Annexure H 1/20

deca
CONSULTING ENGINEERS

Contact Person: *Douw Louwrens (028 312 2292)*
Your Ref: *Mariners Village Retirement Village TIA*
Our Ref: *D095*
Date: *14 December 2015*

Overstrand Municipality
Project Management & Development Control
PO Box 20
Hermanus
7200

For attention: Mr. Dennis Hendriks

Sir

TRANSPORT IMPACT ASSESSMENT FOR THE PROPOSED MARINERS VILLAGE RETIREMENT VILLAGE, ERVEN 10527, 10528, 10529, 10530 AND 10532, HERMANUS

1. BACKGROUND

Deca Consulting Engineers was appointed by Destan Invest (Pty) Ltd to assess the transport impact of the proposed Mariners Village Retirement Village on erven 10527, 10528, 10529, 10530 and 10532 in Hermanus. The proposed development is situated along the western edge of the Mariners Village which is bordered by Church Street to the east and Still Street to the south. Please see the attached ***Locality Plan***.

2. DEVELOPMENT PROPOSAL

The proposed development will be completed in phases. The first phase will be situated in the south-western corner of the development area and will consist of the following units, including the frail care component:

- 12 Studio units (1 bed/unit);
- 24 Single bedroom units;
- 6 Double bedroom units;
- 40 Assisted living units (frail care);
- 25 Frail care units/beds;
- 4 Semi-detached units (2 beds/unit)

The remaining phases will be situated directly to the north of the first phase and will consist of the following additional units:

- 45 Studio units (1 bed/unit);
- 81 Single bedroom units;

VILLIERSDORP OFFICE | HERMANUS OFFICE
26 Graaff Street, Villiersdorp 6848 | PO Box 359, Villiersdorp 6848 | 7 Paterson St, Hermanus, 7200 | PO Box 1273, Hermanus, 7200
TEL +27 (0)28 840 2366 | FAX +27 (0)86 524 5723 | E-MAIL liezl@d-e-c-a.co.za | TEL +27 (0)28 312 2292 | FAX +27 (0)28 312 2325 | E-MAIL pieter@d-e-c-a.co.za
CONSULTING SERVICES CIVIL ENGINEERING | TRAFFIC ENGINEERING | TRANSPORT ENGINEERING | PROJECT MANAGEMENT
MEMBERS: L. DU PLOOY PR. ENG | P. ENGELBRECHT PR. TECH ENG • REG NO: 98/10478/23
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- 18 Double bedroom units;
- 18 Semi-detached units (2 beds/unit)

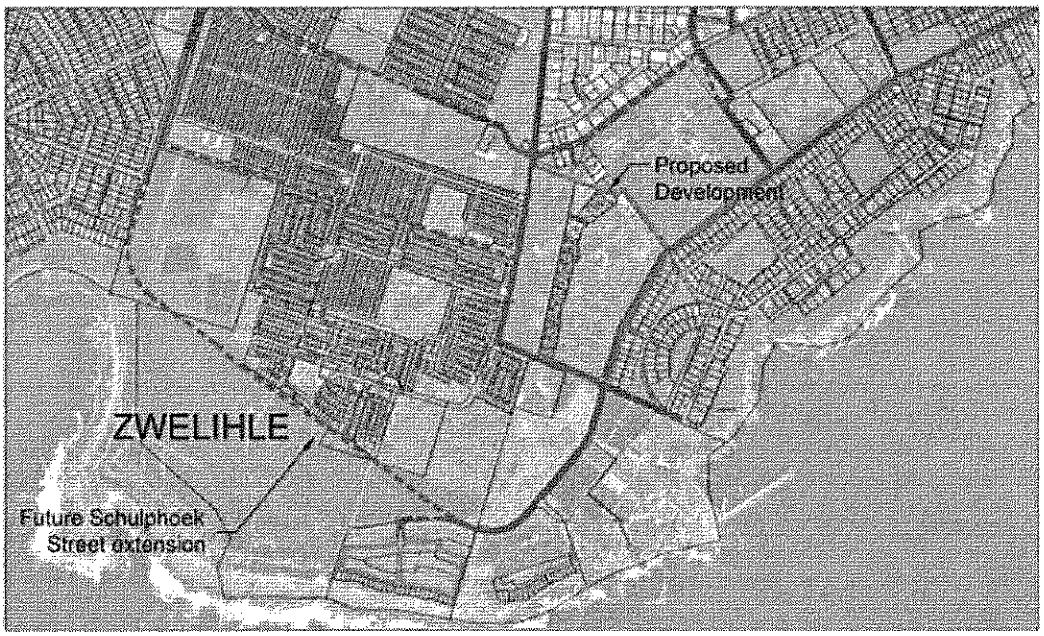
It is expected that the first phase of the development will be completed in two years' time and that the remaining units will also be completed in two phases with approximately 2 years per phase. Please see the attached ***Site Layout Proposal Plan***.

