APPENDIX “A”

TRAFFIC STUDY REPORT

DEVELOPMENT WATCH SUBMISSION TO SUNSHINE COAST COUNCIL
MCU 17/0095, MCU17/0096 AND REC 17/0056

DEVELOPMENT WATCH COMMENTS ON SOME ISSUES IN THE

YAROOMBA BEACH VILLAGE AND RESORT

TRAFFIC IMPACT ASSESSMENT REPORT -- 6/10/2017

[THE REPORT WAS PREPARED FOR SH COOLUM PTY LTD BY SMEC AND SUBMITTED TO SUNSHINE COAST COUNCIL AS SUPPORTING DOCUMENTATION TO THE DEVELOPMENT APPLICATION LODGED BY SH COOLUM]

- **Base Case Traffic Volumes:** The analysis compares traffic volumes in the area around the site before development (base case - 2017) with projected traffic volumes after completion of the development (2027).

  The Report describes the traffic survey for the base case: "The surveys were taken from 7:00AM to 9:00AM and from 4:30PM to 6:00PM for a single day." -- That day was Wednesday 19th July 2017.

  These one day, peak hour only surveys are obviously a limited sample. Observations carried out by DW suggest that:

  a. These mid-winter traffic volumes probably under-estimate current average weekday volumes.
  b. The PM peak in some parts of the road network, such as the Yandina-Coolum Rd/School Rd intersection may well occur between 3:00PM and 4:30PM.

- **Traffic Generation:** At Section 5 of the SMEC Report estimates of the traffic to be generated by the proposed Development are calculated based on rates per dwelling.

  Table 1 in Section 5 sets out the proposed numbers of dwellings for the Development. However the Table understates the numbers of rooms and key floor areas with reference to other information provided by the applicant. The following outlines the discrepancies in the Table:

  - Does not recognize that 70 dual key rooms in the serviced apartments are in effect 140 dwelling units.
  - Does not list 360 sqm of Retail space in the Resort Complex (see Info Response ATT 27)
  - Does not list 858 sqm of Commercial/Community space (see Info Response ATT 27)

  As the Traffic Generation Calculations by DW table attached shows, the consequence of these discrepancies is that the SMEC Report under-estimates AM and PM Peak traffic generation by the Site by 10%.

  AM Peak traffic generated by the Site in 2027 is expected to be around 986 vehicles per hour (vph) and PM Peak 1012 vph.

  According to the SMEC Report the current (Base Case) AM Peak traffic on David Low Way at the Site is 659 vph and the projected 2027 traffic without the Resort is 803 vph.

  When the traffic the Resort generates is added into this it can be expected that traffic volumes in the AM Peak Hour at the Site will more than double to over 1850 vph.

  According to the SMEC Report the current (Base Case) PM Peak traffic on David Low Way at the Site is 904 vph and the projected 2027 traffic without the Resort is 1102 vph.

  When the traffic the Resort generates is added into this it can be expected that traffic volumes in the PM Peak Hour at the Site will nearly double to over 2000 vph.

These large additional traffic loads imposed on the local street network will obviously have significant impacts.

- **Intersection Performance:** The objective of the SMEC Traffic Impact Assessment Report is to assess whether the local road network will be able to adequately handle the projected traffic volumes when the Sekisui development is complete – which is postulated to be 2027.

