PROMETNOTEHNIŠKI INŠTITUT

Univerza v Ljubljani
Fakulteta za gradbeništvo in geodezijo

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PROMETNOTEHNIŠKI INŠTITUT

NOVELACIJA PROMETNE ŠTUDIJE – DEL LJUBLJANSKE IN KOLODVORSKE CESTE (OD CESTE R2-412/0359 KRANJ (KIDRIČEVA – ISKRA) OD KM 1,115 DO CESTE R2-412/0210, KRANJ (ISKRA – LABORE) DO KM 0,090)

KONČNO POROČILO

NAROČNIK:

Mestna občina Kranj
Urad za okolje in prostor
Slovenski trg 1
4000 Kranj

IZVAJALEC:

Univerza v Ljubljani,
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št. 070/2020

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VSEBINA

1 Splošno

Predmet elaborata je bila izdelava novelacije kapacitetne in prometno varnostne analize križišč na delu Ljubljanske in Kolodvorske ceste (od ceste R2-412/0359 Kranj (Kidričeva – Iskra) od km 1,115 do ceste R2-412/0210, Kranj (Iskra – Labore) do km 0,09) na podlagi Urbanistične strokovne podlage (Protim Ržišnik Perc) za območje KR SA 4, s katero se na to območje (Slika 1) še dodatno umešča novi avtobusni terminal v 16-imi peroni.

Elaborat je izdelan v skladu s projektno nalogo št.: 350-15/2018-4 (12.08.2020), ki jo je pripravila Mestna občina Kranj.

Leta 2018 je bila izdelana osnovna študija za 3 variante. Prva varianta je predstavljala analizo obstoječega stanja v izhodiščnem in planskem letu brez sprememb v rabi prostora. Druga varianta je predstavljala analizo obstoječega stanja geometrije in obstoječih krmilnih programov z dodatnimi obremenitvami zaradi povečane rabe prostora v območju sprejemanja OPPN (KR SA 4). Tretja varianta je predstavljala nadgradnjo druge variante, torej kapacitetno analizo križišč s spremenjenimi (optimiranimi) krmilnimi programi.

Zaradi umestitve oziroma preselitve Avtobusne postaje Kranj se bodo spremenile/povečale prometne obremenitve, zato je potrebno ponovno kapacitetno preveriti ključna križišča v vplivni okolici.

Naročnik (Občina Kranj) se je naknadno odločil preveriti še 2 dodatna scenarija oziroma fazi in sicer:

- Faza 1; preselitev Avtobusne postaje Kranj in izgradnja podzemne garaže za osebna vozila; priključevanje območja samo preko obstoječega križišča Iskra 2 (križišče 1),
- Faza 2; preselitev Avtobusne postaje Kranj in izgradnja podzemne garaže za osebna vozila; priključevanje območja preko obstoječega križišča »Železniška postaja« (križišče 1) in preko nove povezave na severnem delu območja, vzpostavitev četrtega kraka na križišču »Aquasava« (križišče 3).

S prometnim modelom (PTV Vistro), ki je bil izdelan in uporabljen v osnovni študiji ter kalibriran na sedanje obstoječe prometne obremenitve (uporabljeni podatki iz avtomatskih števnih mest), smo za vsakega od dodatnih scenarijev/faz napovedali predvidene prometne tokove na obravnavanem območju.

Predvideva se, da bi faza 1 bila predana namenu v letu 2025 (vmesno leto), faza 2 pa v letu 2040 (plansko leto). Za ti dve leti so bile napovedane prometne obremenitve (uporabljena je ista generacija dodatnih prometnih obremenitev kot v osnovni študiji leta 2018, dodane so bile le obremenitve zaradi avtobusov).

Kapacitetna analiza je bila v fazi 1 narejena za križišči »Železniška postaja« (križišče K1) in »Iskra« (križišče K2), v fazi 2 pa še za križišče »Aquasava« (križišče K3).

V zaključku elaborata so predlagani ukrepi z namenom zagotavljanja ustreznih nivojev uslug na obravnavanih križiščih do konca planske dobe (leta 2040).

Slika 1: Lokacija obravnavanega območja KR SA 4 v Kranju med Šmarjetno goro in Savo

2 Uporabljena metodologija

Za izdelavo novelacije študije smo uporabili orodje PTV Vistro 2020. Vsi analitični izračuni so narejeni po metodologiji HCM (ki jo priznava in predpisuje tudi Ministrstvo za infrastrukturo, DRSI). Upoštevani so vsi pomembnejši parametri (geometrija križišča, merodajne prometne obremenitve, zamude in nivo uslug - NU, dolžine kolon). Vhodni podatki po smereh so organizirani glede na orientacijo križišča v prostoru in glede na prikazane prometne obremenitve oziroma geometrijo križišča.

Za analizo prepustnosti in/ali dimenzioniranje križišč so pomembni sledeči parametri:

- fazno zaporedje na semaforiziranih križiščih,
- predvidene prometne obremenitve za izračun (EOV/uro),
- nivo uslug (NU) v odvisnosti od zamud in stopnje nasičenosti,
- število vozil v koloni in s tem zajezitvena dolžina v posamezni smeri,
- povprečna zamuda na vozilo (sekund/vozilo) v posamezni smeri

Za uspešnost delovanja križišča sta pomembna dva kriterija: kriterij prometnih obremenitev (kapaciteta), ki je izražen preko stopnje nasičenosti X = V/C in kriterij čakalnih časov, ki je izražen preko zamud. Merilo so t.i. Nivoji Uslug v posameznih smereh.

Na nesemaforiziranih križiščih sta kapaciteta in čakalni čas na voznih pasovih neprednostnih priključkov odvisna od tega, koliko zadostnih časovnih razmakov med vozili na prednostnih smereh lahko izkoristijo vozila iz neprednostnih smeri, da izvršijo želeno prometno operacijo vključevanja ali prečkanja prometnega toka. Ob koncu planske dobe je še zadovoljiva stopnja nasičenja X = 0,85, ko je dosežen kriterij prometnih obremenitev. Čakalni časi oziroma konični NU pa je lahko "E", ko je dosežen kriterij čakalnih časov. V primeru NU F je potrebno izvesti ustrezne ukrepe za povečanje uspešnosti in/ali kapacitete križišča (razširitev, semaforizacija, idr.) že pred iztekom planske dobe.

Pri semaforiziranih križiščih je prometna uspešnost odvisna predvsem od stopnje nasičenosti posameznih smeri, poznana tudi kot X = V/C, ki predstavlja razmerje dejanskih merodajnih prometnih obremenitev (V) v odvisnosti od kapacitete (C). Kapaciteta je odvisna od geometrijskih elementov križišča, lastnosti prometnega toka in od krmilnih parametrov. Definira jo tudi razmerje med stopnjo merodajnih obremenitev in stopnjo nasičenega prometnega toka v posameznih smereh ($Y = Q_{mer}/S$) in razmerja zelenih luči v odvisnosti od dolžine ciklusa ($\lambda = g/C$). Stopnja

nasičenosti X predstavlja tudi razmerje X = Y/λ. Še zadovoljiva stopnja nasičenosti posamezne samostojne smeri semaforiziranega križišča je med X = 0,90 do 0,95, ko je dosežen kriterij prometnih obremenitev. Nivo uslug (NU) križišča in posameznih smeri je vezan na zamude oziroma čakalne čase vozil. Ti so odvisni od dejanskih prometnih obremenitev glede na porazdelitev zelenih časov (čakalni časi pri rdečem signalu). NU E kaže na dosežen kriterij čakalnih časov, NU F pa na presežen kriterij.

Pri krožnih križiščih je kapaciteta odvisna od zmogljivosti priključkov. Na to vplivajo poleg splošnih geometrijskih elementov krožnega križišča, še geometrijski elementi uvoza. Stopnja nasičenosti priključkov naj ne bi presegla X = 0.85, še sprejemljivi NU so E.

