been prepared as part of this application. A site visit revealed that the site is covered by topsoil and is expected to have subsurface conditions consisting of silty sand with the potential for indurated sand at depth. This soil profile would be consistent with the majority of the balance of the Kings Forest Development.

2.2.3 Flooding

Previous flood reporting for the Kings Forest Development indicated that Q_{100} flood levels taking into account sea level rise and increased storm intensity, was approximately R.L 3.5m.

The existing surface levels are well above the Q_{100} flood level and are above RL 5.0m

2.2.4 Existing Water Services

Currently there is no existing water infrastructure at the site.

2.2.5 Existing Sewer Reticulation

The site has no current sewer infrastructure.

Sewerage from the Kings Forest Development will be pumped to a proposed Regional Pump Station 01 (SPS 4023 as previously allocated in Council's numbering system). This pump station is to be constructed by Project 28 Pty Ltd as part of Stage 1 of the development. The location of SPS 01 is shown in ***Appendix A*****.**

It is anticipated that the sewer from the proposed development will gravitate to a discharge manhole and discharge to SPS01 as shown in ***Appendix A***.

The flows from the proposed development along with the flows from the overall development will be required to have a full network analysis prior to construction to avoid septicity issues and design the pumps for the anticipated initial low flows.

2.2.6 Existing Traffic and Roadworks

The site is located on the eastern side of Tweed Coast Road which currently consists of an undivided 2 lane road with a posted speed of 80 km/h. It is understood that the posted speed will be reduced in the future to accommodate the Kings Forest Development.

To the west of Tweed Coast Road is a small residential development on Old Bogangar Road (a 2 undivided lane road) which enters Tweed Coast Road via a non-signalised basic left-in; left- out at the mid-point of the proposed development on the opposite side.

3.0 PROPOSED DEVELOPMENT AND ENGINEERING DESIGN

The proposed development site has previously been approved for “Rural Retail” development. The approval as part of Precinct 1 of the Kings Forest development included a GFA of 2,036m^2 and 135 parking spaces.