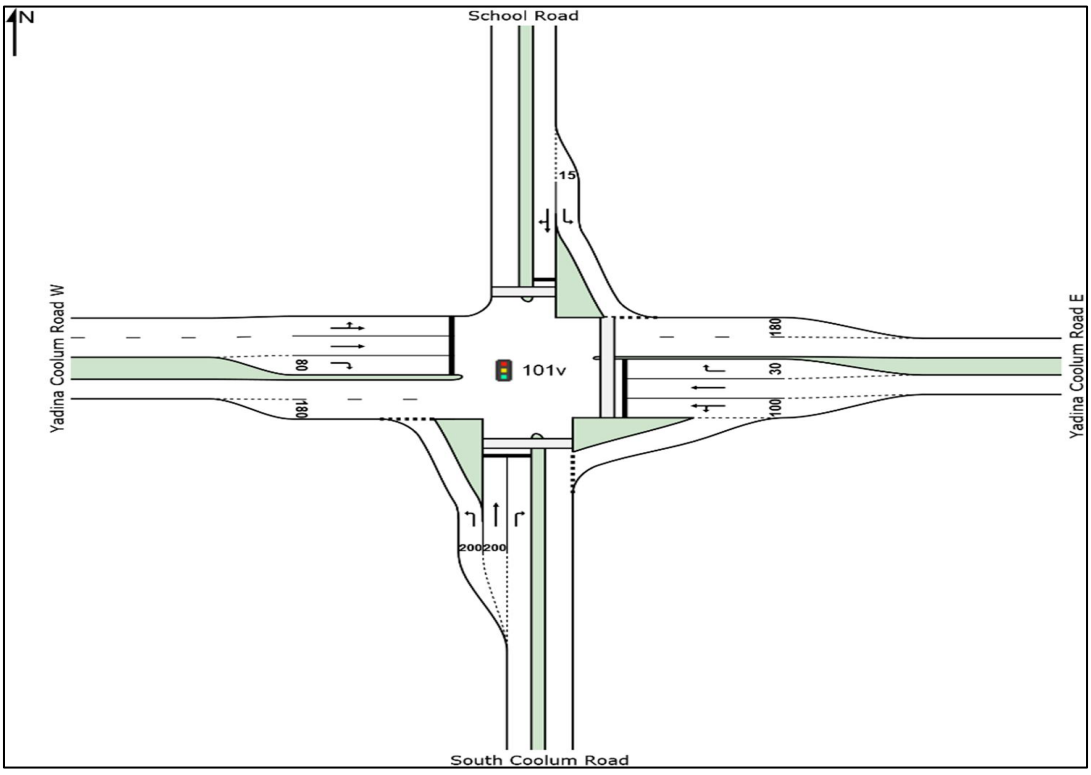
  Sections 6 and 7 of the Report set out the results of an analysis of projected traffic demand versus road capacity for key congestion points in the road network – which are the intersections.

  The Report identifies that the critical nearby road intersections which will be impacted by the proposed Sekisui development are:

  - Yandina-Coolum Rd/School Rd/South Coolum Rd;
  - David Low Way/Beach Rd;

1. Yandina-Coolum Rd/School Rd/South Coolum Rd Intersection

The Report proposes that to adequately cope with projected traffic volumes the intersection will need to be totally reconstructed from the existing roundabout into a major signalised intersection as shown below:

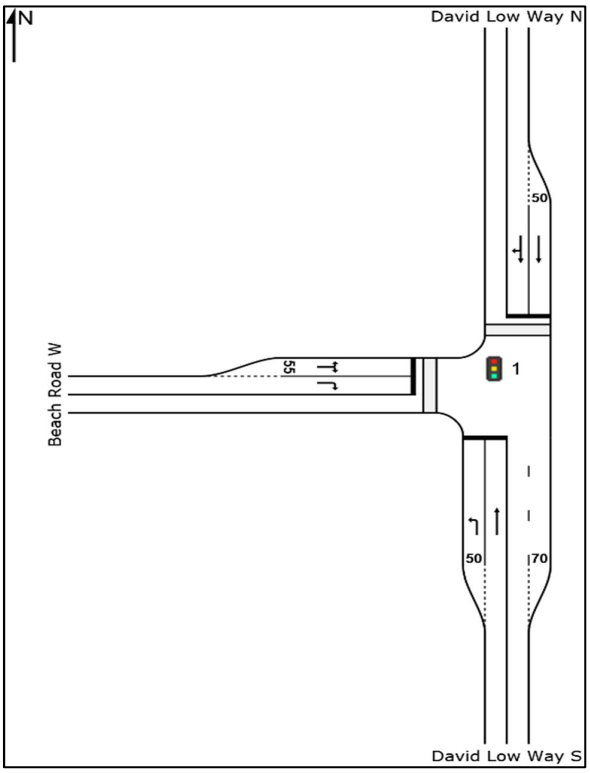


It would appear that to construct the intersection substantial property will need to be resumed from the existing shops in the south-east quadrant and from the existing residences in the north-east quadrant.