V skladu z metodologijo HCM je potrebno križišča in priključke v naseljih računati na maksimalni 15 minutni promet v konični urah. Na merodajne prometne obremenitve v izračunih bistveno vpliva faktor urne konice (O_{mer} = O_{dej} /PHF). V primeru velikega nihanja prometa znotraj konične ure so lahko merodajne prometne obremenitve bistveno večje od dejanskih.

Kriterij čakalnih časov po HCM je prikazan v preglednici 1.

Preglednica 1: Kriterij čakalnih časov

	Zamude na vozilo, d [s]	
Nivo uslug (NU)	**Semaforizirana in krožna križišča**	**Nesemaforizirana križišča**
A	d <=10	d <= 10
B	10 < d <= 20	10 < d <= 15
C	20 < d <= 35	15 < d <= 25
D	35 < d <= 55	25 < d <= 35
E	55 < d <= 80	35 < d <= 50
F	80 < d	50 < d

3 Vhodni podatki

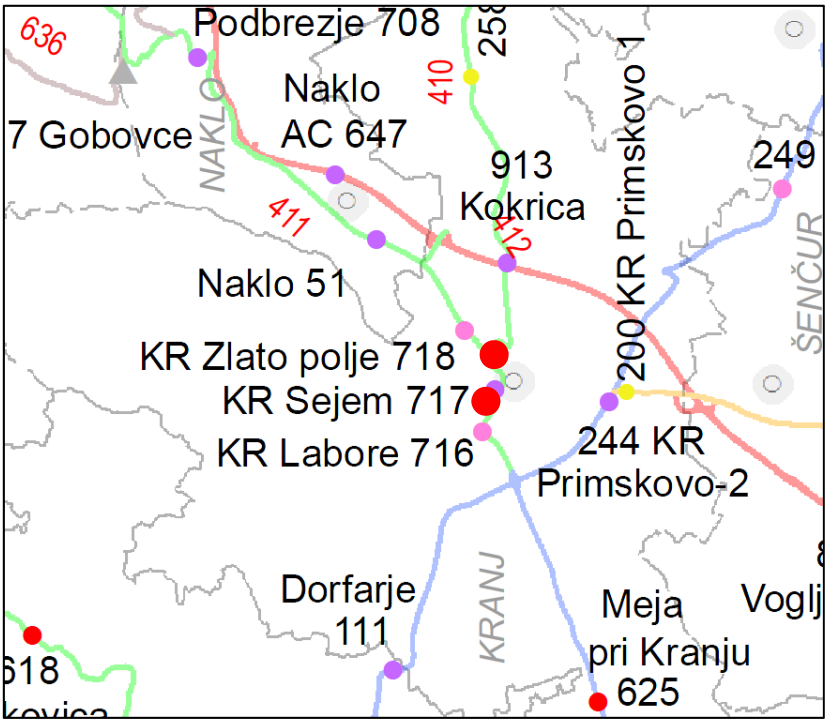
3.1 Prometne obremenitve

Dodatno ročno štetje prometa ni bilo izvedeno.
Uporabljeni so bili podatki o prometnih obremenitvah iz osnovne študije, kalibrirani (povečani) na podlagi podatkov iz avtomatskih števnih mest.

3.1.1 Avtomatski števci prometa (analiza PLDP)

Tako, kot v osnovni študiji, smo obravnavali avtomatski števni mesti ŠTM 716 KR Labore ter ŠTM 717 KR Sejem (Slika 2). Iz publikacije Promet (DRSI) smo dodatno zbrali še podatke za leta 2017, 2018 in 2019.

Števno mesto ŠTM 716 KR Labore se nahaja pred križiščem K1 »Železniška postaja«, števno mesto ŠTM 717 KR Sejem pa se nahaja za križiščem K3 »Krožno križišče Aquasava« v nasprotni smeri naraščanja stacionaže.



Slika 2: Lokacije števnih mest v na obravnavanem odseku

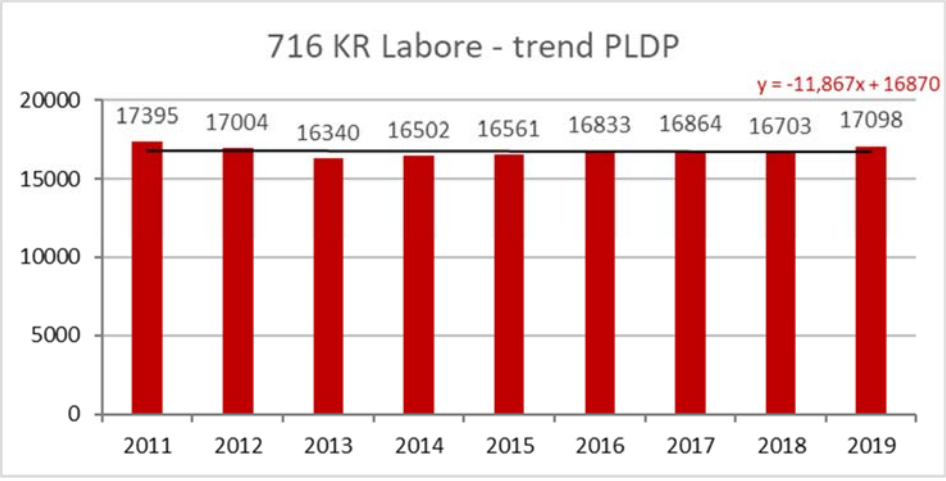
Podatki o prometnih obremenitvah za leta od 2011 do 2019 so zbrani v naslednjih preglednicah in prikazani na grafikonih (Preglednica 2, Preglednica 3, Slika 3 in Slika 4).

Preglednica 2: PLDP - Prometne obremenitve in struktura prometa za (DRSI) ŠTM 716 KR Labore (vir: DRSI, http://www.drsi.gov.si)

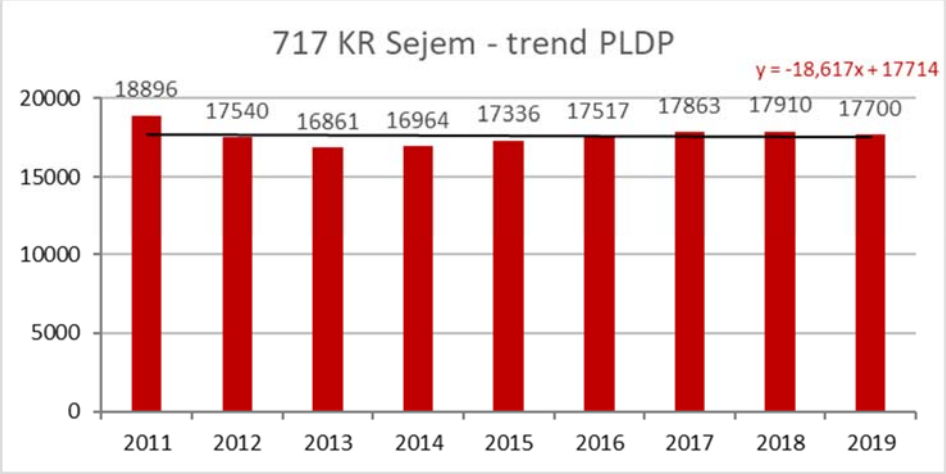
LETO	Vsa vozila (PLDP)	Motorji	Os. vozila	Avtobusi	La. tov. < 3,5t	Sr. tov. 3,5 - 7t	Tež. tov. > 7t	Tov. s prik.	Vlač.
2011	17395	138	15315	250	1052	242	156	74	168
2012	17004	126	14992	257	1040	232	137	68	152
2013	16340	120	14343	260	1011	234	132	72	168
2014	16502	126	14367	264	1056	248	185	68	188
2015	16561	131	14400	268	1081	254	177	68	182
2016	16833	136	14667	272	1115	238	117	76	212
2017	16864	135	14683	290	1101	207	145	66	237
2018	16703	131	14518	290	1142	192	141	59	230
2019	17098	130	14684	289	1191	227	202	81	294