3. EXISTING ROADS AND TRAFFIC

Higher order roads in the vicinity of the development include Church Street and Still Street. The Draft Overstrand Transport Plan (*EFG / iCE Group, 2014*) proposes that these roads be classified as Class 4a roads. The proposed development will make use of the existing Mariners Village access off Church Street opposite Crescent Street.

The Draft Overstrand Transport Plan also proposes the extension of Church Street from opposite the Beach Club residential development to link up with an extension of Schulphoek Street in the west as indicated in ***Diagram 1***. It is expected that Church Street will have a noticeable increase in through moving traffic volumes once this route is finalised.

Diagram 1: Road proposals in the vicinity of the proposed development (Draft Overstrand Transport Plan, 2014)



Traffic counts were done at the Church Street / Still Street and Church Street / Crescent Street / Mariners Village Access intersections. The intersections were analysed using SIDRA to determine existing service levels. The traffic volumes and service levels are shown in ***Figure 1***.

Church Street / Still Street intersection: This is a four legged intersection with single lanes in all directions and stop control on both of the Church Street legs and free flow on Still Street. The

analysis of this intersection indicates that all movements operate at a level of service A (excellent) during the AM and PM peak hours.

Church Street / Crescent Street / Mariners Village Access intersection: This is also a four legged intersection with stop control on the Crescent Street and Mariners Village Access legs and free flow on Church Street. Church Street and Crescent Street both have one lane in each direction while the Mariners Village has two short access lanes (30m) from the intersection controlled by a gatehouse with booms and one exit lane. The analysis of this intersection indicates that all movements operate at a level of service A (excellent) during the AM and PM peak hours.

4. BACKGROUND TRAFFIC

4.1 Other developments

A number of developments are planned in the Zwelihle, Sandbaai / Mount Pleasant and Hermanus West areas. The potential number of peak hour trips generated by these developments was included in an additional calculation to determine the impact of these trips on the surrounding road network together with the impact of the proposed Mariners Village.

4.1.1 Hermanus Schulphoek Point Development Proposal

According to the 2008 subdivision and rezoning plan prepared by Urban Dynamics Western Cape, the development consists of 244 single residential erven in a private estate with controlled access.

Development of the site is required to make provision for a road reserve to accommodate the new east-west aligned relief road as indicated in ***Diagram 1***. This relief road is to be sited along the southern boundary of Zwelihle for the purpose of linking Schulphoek Road with Westcliffe and the harbour area of Hermanus.

4.1.2 Whale Coast Village Mall Traffic Impact Assessment

The proposed Whale Coast Village Mall is situated in Sandbaai on Erven 1449, 1450, 1452 and 1734, adjacent to the R43, between the Sandbaai and Schulphoek Road intersections. The development application for 38 087 m^2 GLA of retail shopping is however still being considered by the Provincial Administration, in conjunction with two other shopping centre proposals along the R43.

The traffic impact assessment (*ITS, February 2009*) shows that the main entrances will be from Bergsig Street in the south and Schulphoek Road in the east, as well as a left-in-left-out intersection on the R43. The report also stresses the importance of completing the Bergsig Street link road between Onrus and Hermanus as well as the need for the improvement and/ or signalisation of the Schulphoek and Swartdam Road intersections on the R43.

4.1.3 Zwelihle housing developments

A number of low cost housing projects have been approved in the area and some are currently underway. The majority of these dwelling units will be located between Swartdam Road and the the Mariners Village. A total of 446 units are planned for the area.

4.1.4 Whale Bay Cascades

The proposed Whale Bay Cascades is situated adjacent to the east of the Hermanus Beach Club. The development will consist of approximately 106 high income residential units.

4.2 Background 2016

It is expected that the first phase of the proposed development will be completed by the end of 2016. Existing traffic volumes on Church Street and Still Street were increased by 3% per annum to account for natural growth in background traffic. Other developments in the area

The existing Mariners Village has a total of 165 developable single residential erven. At the time of this study, 32 erven have been developed with 133 being vacant. The existing peak hour traffic volumes indicated in ***Figure 1*** includes the trips generated by these 32 developed erven. The remaining 133 vacant erven are expected to be developed by the time the Retirement Village is completed (2020) which equates to approximately 22 erven being developed per year. The potential peak hour trips generated by the undeveloped erven had to be determined and added to the expected background traffic volumes.