There is no estimate provided in the Report of the costs of carrying out such a major reconstruction of this key intersection. There is no acknowledgement that the Developer would be contributing to the major costs envisaged here.

2. David Low Way/Beach Rd Intersection

The SMEC Report analysis concludes that this key intersection will need to be upgraded and notes that given the intersection location and local geometric constraints, scope for proposed upgrades are limited.
The following shows a layout proposed by them as a potential upgrade:



It can be seen that the key expansion proposed apparently eliminates the heavily used beach-side parking along David Low Way heading to the south. This is likely to generate considerable community resistance.

No other intersection improvement options are identified or proposed.

The Report then analyses the projected performance of this expanded intersection under the impact of 2027 traffic demands into a summary Table 26 as follows:

Table 26: Design 2027 AM and Peak period – Proposed Intersection Layout David Low Way/Beach Road

Approach	2027 AM Peak				2027 PM Peak			
	D.O.S	Average Delay(sec)	L.O.S	95%ile Queue (m)	D.O.S	Average Delay(sec)	L.O.S	95%ile Queue (m)
South: David Low Way S	0.71	19	B	145	0.79	26	C	156
North: David Low Way N	0.71	21	C	68	0.92	26	C	150
West: Beach Road W	0.68	36	D	83	0.79	39	D	104
All vehicles	**0.71**	**25**	**C**	**145**	**0.92**	**29**	**C**	**158**

On the basis of this analysis the SMEC Report concludes:

"The results above illustrate that the proposed intersection will operate within acceptable limits in both the AM and PM peak hour periods in 2027, with the additional traffic from the development."

However, an examination of the more detailed intersection analysis movement summary sheets contained in the Appendix to the Report is unable to corroborate the figures in the above summary table.

Those detailed sheets show as follows:

MOVEMENT SUMMARY

Site: 1 [2027 AM Design -Proposed]

David Low Way / Beach Road

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: David Low Way S											
1	L2	169	5.0	0.129	9.8	LOS A	2.4	17.6	0.32	0.66	50.3
2	T1	578	5.0	0.735	20.9	LOS C	21.0	153.4	0.81	0.72	44.7
Approach		747	5.0	0.735	18.4	LOS B	21.0	153.4	0.70	0.71	45.8
North: David Low Way N											
8	T1	426	5.0	0.327	6.6	LOS A	8.2	59.7	0.43	0.38	54.2
9	R2	200	5.0	0.744	53.1	LOS D	10.0	73.3	1.00	0.87	31.4
Approach		626	5.0	0.744	21.4	LOS C	10.0	73.3	0.61	0.54	44.0
West: Beach Road W											
10	L2	327	5.0	0.456	29.3	LOS C	11.7	85.5	0.78	0.80	39.7
12	R2	255	5.0	0.748	50.0	LOS D	12.5	91.4	1.00	0.88	32.3
Approach		582	5.0	0.748	38.3	LOS D	12.5	91.4	0.88	0.83	36.1
All Vehicles		1956	5.0	0.748	25.3	LOS C	21.0	153.4	0.72	0.69	41.9

MOVEMENT SUMMARY

Site: 1 [2027 PM Design -Proposed]

David Low Way / Beach Road

Signals - Fixed Time Isolated Cycle Time = 100 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: David Low Way S											
1	L2	172	5.0	0.141	11.6	LOS B	2.9	21.2	0.38	0.67	49.1
2	T1	526	5.0	0.841	34.9	LOS C	24.8	180.7	0.91	0.91	38.1
Approach		698	5.0	0.841	29.2	LOS C	24.8	180.7	0.78	0.85	40.4
North: David Low Way N											
8	T1	772	5.0	0.802	12.9	LOS B	23.3	170.4	0.64	0.60	49.5
9	R2	272	5.0	0.981	86.4	LOS F	18.7	136.6	1.00	1.12	24.4
Approach		1043	5.0	0.981	32.0	LOS C	23.3	170.4	0.73	0.74	39.0
West: Beach Road W											
10	L2	271	5.0	0.341	31.3	LOS C	11.1	80.8	0.81	0.81	38.8
12	R2	327	5.0	0.856	51.6	LOS D	15.7	114.4	0.97	0.93	31.8
Approach		598	5.0	0.856	42.4	LOS D	15.7	114.4	0.89	0.88	34.7
All Vehicles		2339	5.0	0.981	33.8	LOS C	24.8	180.7	0.79	0.81	38.2

It can be seen that the results displayed in these summary sheets are significantly different from the Table 26 figures.