Preglednica 3: PLDP - Prometne obremenitve in struktura prometa za (DRSI) ŠTM 717 KR Sejem (vir: DRSI, http://www.drsi.gov.si)

LETO	Vsa vozila (PLDP)	Motorji	Os. vozila	Avtobusi	La. tov. < 3,5t	Sr. tov. 3,5 - 7t	Tež. tov. > 7t	Tov. s prik.	Vlač.
2011	18896	119	17011	43	1086	203	243	59	132
2012	17540	108	15837	44	976	184	215	53	123
2013	16861	104	15204	53	952	177	194	53	124
2014	16964	109	15146	71	985	179	266	52	156
2015	17336	118	15443	78	1018	182	280	54	163
2016	17517	122	15655	75	1052	176	192	60	185
2017	17863	135	15892	75	1158	173	170	62	198
2018	17910	167	15818	75	1213	172	179	64	222
2019	17700	165	15502	56	1212	210	170	85	300



Slika 3: Prikaz povprečnega letnega dnevnega prometa na ŠTM 716 KR Labore.



Slika 4: Prikaz povprečnega letnega dnevnega prometa na ŠTM 717 KR Sejem.

Iz analize števnih podatkov je razvidno, da je bila rast prometa v zadnjih 3 letih minimalna. K temu je prispevalo tudi dejstvo, da je bilo v zadnjem obdobju rekonstruiranih kar nekaj cest in stari most čez Savo v vplivni okolici), ki so imela za posledico preusmeritev prometnih tokov in zmanjšanje le-teh na obravnavanem območju.

V osnovni študiji je bila uporabljena 1% letna rast prometa za vsa vozila, zato smo tudi sedaj (na podlagi podatkov zadnjih 3 let) strokovno ocenili, da se uporabi 1% splošna letna rast.

Za kapacitetno analizo križišč v fazi 1 v letu 2025 (vmesno leto) smo upoštevali preštete prometne obremenitve v 2017 ter jih povečali za faktor F_1 = 1,083 in v fazi 2 v letu 2040 (plansko leto) jih povečali za faktor F_2=1,255.

Z upoštevanjem 1% splošne letne rasti prometa smo na varni strani pri napovedi in načrtovanju prometnih obremenitev, saj je v mestnih središčih v času konic kapaciteta omrežja oziroma križišč že dosežena. Količina prometa se ne povečuje več (oziroma se povečuje minimalno), temveč se podaljšuje čas trajanja koničnih obremenitev.

3.1.2 Generacija dodatnih prometnih obremenitev

Upoštevane so bile iste dodatne prometne obremenitve kot v osnovni študiji, kjer smo upoštevali dodatno generacijo prometa zaradi spremembe rabe obstoječih površin na več površinah znotraj obravnavnega območja.

Pri novelaciji smo upoštevali še avtobuse zaradi preselitve Avtobusne postaje Kranj, ki bodo v fazi 1 obremenili samo križišče K1 (uvoz in izvoz avtobusov bo potekal preko križišča K1), v fazi 2 pa tudi križišče K3 (uvoz na Avtobusno postajo Kranj bo potekal preko križišča K1, izvoz pa preko križišča K3).

Upoštevano je bilo, da tako v jutranji kot popoldanski konici na postajo zapelje povprečno 30 avtobusov in jih 30 postajo tudi zapusti. Število avtobusov v konicah je bilo ocenjeno, saj v tem trenutku ni moč pridobiti podatka, katere linije medkrajevnega, primestnega in mestnega prometa bodo zapeljale na perone nove avtobusne postaje.

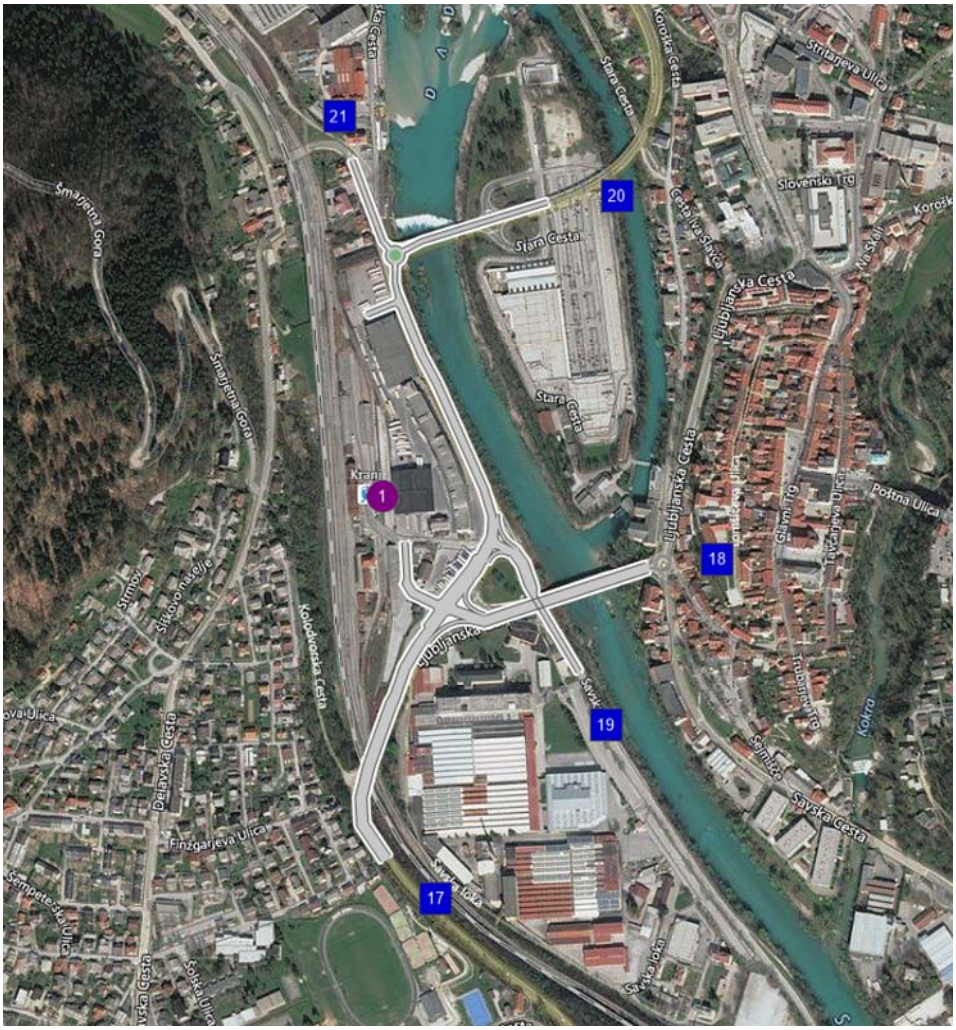
Dodatne prometne obremenitve smo, tako kot v osnovni študiji, po cestni mreži porazdelili s pomočjo prometnega modela, narejenega s programskim orodjem PTV Vistro 2020.

3.1.2.1. Coning

Tudi coning obravnavanega območja je bil povzet po osnovni študiji.
Območje, ki se ureja (KR SA 04), predstavlja cona št. 1. Ostale cone (5 con) predstavljajo izvore in ponore obstoječih ter novo generiranih potovanj (vse dostopne ceste). Upoštevane cone so predstavljene na prikazu Slika 5.