The affected intersections were again analysed with the SIDRA computer programme to obtain expected levels of service without the impact of phase 1 of the proposed development. See ***Figure 2***.

Church Street / Still Street intersection: All the movements at this intersection with the existing layout will continue to operate at a level of service A during the AM and PM peak hours with expected background 2020 traffic volumes.

Church Street / Crescent Street / Mariners Village Access intersection: All the movements at this intersection with the existing layout will also continue to operate at a level of service A during the AM and PM peak hours with expected background 2020 traffic volumes.

4.3 Background 2020

It is expected that the last phase of the proposed development will be completed by 2020. Traffic volumes on Church Street and Still Street were further increased by 3% per annum to obtain expected 2020 traffic volumes. The potential peak hour trips generated by the remaining undeveloped erven of Mariners Village were also determined and added to the expected background traffic volumes. The affected intersections were again analysed with the SIDRA computer programme to obtain expected levels of service without the impact of the proposed development. Refer to ***Figure 3***.

Church Street / Still Street intersection: All the movements at this intersection with the existing layout will continue to operate at a level of service A during the AM and PM peak hours with expected background 2020 traffic volumes.

Church Street / Crescent Street / Mariners Village Access intersection: All the movements at this intersection with the existing layout will also continue to operate at a level of service A during the AM and PM peak hours with expected background 2020 traffic volumes.

5. TRIP GENERATION AND DISTRIBUTION

The proposed development will be home to retired persons, who will travel less than persons of an employable age. Retired persons also travel outside the general morning and late afternoon

peak hours. In the case of this development, a Trip Generation Rate (TGR) of 0,4 trips per unit with a 25:75 in:out split was used for the single unit and assisted living components. This rate was based on empirical observations at similar retirement complexes, and covers trips by residents as well as employees.

A trip generation rate of 0,8 trips per unit with a 25:75 in:out split was used for the double bedroom and semi-detached units. It is expected that persons residing here will still lead an active lifestyle and may travel more often than those in the other retirement components.

The South African Trip Generation Rates document indicates a trip generation rate of 1.5 trips per high income residential dwelling unit for the AM and PM peak hours with a 25:75 in:out split during the AM peak hour and vice versa during the PM peak hour. This TGR was used to determine the potential number of trips generated by the developable erven of the Mariners Village.

By 2016 the expected number of additional completed Mariners Village erven will have the potential to generate an additional 114 trips (29 in; 86 out) during the AM peak hour and vice versa during the PM peak hour. This will increase to 200 trips (50 in; 150 out) during the AM peak hour and vice versa during the PM peak hour in 2020. These potential numbers of trips was included in the background trips in *Paragraph 4.1* and *4.2*.

5.1 Phase 1

The trip generation potential of Phase 1 of the proposed development and expected number of additional completed Mariners Village erven by 2016 is summarised in ***Table 1*** and ***2***.

The trips were distributed according to the existing directional splits at the Church Street / Crescent Street / Mariners Village Access intersection. Please refer to ***Figure 4*** for the distribution of trips generated by Phase 1 of the proposed development.

Table 1: Morning peak hour trip generation potential of Phase 1

Retirement Village	Units	TGR	Total Trips	% IN	% OUT	In	Out
Studios (1 bed/unit)	12	0.4	5	0.25	0.75	1	4
1 Bedroom units	24	0.4	10	0.25	0.75	2	7
2 Bedroom units	6	0.8	5	0.25	0.75	1	4
Assisted living units (frail care)	40	0.4	16	0.25	0.75	4	12
Frail care units/beds	25	0.4	10	0.25	0.75	3	8
Semi-detached units	4	0.8	3	0.25	0.75	1	2
Total	**111**		**48**			**12**	**36**

Table 2: Afternoon peak hour trip generation potential of Phase 1

Retirement Village	Units	TGR	Total Trips	% IN	% OUT	In	Out
Studios (1 bed/unit)	12	0.4	5	0.75	0.25	4	1
1 Bedroom units	24	0.4	10	0.75	0.25	7	2
2 Bedroom units	6	0.8	5	0.75	0.25	4	1
Assisted living units (frail care)	40	0.4	16	0.75	0.25	12	4
Frail care units/beds	25	0.4	10	0.75	0.25	8	3
Semi-detached units	4	0.8	3	0.75	0.25	2	1
Total	**111**		**48**			**36**	**12**

Phase 1 of the proposed development has the potential to generate 48 trips (12 in; 36 out) during the AM peak hour and vice versa during the PM peak hour.