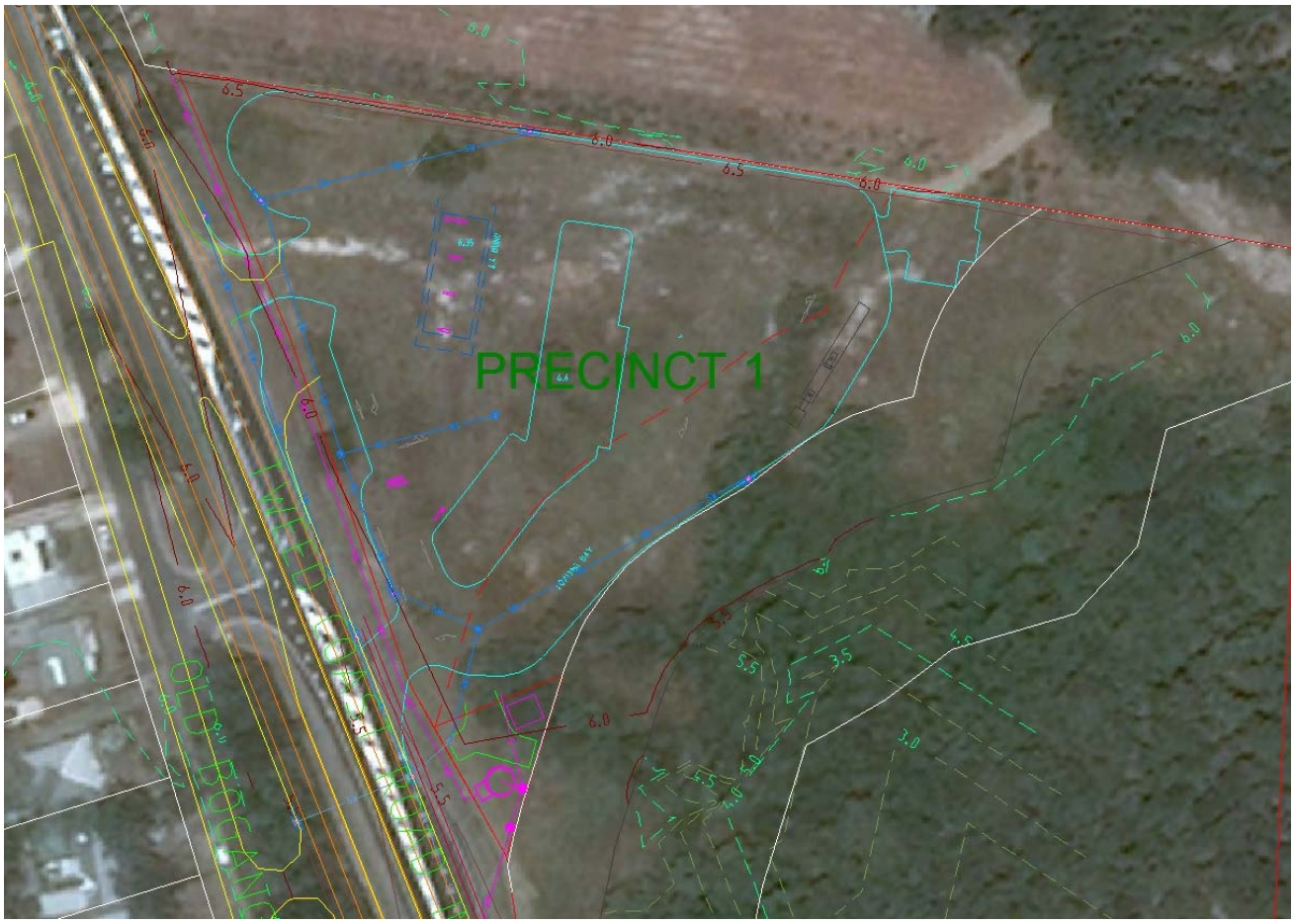
The proposed development includes the construction of a Service Station with convenience store and six other tenancy’s which are envisaged to be high turnover restaurants, fast food or similar.

The development will have separate entry and exit access.

3.1 Vegetation Clearing and Preservation

The overall site consists of an area of 7.5876 hectares with the proposed development contained within only a portion of the site to the north of Cudgen Creek. The majority of the site has been previously cleared of vegetation with limited clearing required as part of a future Construction Certificate as shown in ***Figure 2***.

Figure 2: Tree Clearing Extent



3.2 Earthworks, Proposed Levels and Rock Walls

The site will be graded to accommodate car parking, drive through fast food counters and building platforms. The site is currently relatively flat and the majority of earthworks required on site will be to ensure positive drainage to the proposed stormwater reticulation infrastructure.

It is envisaged that the earthworks will be close to balancing on site dependent on the depth of topsoil and unsuitable material. All earthworks shall comply with the Kings Forest Development Codes and have no batters exceeding 1V:3H. Small retaining structures may be required along partial boundaries to restrict batters entering tree protection areas. All walls shall be structurally designed and certified by a registered engineer.

The whole of the proposed development will be constructed above RL 5.0m which is well above the proposed Q_{100} flood level of approximately 3.5m.

All earthworks will be performed under the supervision of a certified geotechnical engineer.

Attached in ***Appendix A*** is a preliminary grading and cross sections of the proposed earthworks. Final detailed grading will be required prior to commencement of construction.

3.3 Traffic

A detailed traffic study providing confirmation of access and egress points, truck turning swept paths, bin collection capabilities and pedestrian mobility has been provided under separate cover by Bitzios Consulting.

Provided in ***Appendix A*** are Mortons - Urban Solutions preliminary design providing information on the access and egress points and preliminary grading. The access/egress points can be designed to meet current standards.