Zunanje cone:

- 17 Medvode
- 18 Center
- 19 Savska loka
- 20 Koroška
- 21 Gorenjesavska



Slika 5: Coning obravnavanega območja

Preglednica 4: Izračun generacije dodatnega prometa zaradi nove dejavnosti in avtobusne postaje v jutranji konici

	To KR SA 4	Zone 1 : KR SA 4		From KR SA 4	
From	Share	Trips	To	Share	Trips
17: Medvode	18,00 %	14	17: Medvode	23,00 %	13
18: Center	46,00 %	36	18: Center	46,00 %	26
19: Savska loka	2,00 %	2	19: Savska loka	8,00 %	4
20: Koroška	27,00 %	21	20: Koroška	21,00 %	12
21: Gorenjesavska	7,00 %	6	21: Gorenjesavska	2,00 %	1
Total	*100,00 %*	*79*	*Total*	*100,00 %*	*56*

Preglednica 5: Izračun generacije dodatnega prometa zaradi nove dejavnosti in avtobusne postaje v popoldanski konici

To KR SA 4			Zone 1 : KR SA 4	From KR SA 4	
From	Share	Trips	To	Share	Trips
17: Medvode	28,00 %	15	17: Medvode	28,00 %	18
18: Center	36,00 %	20	18: Center	36,00 %	25
19: Savska loka	2,00 %	1	19: Savska loka	2,00 %	1
20: Koroška	29,00 %	16	20: Koroška	29,00 %	19
21: Gorenjesavska	5,00 %	3	21: Gorenjesavska	5,00 %	3
Total	100,00 %	55	Total	100,00 %	66

Prometne obremenitve, ki jih bo generirala spremenjena raba prostora in preselitev Avtobusne postaje Kranj smo dodali obstoječim prometnim obremenitvam in jih tako upoštevali pri kapacitetni analizi obravnavanih križišč.

4 Kapacitetna analiza

Kapacitetna analiza za obe fazi je bila izdelana za vsa tri obodna križišča (»Železniška postaja« - K1, »Iskra« - K2 in »Aquasava« - K3). Lokacije analiziranih križišč so prikazane na naslednji sliki (Slika 6).

Slika 6: Lokacije križišč, za katere je bila opravljena kapacitetna analiza

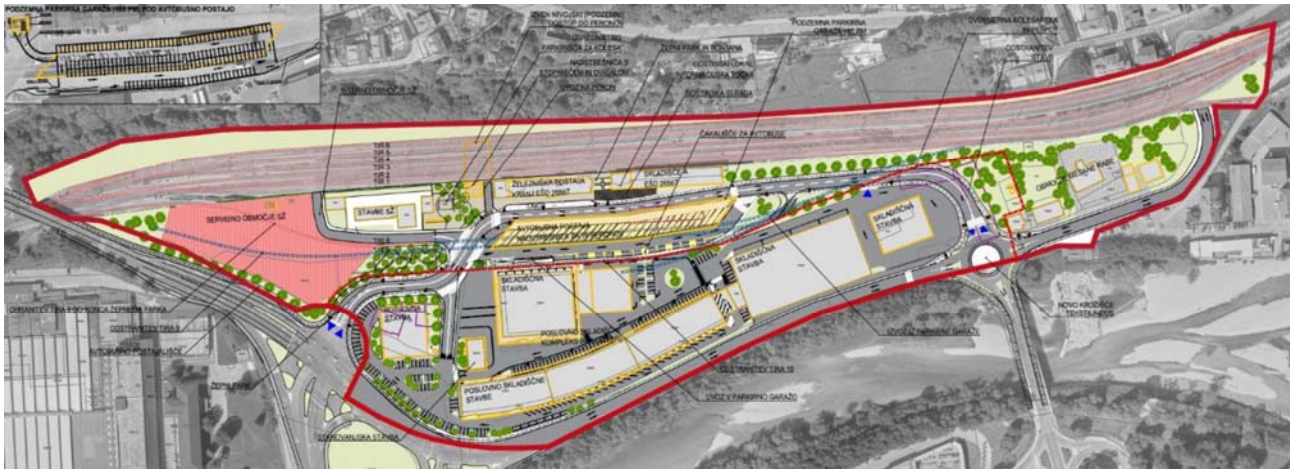
Pri kapacitetni analizi obeh faz je bila upoštevana obstoječa geometrijska zasnova križišč K1 in K2, za križišče K3 pa je bil v fazi 2 dodan četrti/zahodni krak, ki bo predstavljal nov dostop v območje KR SA 04.

4.1 Opis variant – obravnavani scenariji/faze

V okviru novelacije osnovne naloge smo preverili 2 dodatna scenarija oziroma 2 fazi z upoštevano preselitvijo Avtobusne postaje Kranj na obravnavano območje (enota KR SA 4), v obeh prometnih konicah in v dveh časovnih presekih (2025 – vmesno leto, 2040 – plansko leto).

Na naslednjih dveh slikah (Slika 7 in Slika 8) je prikazana shema – zasnova cestnega prometnega omrežja in umestitve Avtobusne postaje Kranj znotraj obravnavanega območja KR SA 4.

Slika 7: Geometrijska zasnova umestitve AP Kranj in cestno omrežje v fazi 1



Slika 8: Geometrijska zasnova umestitve AP Kranj in cestno omrežje v fazi 2

Obravnavani scenariji/faze:

- **Faza 1 v letu 2025 in 2040**
- obstoječe stanje geometrije vseh analiziranih križišč,
- optimirana krmilna programa na križiščih K1 in K2,
- dodatna generacija prometa zaradi nove rabe v območju KR SA 4,
- dodatna generacija prometa zaradi preselitve Avtobusne postaje Kranj.

- **Faza 2 v letu 2040**
- obstoječe stanje geometrije analiziranih križišč K1 in K2, dodan četrti/zahodni krak in povečanje radija na krožnem križišču K3,
- optimirana krmilna programa na križiščih K1 in K2,
- dodatna generacija prometa zaradi nove rabe v območju KR SA 4,
- dodatna generacija prometa zaradi preselitve Avtobusne postaje Kranj.

Križišča so bolj podrobno opisana v nadaljevanju.

4.1.1 Faza 1

Faza 1 predstavlja analizo obstoječega stanja geometrije vseh treh analiziranih križišč in optimiranih krmilnih programov na križiščih K1 in K2.

Za analizo v vmesnem letu 2025 (ob začetku delovanja faze 1) smo poleg naravne rasti prometa (faktor 1,072) upoštevali še dodatne prometne obremenitve zaradi povečane rabe prostora v obravnavanem območju in preselitve AP Kranj.

Za analizo v planskem letu 2040 (ob začetku delovanja faze 2) smo poleg naravne rasti prometa (faktor 1,255) upoštevali še dodatne prometne obremenitve zaradi povečane rabe prostora v obravnavanem območju in preselitve AP Kranj.

Upoštevano je bilo, da se vsa vozila v in iz območja KR SA 4 vodi preko križišča K1.

Križišče 1 – štirikrako semaforizirano križišče

Geometrijski elementi

Krak A (Ljubljanska cesta – južni krak); prednostna smer

- štirje uvozni pasovi, od tega en pas za leve zavijalce dolžine cca. l_a = 60 m, dva pasova za naravnost (od tega en dolžine l_a = 100 m) in en pas za desne zavijalce (by-pass) dolžine cca. l_a = 45 m,
- dva izvozna pasova (od tega en dolžine l_a = 100 m),
- preko kraka poteka prehod za pešce in kolesarje dolžine cca. 22 m (brez by-passa).

Krak B (Ljubljanska cesta - vzhodni krak); neprednostna smer

- štirje uvozni pasovi, od tega dva pasova za leve zavijalce (en pas za leve dolžine l_a = 60 m), en pas za naravnost ter en pas za desne zavijalce (by-pass) dolžine cca. l_a = 20 m,
- dva izvozna pasova (od tega en dolžine l_a = 45 m),
- preko kraka poteka prehod za pešce in kolesarje dolžine cca. 27 m (brez by-passov).