5.2 Entire Development

The total trip generation potential of the entire proposed development and remaining developable portion of Mariners Village is summarised in ***Table 3*** and ***4***.

The trips were also distributed according to the existing directional splits at the Church Street / Crescent Street / Mariners Village Access intersection. Please refer to ***Figure 5*** for the distribution of trips generated by the entire proposed development.

Table 3: Morning peak hour trip generation potential of the entire development

Retirement Village	Units	TGR	Total Trips	% IN	% OUT	In	Out
Studios (1 bed/unit)	57	0.4	23	0.25	0.75	6	17
1 Bedroom units	105	0.4	42	0.25	0.75	11	32
2 Bedroom units	24	0.8	19	0.25	0.75	5	14
Assisted living units (frail care)	40	0.4	16	0.25	0.75	4	12
Frail care units/beds	25	0.4	10	0.25	0.75	3	8
Semi-detached units	22	0.8	18	0.25	0.75	4	13
Total	**273**		**128**			**32**	**96**

Table 4: Afternoon peak hour trip generation potential of the entire development

Retirement Village	Units	TGR	Total Trips	% IN	% OUT	In	Out
Studios (1 bed/unit)	57	0.4	23	0.75	0.25	17	6
1 Bedroom units	105	0.4	42	0.75	0.25	32	11
2 Bedroom units	24	0.8	19	0.75	0.25	14	5
Assisted living units (frail care)	40	0.4	16	0.75	0.25	12	4
Frail care units/beds	25	0.4	10	0.75	0.25	8	3
Semi-detached units	22	0.8	18	0.75	0.25	13	4
Total	**273**		**128**			**96**	**32**

The proposed development has the potential to generate 128 trips (32 in; 96 out) during the AM peak hour and vice versa during the PM peak hour.

6. TRAFFIC IMPACT

6.1 Phase 1

Trips generated by Phase 1 of the proposed development were added to the background 2016 traffic volumes to obtain expected total 2016 traffic volumes. The affected intersections were again analysed with the SIDRA computer programme to obtain the expected levels of service including the impact of Phase 1 of the proposed retirement village. Please refer to ***Figure 6*** for expected total 2016 traffic volumes and levels of service.

Church Street / Still Street intersection: All the movements at this intersection with the existing layout will continue to operate at a level of service A during the AM and PM peak hours with expected total 2016 traffic volumes.

Church Street / Crescent Street / Mariners Village Access intersection: All the movements at this intersection with the existing layout will also continue to operate at a level of service A during the AM and PM peak hours with expected total 2016 traffic volumes.

From the traffic analysis it can be concluded that Phase 1 of the proposed development will have a low traffic impact.

6.2 Entire Development

Trips generated by the entire proposed development were added to the background 2020 traffic volumes to obtain expected total 2020 traffic volumes. The affected intersections were again analysed with the SIDRA computer programme to obtain the expected levels of service with the impact of the proposed retirement village. Please refer to ***Figure 7*** for expected total 2020 traffic volumes and levels of service.

Church Street / Still Street intersection: All the movements at this intersection with the existing layout will continue to operate at a level of service A during the AM and PM peak hours with expected total 2020 traffic volumes.

Church Street / Crescent Street / Mariners Village Access intersection: All the movements at this intersection with the existing layout will also continue to operate at a level of service A during the AM and PM peak hours with expected total 2020 traffic volumes.

From the traffic analysis it can be concluded that the entire proposed development will still have a low traffic impact.

6.3 Entire Development with other possible developments

The number of potential peak hour trips generated by the developments indicated in ***Paragraph 4*** distributed to the Church Street / Still Street and Church Street / Crescent Street / Mariners Village Access intersections were added to the expected total 2020 peak hour traffic volumes. The affected intersections were again analysed with the SIDRA computer programme to obtain expected levels of service with the impact of all the possible developments included. Please refer to ***Figure 8*** for expected total 2020 traffic volumes and levels of service, including the trips of the developments mentioned in ***Paragraph 4***.

Church Street / Still Street intersection: All the movements at this intersection with the existing layout will continue to operate at acceptable levels of service during the AM and PM peak hours with expected total 2020 traffic volumes.

Church Street / Crescent Street / Mariners Village Access intersection: All the movements at this intersection with the existing layout will also continue to operate at acceptable levels of service during the AM and PM peak hours with expected total 2020 traffic volumes.