3.4 Water Reticulation

There is currently no water reticulation at the proposed development site. As part of the overall Kings Forest Development, the initial stages require an extension of the water main currently constructed to Dianella Drive along Tweed Coast Road. It is proposed to construct the extension with a 450mm diameter main or as determined in future network analysis. The main is to be constructed to Kings Forest Parkway. The proposed development will connect to the 450mm diameter or similar. We anticipate that the proposed main to the development will be constructed with 100mm or 150mm diameter depending on potable and fire flows.

It is anticipated that the final water network submitted as part of future construction certificates will be required.

A preliminary schematic of the proposed water connection is shown on the attached Mortons-Urban Solutions Plans (refer ***Appendix A***).

3.5 Sewer Reticulation and Pump Stations

There is no current sewer infrastructure to service the proposed development.

Sewerage from the Kings Forest Development will be pumped to a proposed Regional Pump Station 01 (SPS 4023 as previously allocated in Council's numbering system). This pump station is to be constructed by Project 28 Pty Ltd as part of Stage 1 of the development. The location of SPS 01 is shown in ***Appendix A*****.**

It is anticipated that the sewer from the proposed development will gravitate to a discharge manhole and discharge to SPS01 as shown in ***Appendix A***.

The flows from the proposed development along with the flows from the overall development will be required to have a full network analysis prior to construction to avoid septicity issues and design the pumps for the anticipated initial low flows.

3.6 Stormwater Reticulation

Preliminary grading of the site has been undertaken by Mortons - Urban Solutions to demonstrate that stormwater from the proposed development can be piped with sufficient grade to discharge into a stormwater collection system and discharge into Cudgen Creek to the south of the development. Refer ***Appendix A*** for preliminary grading.

It is envisaged that the proposed service station will have appropriate grease traps designed as part of future approvals and that a gross pollutant trap will be provided prior to discharge into Cudgen Creek.

4.0 CONCLUSION

Based on preliminary reporting from the associated consultants; Mortons - Urban Solutions preliminary engineering grading and servicing plans; we conclude that the subject site is able to be engineered in accordance with Planning Scheme requirements and development codes.

APPENDIX A

Preliminary Engineering Plans

(Drawing Nos. 12301-SK-060A, 12301-SK-060B & 12301-SK-061, dated 16 December 2014)
Prepared by Mortons - Urban Solutions

PROJECT NAME

KINGS FOREST

CONCEPT PLANNING

CLIENT

PROJECT 28 PTY LTD

NORTH

0 5 10 15 20 25m

Scale 1:500 - A1 (1:1000 - A3)