Krak C (Kolodvorska cesta – severni krak); prednostna smer

- trije uvozni pasovi, od tega en pas za leve zavijalce, en pas za naravnost in en pas za naravnost in desne zavijalce dolžine cca. l_a = 55 m,
- dva izvozna pasova,
- preko kraka poteka prehod za pešce in kolesarje dolžine cca. 20 m (brez by-passa).

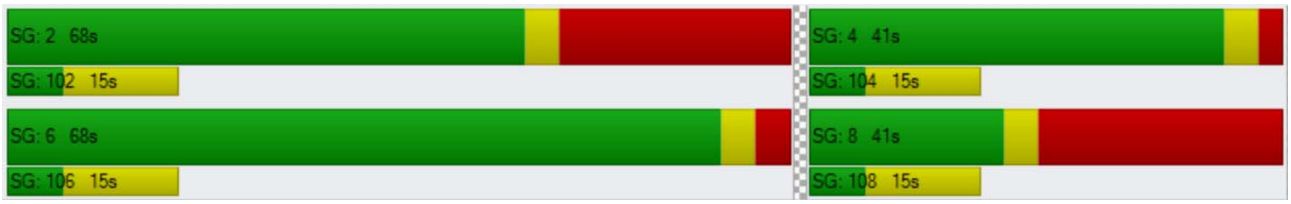
Krak D (Kolodvorska cesta - izvoz iz obravnavanega območja – zahodni krak) – neprednostna smer

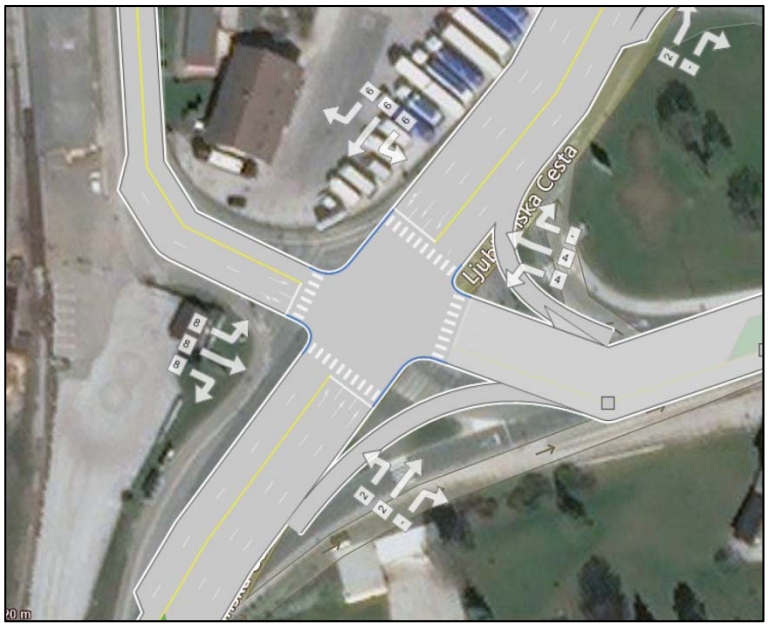
- dva uvozna pasova, od tega en pas za leve zavijalce in en skupen pas za naravnost in desne zavijalce dolžine cca. l_a = 45 m ter,
- en izvozni pas,
- preko kraka poteka prehod za pešce dolžine cca. 18 m.

Na vseh krakih križišča je omejitev hitrosti 50 km/h.

Krmilni program

Prometno odvisni semafor, dolžina cikla od 75s do 120 s





Križišče 2 – trikrako semaforizirano križišče

Geometrijski elementi

Krak A (Kolodvorska cesta – južni krak); prednostna smer

- trije uvozni pasovi, od tega dva pasova za naravnost in en pas za desne zavijalce (by-pass) dolžine cca. l_a = 15 m,
- dva izvozna pasova,

Krak B (Savska loka - vzhodni krak); neprednostna smer

- trije uvozni pasovi, od tega dva pasova za leve zavijalce (en pas za leve dolžine l_a = 20 m) in en pas za desne zavijalce (by-pass) dolžine cca. l_a = 80 m,
- en izvozni pas,

Krak C (Kolodvorska cesta – severni krak); prednostna smer

- dva uvozna pasova, od tega en pas za leve zavijalce dolžine cca. l_a = 65 m in en pas za naravnost,
- dva izvozna pasova (od tega en dolžine l_a = 45 m),

Na vseh krakih križišča je omejitev hitrosti 50 km/h.

Krmilni program

Prometno odvisni semafor, dolžina cikla od 75s do 120s

Križišče 3 – trikrako krožno križišče

Geometrijski elementi

Krak A (Kolodvorska cesta – južni krak); neprednostna smer

- en uvozni pas za naravnost in desno,
- en izvozni pas,

Krak B (Stara cesta - vzhodni krak); neprednostna smer

- en uvozni pas za levo in desno,
- en izvozni pas,

Krak C (Gorenjesavska cesta– severni krak); neprednostna smer

- en uvozni pas za levo in naravnost,
- en izvozni pas,

Krožno križišče ima premer notranjega otoka 12 m in širino krožnega voznega pasu 6m.

Na vseh krakih križišča je omejitev hitrosti 50 km/h.

4.1.2 Faza 2

Faza 2 predstavlja analizo obstoječega stanja geometrije obeh analiziranih semaforiziranih križišč K1 in K2 in optimiranih krmilnih programov. Na križišču K3 se doda četrti/zahodni krak in poveča radij.

Za analizo v planskem letu 2040 (ob začetku delovanja faze 2) smo poleg naravne rasti prometa (faktor 1,255) upoštevali še dodatne prometne obremenitve zaradi povečane rabe prostora v obravnavanem območju in preselitve AP Kranj.

Osebna vozila v in iz območja KR SA 4 se vodijo na oba možna dostopa (preko križišča K1 in preko nove povezave na križišče K3). Uvoz avtobusov na Avtobusno postajo Kranj bo potekal preko križišča K1, izvoz pa preko križišča K3.

Križišče 1 – štirikrako semaforizirano križišče

Geometrijski elementi in Krmilni program

Glej opis pri fazi 1!

Križišče 2 – trikrako semaforizirano križišče

Geometrijski elementi in Krmilni program

Glej opis pri fazi 1!

Križišče 3 – štirikrako krožno križišče

Geometrijski elementi

Krak A (Kolodvorska cesta – južni krak); neprednostna smer

- en uvozni pas za vse smeri,
- en izvozni pas,

Krak B (Stara cesta - vzhodni krak); neprednostna smer

- en uvozni pas za vse smeri,
- en izvozni pas,

Krak C (Gorenjesavska cesta – severni krak); neprednostna smer

- en uvozni pas za vse smeri,
- en izvozni pas.

Krak D (Kolodvorska cesta – zahodni krak); neprednostna smer

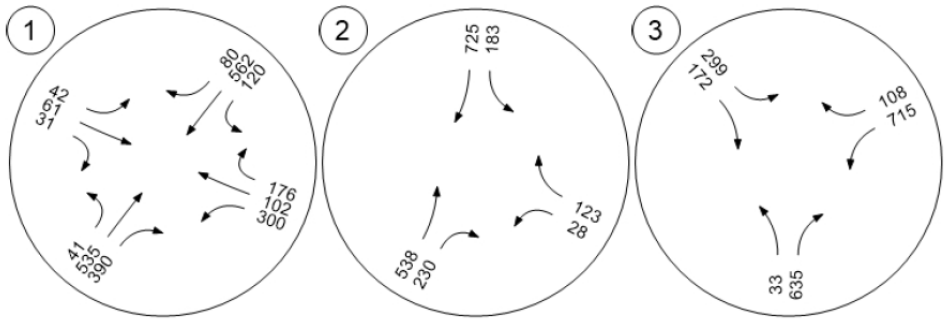
- en uvozni pas za vse smeri,
- en izvozni pas.