Specifically:

- Degrees of Saturation (DOS) are higher, and in the PM Peak analysis they are as high as 0.98 – which is way too high and unacceptable.
- Average Delays are significantly higher. In one case, in the PM Peak, for the right turn from David Low Way to Beach Rd they are expected to average 86.4 seconds – which is unacceptable.
- Estimated average queue lengths are significantly longer with PM Peak queues from David Low Way south expected to be over 180 metres, from the north to be over 170 metres and from Beach Rd over 110 metres. These sorts of queue lengths could be expected to cause significant delays and local disruption.

The unacceptability of these outcomes can be confirmed by reference to Table 4 of the Report.

It can be seen quite clearly that, contrary to what the SMEC Report says, the Beach Rd/David Low Way intersection will not be able to operate within acceptable limits by 2027.

Of further concern is the fact that SMEC were apparently unable to identify any further practical options for reconfiguration of the Beach Rd/David Low Way intersection.

Summary:

This Development Watch review of the SMEC Traffic Impact Assessment Report has identified that in the Report:

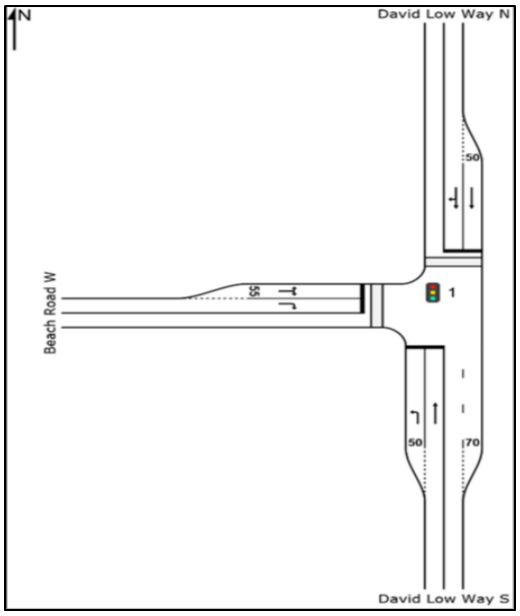
- Base Case traffic volumes could well have been under-estimated;
- The traffic likely to be generated by the Development has been under-estimated;
- Two key local intersections highlight the traffic problems which will emerge in the course of the proposed Development:
    - The Yandina-Coolum Rd/School Rd/South Coolum Rd roundabout will need to be reconstructed to a major signalised intersection requiring substantial property resumptions and very significant outlay of funds – which SH Coolum Pty Ltd have not offered to fund.
    - There appears to be no practical way to redesign and expand the David Low Way/Beach Rd intersection to adequately accommodate the anticipated traffic volumes by 2027.

It seems reasonable to conclude that the traffic network in the vicinity of the proposed large and dense residential development proposed by SH Coolum Pty Ltd had never been constructed anticipating such a dense project. The local road network will simply not be able to adequately accommodate the traffic anticipated by 2027.