ISSUES	DATE	
TENDER		
COUNCIL		
CONSTRUCTION		

B	06-05-15	SHEET LAYOUT CHANGED
A	16-12-14	COUNCIL ISSUE
PRE	DATE	AMENDMENT

ALL DRAWINGS ARE TO BE READ IN CONJUNCTION WITH 001-NOTES AND 002-LEGEND

ASSOCIATED CONSULTANTS

DRAWING TITLE

KINGS FOREST
PRECINCT 1
GRADING PLAN

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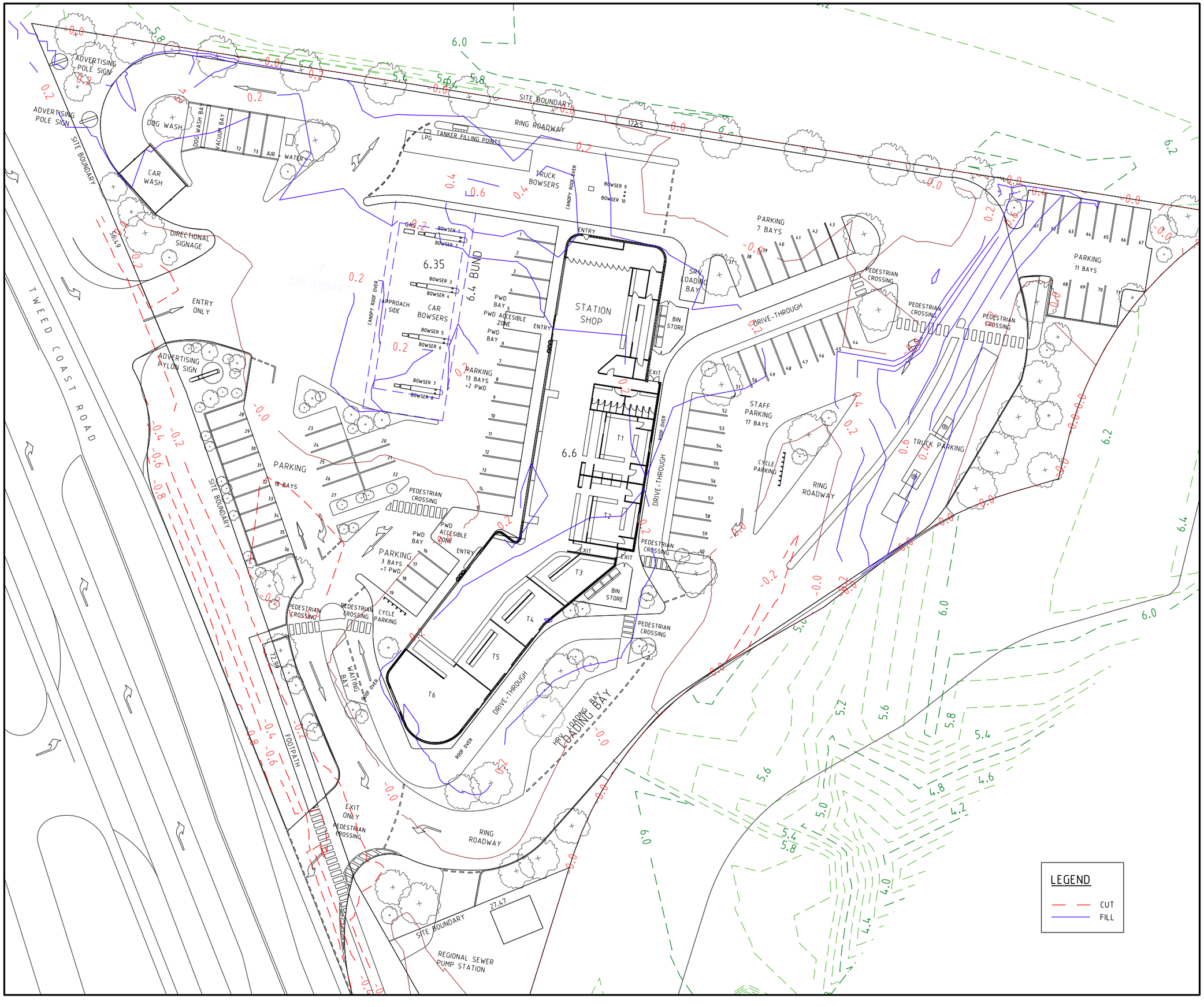
APPROVED		DATE	16-12-14

DRAWING NUMBER 12301-SK-060A | AMEND. B



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PROJECT NAME

KINGS FOREST

CONCEPT PLANNING

CLIENT

PROJECT 28 PTY LTD

NORTH

0 2.5 5 7.5 10 12.5m

Scale 1:250 - A1 (1:500 - A3)

ISSUES	DATE	
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COUNCIL		
CONSTRUCTION		