Rekonstruirano krožno križišče ima premer notranjega otoka 24 m in širino krožnega voznega pasu 6m.

Na vseh krakih križišča je omejitev hitrosti 50 km/h.

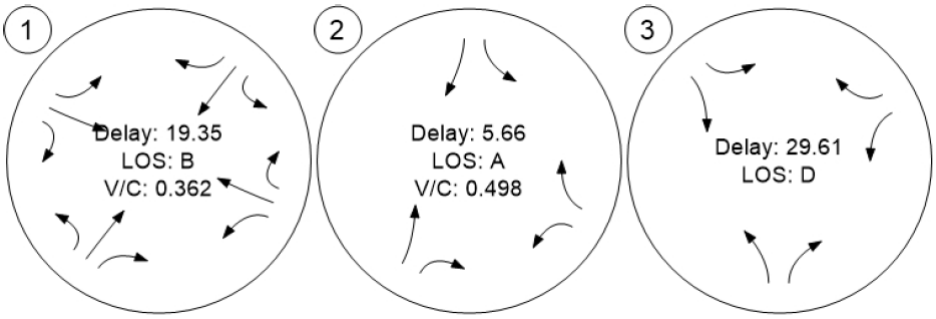
4.2 Kapacitetna analiza križišč v vmesnem letu 2025

4.2.1 Prometne obremenitve JK, faza 1, leto 2025

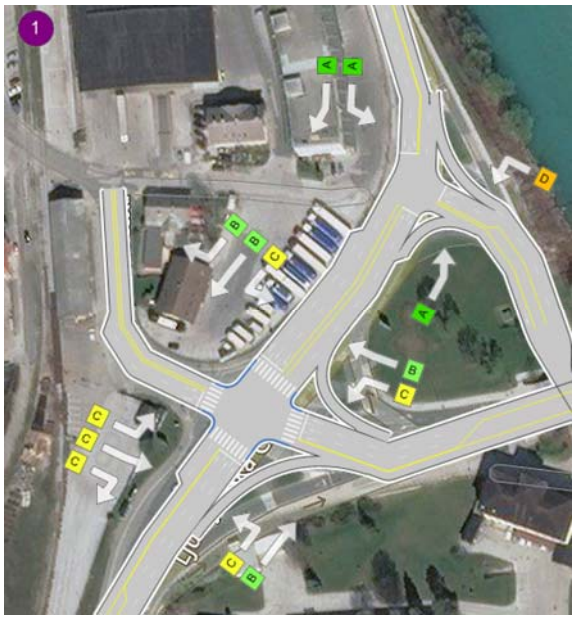


Zavijalci (vsa vozila/h) po posameznih smereh

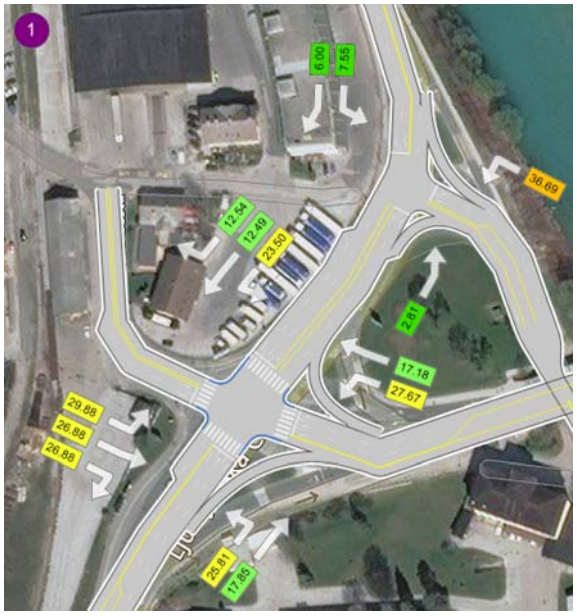
4.2.2 Rezultati JK, faza 1, leto 2025



Skupna zamuda, nivo uslug in st. zasičenosti

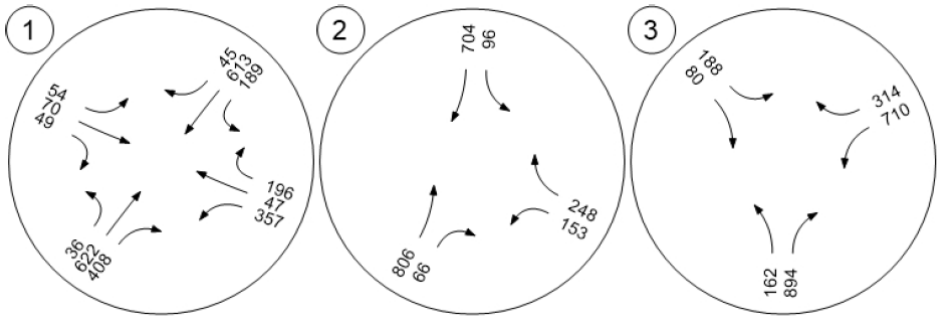


Nivo uslug po posameznih smereh



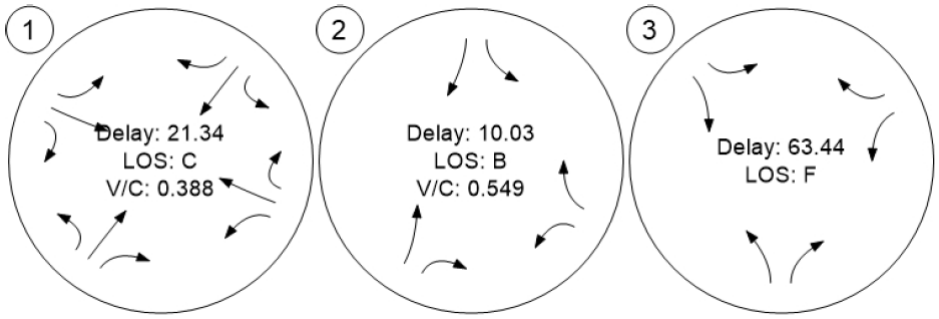
Zamude (s/vozilo) po posameznih smereh

4.2.3 Prometne obremenitve PK, faza 1, leto 2025



Zavijalci (vsa vozila/h) po posameznih smereh

4.2.4 Rezultati PK, faza 1, leto 2025



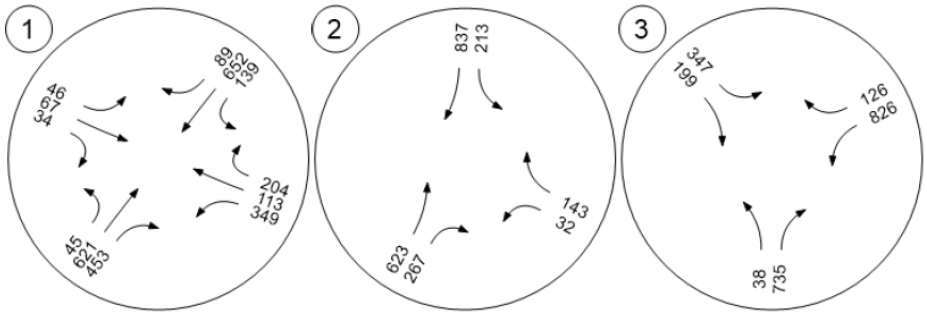
Skupna zamuda, nivo uslug in st. zasičenosti