TRAFFIC GENERATION CALCULATIONS BY DW

Land Use		Number of units/size	Traffic Generation Rates AM PEAK	PM PEAK	Discount Factor	Estimated Traffic (vph) AM PEAK	PM PEAK
Hotel Precinct		**454 rooms/units (SMEC says 382 units)**					
Hotel		220 rooms	0.31	0.42		68.2	92.4
Serviced apartments		218 units (SMEC Traffic Report S5 Table 1 says 148 units)				99.1	
	1 Bed [C]	35 units	0.45	0.45		*15.75*	
	1 Bed dual key [AA-AB]	84 units	0.45	0.45		*37.8*	
	2 Bed [D]	35 units	0.45	0.45		*15.75*	
	2 Bed dual key [BA-BB]						
	2 Bed units	28 units	0.45	0.45		*12.6*	
	1 Bed units	28 units	0.45	0.45		*12.6*	
	3 Bed	8 units	0.575	0.575		*4.6*	
Retail		2820 sqm (SMEC Traffic Report S5 Table 1 says 2460 sqm)				260.145	
	Shopping Centre	2460 sqm	12.3 / 100 sqm		0.75	*226.935*	
	Resort Complex	360 sqm	12.3 / 100 sqm		0.75	*33.21*	
Commercial/Community		1368 sqm (SMEC Traffic Report S5 Table 1 says 510 sqm)				27.36	
	Shopping Centre	310 sqm	2.0 / 100 sqm				
	SLSQ Store	41 sqm	2.0 / 100 sqm				
	Education Centre	331 sqm	2.0 / 100 sqm				
	Resort Complex	421 sqm	2.0 / 100 sqm				
	Day Spa	265 sqm	2.0 / 100 sqm				
	[Retail & Commercial Areas are taken directly from Info Response ATT 27]						
Single dwellings		16 units	0.85	0.85		13.6	
					STAGE 1 TOT AM PK		468
					STAGE 1 TOT PM PK		493
				SMEC Report says	STAGE 1 TOT AM PK		387
					STAGE 1 TOT PM PK		411
Precincts 2 to 5		**835 units**					
Precinct 2						74.55	
	Apartments	111 two bed units	0.45	0.45		*49.95*	
		28 three bed units	0.575	0.575		*16.1*	
	Single Dwellings	10 units	0.85	0.85		*8.5*	
Precinct 2						99.475	
	Apartments	121 two bed units	0.45	0.45		*54.45*	
		31 three bed units	0.575	0.575		*17.825*	
	Single Dwellings	32 units	0.85	0.85		*27.2*	
Precinct 2						105	
	Apartments	142 two bed units	0.45	0.45		*63.9*	
		36 three bed units	0.575	0.575		*20.7*	
	Single Dwellings	24 units	0.85	0.85		*20.4*	
Precinct 2						148.525	
	Apartments	227 two bed units	0.45	0.45		*102.15*	
		57 three bed units	0.575	0.575		*32.775*	
	Single Dwellings	16 units	0.85	0.85		*13.6*	
					STAGES 2 TO 5 TOT AM PK		428
					STAGES 2 TO 5 TOT PM PK		428
TOTAL		1069 dwellings/apartments			STAGES 1 TO 5 TOT AM PK		896
		220 hotel rooms			STAGES 1 TO 5 TOT PM PK		920
		4188 sqm commercial/retail/community	SMEC Report says [Table 3]		STAGES 1 TO 5 TOT AM PK		815
					STAGES 1 TO 5 TOT PM PK		839
					ADD CONFERENCE/EVENT COMPONENT 10%		
					CONFERENCE/EVENT TRAFFIC AM PK		90
					CONFERENCE/EVENT TRAFFIC AM PK		92
			SMEC Report says [Table 3]		STAGES 1 TO 5 TOT AM PK		815
					STAGES 1 TO 5 TOT PM PK		839
					TOTAL TRAFFIC AM PEAK		986 VPH
					TOTAL TRAFFIC PM PEAK		1012 VPH