PRE	DATE	AMENDMENT
A	06-05-15	COUNCIL ISSUE

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ASSOCIATED CONSULTANTS

DRAWING TITLE

KINGS FOREST
PRECINCT 1
CUT & FILL PLAN

MORTONS urbansolutions
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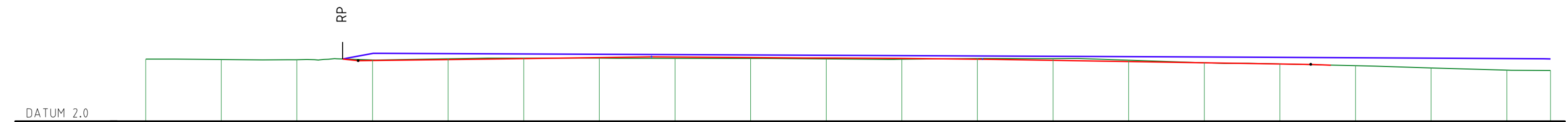
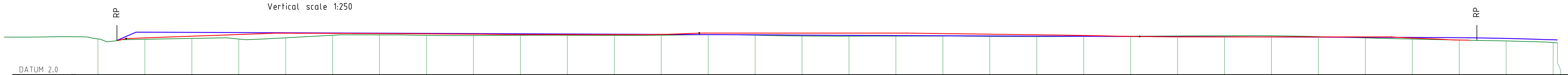


DATUM 2.0

SERVO				6.025	6.089	6.154	6.22	6.255	6.221	6.187	6.153	6.118	6.04	5.958	5.878	5.801				
PREVIOUS GRADING				6.492	6.479	6.458	6.438	6.417	6.396	6.375	6.354	6.333	6.297	6.28	6.264	6.248	6.203	6.176	6.152	6.135
EXISTING SURFACE	6.124	6.093	6.083	6.066	6.138	6.18	6.182	6.168	6.167	6.128	6.108	6.159	6.152	6.045	5.878	5.802	5.682	5.538	5.389	5.371
CHAINAGE	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	92.895

LONGITUDINAL SECTION C

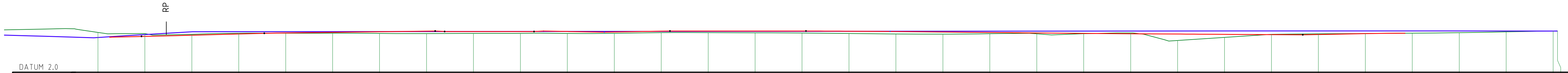
Horizontal scale 1:250
Vertical scale 1:250



DATUM 2.0

SERVO		5.893	6.072	6.253	6.388	6.372	6.35	6.321	6.287	6.246	6.242	6.243	6.253	6.4	6.4	6.4	6.4	6.4	6.349	6.286	6.228	6.152	6.057	6.001	6	6	6	6	5.872	5.675			
PREVIOUS GRADING		6.496	6.475	6.454	6.433	6.412	6.392	6.371	6.35	6.329	6.308	6.288	6.267	6.245	6.222	6.193	6.167	6.142	6.122	6.102	6.083	6.064	6.046	6.028	6.01	5.993	5.975	5.957	5.94	5.922	5.831	5.696	5.683
EXISTING SURFACE	5.787	5.747	5.836	5.774	5.902	6.175	6.213	6.172	6.141	6.174	6.173	6.156	6.174	6.227	6.176	6.099	6.069	6.083	6.086	6.058	6.036	6.054	6.073	6.092	6.112	6.117	6.039	5.896	5.765	5.677	5.574	5.402	5.37
CHAINAGE	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	165.467