Nivo uslug po posameznih smereh

Zamude (s/vozilo) po posameznih smereh

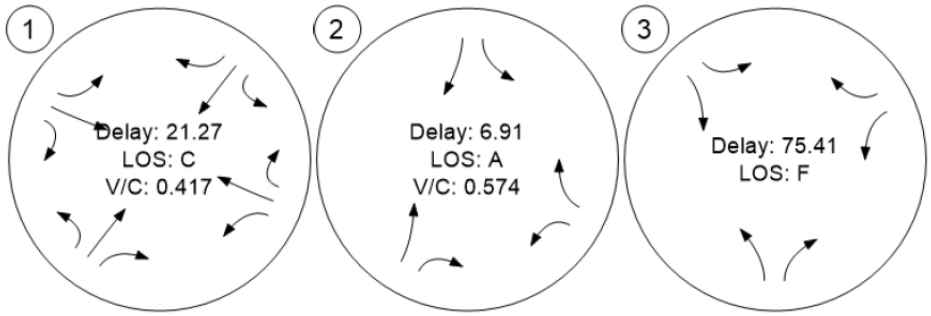
4.3 Kapacitetna analiza križišč v planskem letu 2040

4.3.1 Prometne obremenitve JK, faza 1, leto 2040



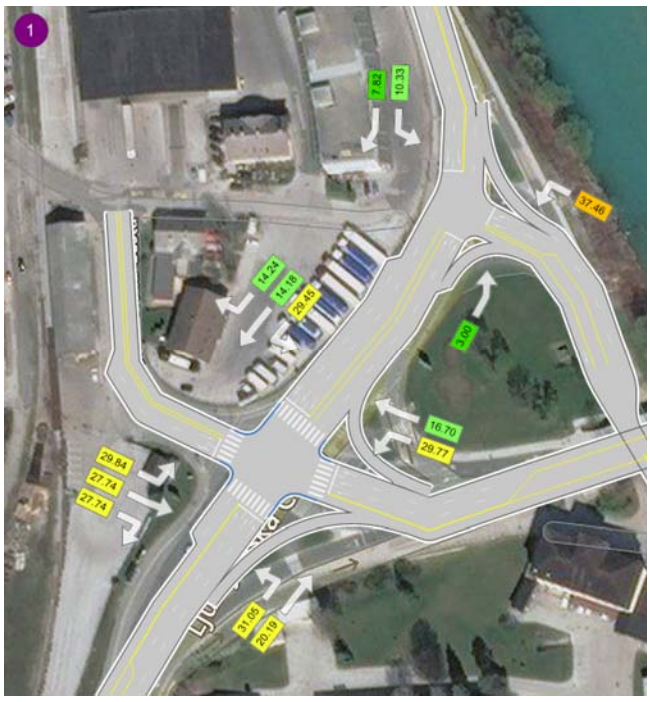
Zavijalci (vsa vozila/h) po posameznih smereh

4.3.2 Rezultati JK, faza 1, leto 2040



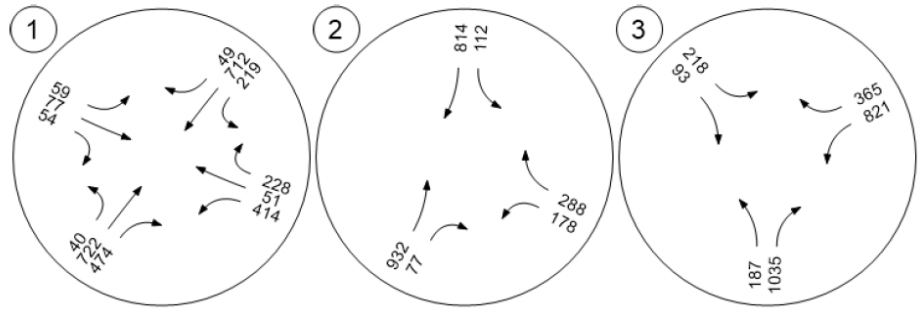
Skupna zamuda, nivo uslug in st. zasičenosti

Nivo uslug po posameznih smereh



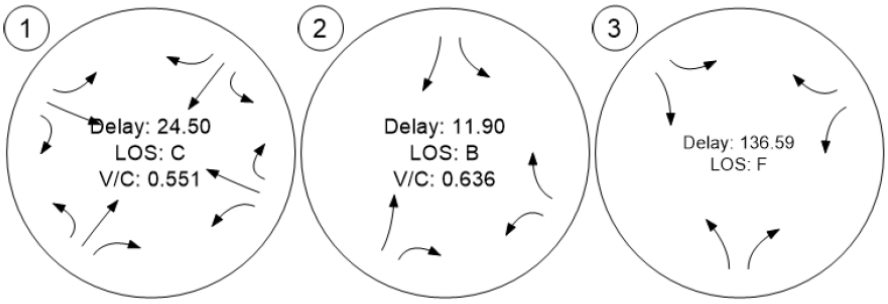
Zamude (s/vozilo) po posameznih smereh

4.3.3 Prometne obremenitve PK, faza 1, leto 2040



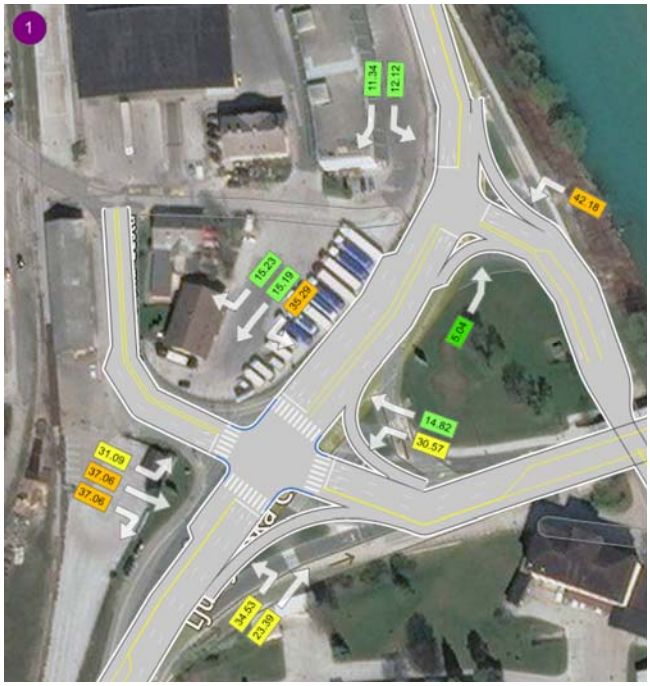
Zavijalci (vsa vozila/h) po posameznih smereh

4.3.4 Rezultati PK, faza 1, leto 2040



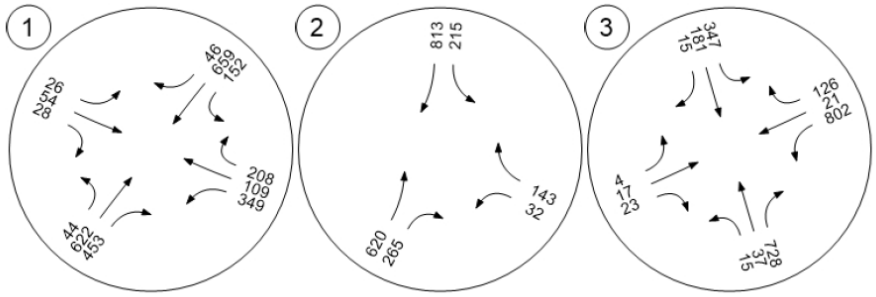
Skupna zamuda, nivo uslug in st. zasičenosti