SEKISUI'S BEACH RD INTERSECTION

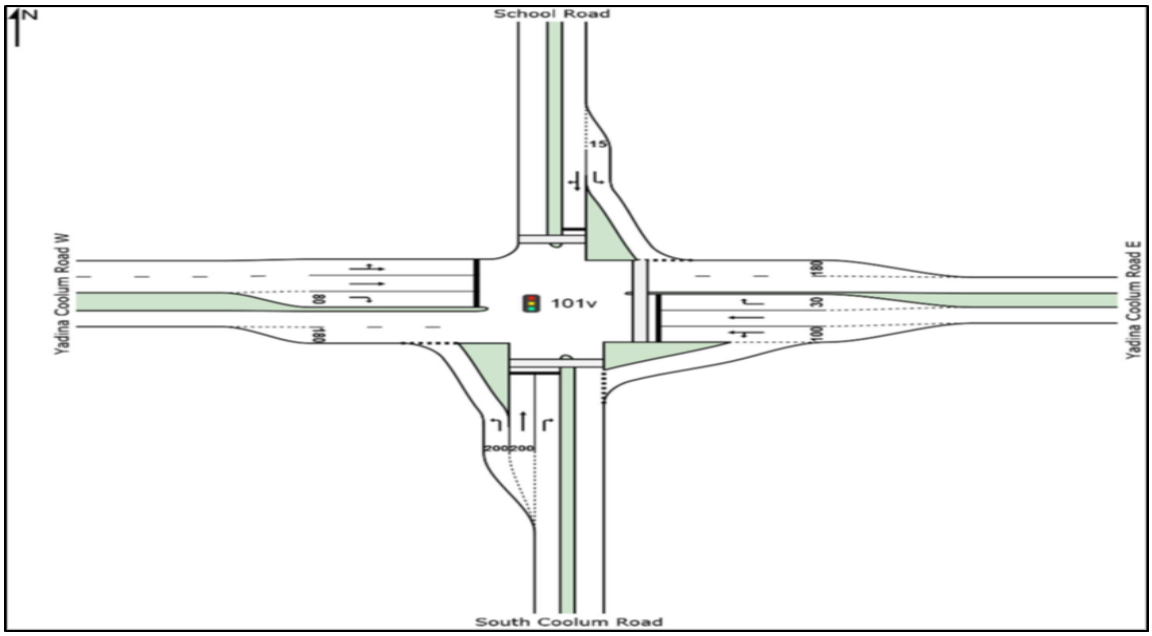


- THIS IS SEKISUI'S SUGGESTED SOLUTION TO THE TRAFFIC CONGESTION THEY ARE FORECASTING WILL OCCUR AT THE BEACH RD / DAVID LOW WAY INTERSECTION BY 2027.
- SEKISUI'S TRAFFIC REPORT PROJECTS THAT THEIR PROPOSED DEVELOPMENT WILL GENERATE OVER 800 EXTRA VEHICLE MOVEMENTS IN PEAK HOUR.
- IN PROPOSING THIS REARRANGEMENT THEY NOTE THAT GIVEN THE INTERSECTION LOCATION AND LOCAL GEOMETRIC CONSTRAINTS SCOPE FOR UPGRADE PROPOSALS IS LIMITED.
- IT CAN BE SEEN THAT THIS PROPOSAL APPEARS TO ELIMINATE ALL OF THE EXISTING BEACH-SIDE PARKING ON DAVID LOW WAY HEADING SOUTH.
- SEKISUI'S COMPUTER ANALYSIS OF THE EXPECTED PERFORMANCE OF THE EXPANDED INTERSECTION INDICATES THAT BY 2027 IT WILL STILL BE INADEQUATE WITH LONG TRAFFIC QUEUES BLOCKING ADJOINING INTERSECTIONS AND LONG DELAYS.
- WHO IS GOING TO PAY TO SORT OUT THIS MESS — AND HOW??

COOLUM'S INFRASTRUCTURE WAS NEVER DESIGNED TO HANDLE DEVELOPMENT ON THE SCALE SEKISUI ARE PROPOSING.

DEVELOPMENT WATCH INC

SEKISUI'S SCHOOL RD INTERSECTION



- THIS IS SEKISUI'S PROPOSED SOLUTION TO THE TRAFFIC CONGESTION THEY ARE FORECASTING WILL BE AT THE SCHOOL RD / YANDINA-COOLUM RD / SOUTH COOLUM RD INTERSECTION BY 2027.
- SEKISUI'S TRAFFIC REPORT PROJECTS THAT THEIR PROPOSED DEVELOPMENT WILL GENERATE OVER 800 EXTRA VEHICLE MOVEMENTS IN PEAK HOUR.
- THERE WILL CLEARLY NEED TO BE PROPERTY RESUMPTIONS AND SERVICES RELOCATIONS TO CONSTRUCT THIS MAJOR SIGNALISED INTERSECTION.
- WHAT WILL HAPPEN TO THE SCHOOL CHILDREN?
- WHO WILL PAY FOR THIS MULTI-MILLION DOLLAR INTERSECTION CONSTRUCTION??

COOLUM'S INFRASTRUCTURE WAS NEVER DESIGNED TO HANDLE DEVELOPMENT ON THE SCALE SEKISUI ARE PROPOSING.

DEVELOPMENT WATCH INC