LONGITUDINAL SECTION B



DATUM 2.0

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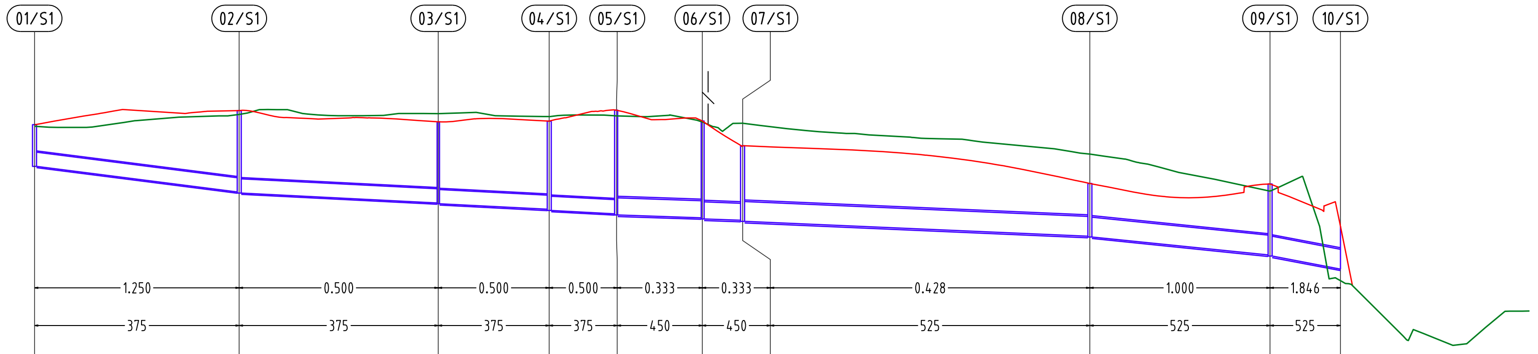
PREVIOUS GRADING	5.71	6.024	6.323	6.331	6.335	6.338	6.342	6.346	6.349	6.353	6.357	6.36	6.364	6.367	6.37	6.374	6.377	6.38	6.384	6.387	6.39	6.393	6.397	6.4	6.403	6.407	6.41	6.413	6.417	6.42	6.411	6.402	6.402
EXISTING SURFACE	6.252	6.128	6.052	6.168	6.166	6.172	6.147	6.126	6.141	6.155	6.143	6.166	6.226	6.228	6.207	6.186	6.135	6.082	6.076	6.119	6.101	6.11	6.2	5.39	5.719	6.048	6.098	6.137	6.168	6.224	6.315	6.409	6.418
CHAINAGE	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	165.467

LONGITUDINAL SECTION A



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PIPE GRADE (%)		1.250		0.500		0.500		0.500		0.333		0.333		0.428		1.000		1.846	
PIPE DIAMETER (mm)		375		375		375		375		450		450		525		525		525	
PIPE CLASS		2		2		2		2		2		2		2		2		2	
DATUM R.L.	-26.000																		
DEPTH TO INVERT	1.104		2.156 2.186		2.150 2.170		2.334 2.364		2.744 2.774		2.564 2.594		1.974 2.004		1.397 1.417		1.880 1.910		1.133 1.133
HYDRAULIC GRADE LINE	0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000		0.000 0.000
PIPE INVERT LEVELS	4.716		4.040 4.010		3.746 3.726		3.580 3.550		3.461 3.431		3.355 3.325		3.290 3.260		2.866 2.846		2.370 2.340		1.996 1.996
DESIGN SURFACE LEVELS	5.820		6.195		5.897		5.913		6.205		5.919		5.264		4.263		4.250		3.129
EXISTING SURFACE LEVELS	5.780		6.091		6.115		6.034		6.054		5.891		5.858		5.040		4.061		1.689
CHAINAGE	0.000	54.137	54.137	52.643	106.780	29.352	136.132	17.795	153.927	22.715	176.642	10.638	187.280	91.847	279.127	47.667	326.794	18.603	345.398

DRAINAGE LINE S1 (INDICATIVE GRADING SUBJECT TO DETAIL DESIGN)

PROJECT NAME
KINGS FOREST

CONCEPT PLANNING

CLIENT
PROJECT 28 PTY LTD

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ASSOCIATED CONSULTANTS

DRAWING TITLE
KINGS FOREST SECTIONS AND INDICATIVE DRAINAGE PROFILE

0 20 40 60 80 100m
Scale 1:2000 - A1 (1:4000 - A3)

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