7. GEOMETRY

7.1 Internal Roads

All two lane roads should have a minimum blacktop width of 5m with minimum bellmouth radii of 5m. Where delivery vehicles are expected, minimum bellmouth radii of 6m should be provided.

7.2 Parking

All perpendicular parking bays should have dimensions of at least 2.5m x 5m, with manoeuvring space of minimum 7 metres behind bays. All parallel bays should have dimensions of at least 2.5m x 6m.

8. PARKING

The Overstrand Zoning Scheme Regulations document indicates an off-street parking requirement of 1 bay per bedroom plus 0.25 bays per frail care bed for retirement homes.

According to the requirements of the Overstrand Zoning Scheme Regulations document, Phase 1 of the proposed development will require a total of 102 off-street parking bays. ***Table 5*** summarises the off-street parking requirement of Phase 1 of the proposed development.

Table 5: Off-street parking requirements for Phase 1 of the proposed development

Retirement Village	Units	Parking bay requirement / unit	Bays required
Studios (1 bed/unit)	12	1	12
1 Bedroom units	24	1	24
2 Bedroom units	6	2	12
Assisted living units (frail care)	40	1	40
Frail care units/beds	25	0.25	6.25
Semi-detached units	4	2	8
Total	**111**		**102**

The remaining components (Phase 2 and 3) of the proposed development will require a total of 198 off-street parking bays. ***Table 6*** summarises the off-street parking requirement of the remaining proposed development.

Table 6: Off-street parking requirements for the remaining components of the proposed development

Retirement Village	Units	Parking bay requirement / unit	Bays required
Studios (1 bed/unit)	45	1	45
1 Bedroom units	81	1	81
2 Bedroom units	18	2	36
Semi-detached units	18	2	36
Total	**162**		**198**

A total of 300 off-street parking bays should therefore be provided by the proposed development. The attached SDP

9. NON MOTORISED AND PUBLIC TRANSPORT

The proposed development is located directly next to Church Street, which is a major minibus taxi route. No public transport facilities will be required specifically for the development.

A number of employees at the frail care component are expected to reside in Zwelihle and make use of non-motorised transport to access the proposed development. Adequate paved sidewalks are located along Still Street.

10. CONCLUSIONS

The transport impact assessment indicates that the proposed Mariners Village Retirement Village will have a low traffic impact. The other findings are summarised below.

- The proposed development will consist of 57 studio units (1 bed/unit), 105 single bedroom units, 24 double bedroom units, 40 assisted living units (frail care), 25 frail care units/beds and 22 semi-detached units (2 beds/unit) which will be developed in three phases;
- The proposed development will make use of the existing Mariners Village access off Church Street opposite Crescent Street;
- The stop controlled intersections of Still Street / Church Street and Church Street / Crescent Street / Mariners Village Access intersections currently operates at excellent levels of service during the AM and PM peak hours;
- The draft Overstrand Transport Plan shows proposes the extension of Church Street from opposite the Beach Club residential development to link up with an extension of Schulphoek Street in the west .It is expected that Church Street will have a noticeable increase in through moving traffic volumes once this route is finalised;
- Phase 1 of the proposed Mariners Village Retirement Village has the potential to generate 48 trips (12 in; 36 out) during the AM peak hour and vice versa during the PM peak hour. The expected number of additional completed Mariners Village erven by 2016 have the potential to generate an additional 114 trips (29 in; 86 out) during the AM peak hour and vice versa during the PM peak hour;
- The entire proposed development has the potential to generate 128 trips (32 in; 96 out) during the AM peak hour and vice versa during the PM peak hour. The undeveloped Mariners Village has the potential to generate an additional 200 trips (50 in; 150 out) during the AM peak hour and vice versa during the PM peak hour;

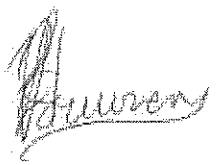
- From the traffic analysis it can be concluded that the proposed development will have a low traffic impact. No intersection improvements are required to accommodate the additional traffic generated by the development, as well as the developments mentioned in ***Paragraph 4***;
- The total number of parking bays that can be accommodated on the premises exceeds the required 300 bays;

11. RECOMMENDATIONS

The proposed Mariners Village Retirement Village has a limited impact on surrounding roads and intersections and no improvements are therefore required.

We trust that you will find this transport impact assessment in order. Kindly contact the undersigned should you have any questions.

Yours truly



Douw Louwrens (B. Eng Civil)
On behalf of: Deca