Nivo uslug po posameznih smereh



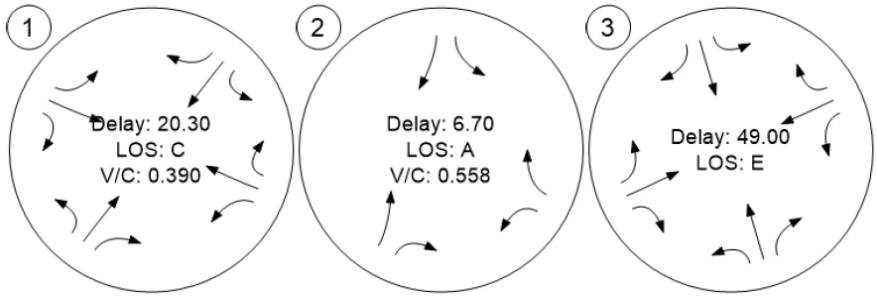
Zamude (s/vozilo) po posameznih smereh

4.3.5 Prometne obremenitve JK, faza 2, leto 2040



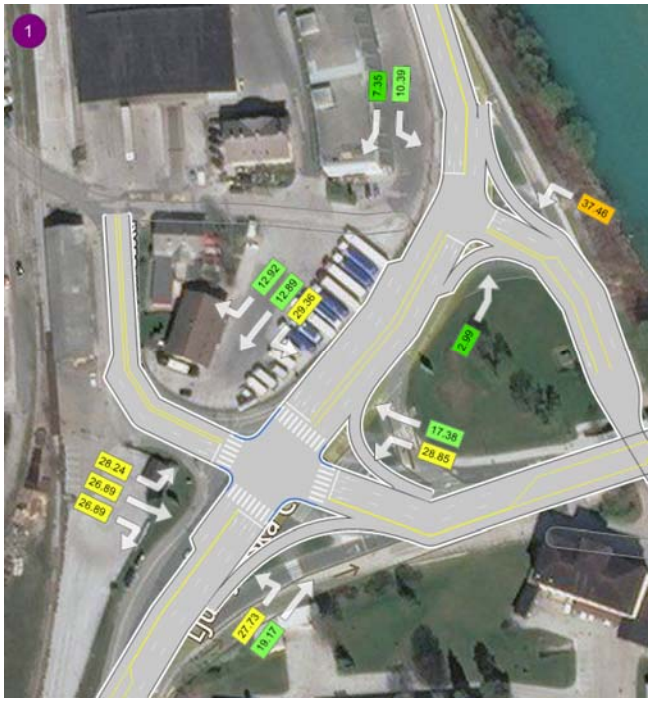
Zavijalci (vsa vozila/h) po posameznih smereh

4.3.6 Rezultati JK, faza 2, leto 2040



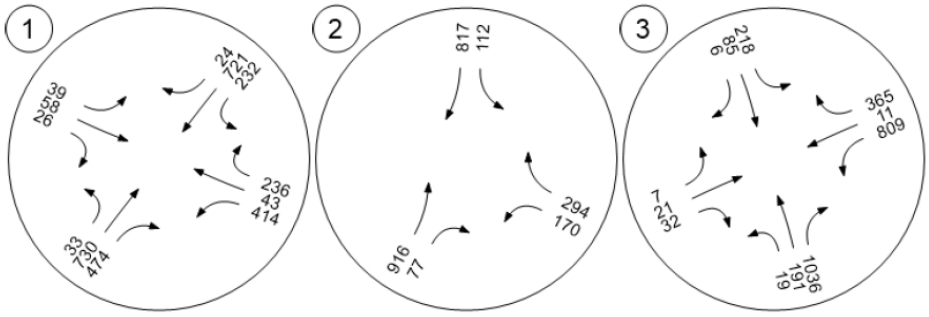
Skupna zamuda, nivo uslug in st. zasičenosti

Nivo uslug po posameznih smereh



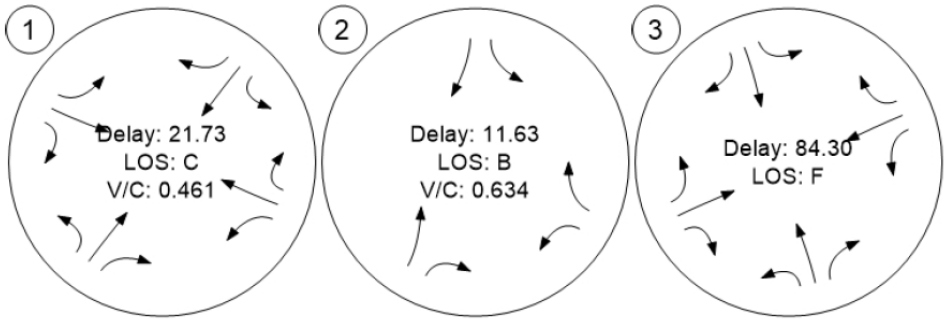
Zamude (s/vozilo) po posameznih smereh

4.3.7 Prometne obremenitve PK, faza 2, leto 2040



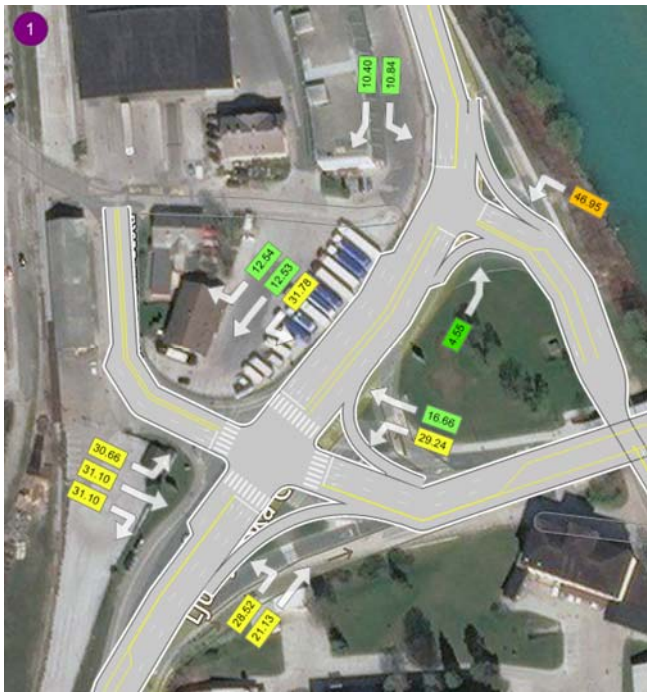
Zavijalci (vsa vozila/h) po posameznih smereh

4.3.8 Rezultati PK, faza 2, leto 2040



Skupna zamuda, nivo uslug in st. zasičenosti

Nivo uslug po posameznih smereh



Zamude (s/vozilo) po posameznih smereh

4.4 Analiza rezultatov in komentar

Iz kapacitetne analize lahko opazimo, da je bolj neugodna popoldanska konica, ko je na obravnavanem območju več prometnih obremenitev.

Primerjava ključnih parametrov na križiščih tako v jutranji kot popoldanski konici izkazujejo boljše rezultate v fazi 2.

Kapacitetna analiza je tako v vmesnem letu 2025 kot v planskem letu 2040 pokazala, da na obeh semaforiziranih križiščih predvidoma ne bo težav (preselitev Avtobusne postaje Kranj ne bo bistveno poslabšala stanja na obeh semaforiziranih križiščih). Z optimizacijo krmilnih programov in vzpostavitvijo prometno odvisnih semaforskih naprav bo do konca planske dobe možno ustrezno servisirati predvidene prometne obremenitve.

Težave je pričakovati na krožnem križišču K3, še posebej, če ne bo prišlo do realizacije faze 2. Krožno križišče bi bilo predvidoma neustrezno že v leto 2025, v kolikor se na območje KR SA 4 preseli Avtobusna postaja Kranj. Stanje bi se zelo poslabšalo do leta 2040 v kolikor se ne bi realizirala faza 2. Kapacitetna analiza faze 2 je pokazala, da bi križišče K3 bilo problematično v popoldanski konici, kljub temu, da bi se vzpostavil četrti/zahodni krak in predvsem, da bi se povečal radij krožnega križišča, ki pomembno vpliva na pretočnost.

Prikaz rezultatov kapacitetne analize (nivoji uslug in povprečne zamude na vozilo na obravnavanih križiščih) za primerjavo faze 1 in faze 2 v planskem letu 2040 je prikazan v naslednjih preglednicah in slikah (Preglednica 6, Preglednica 7, Slika 9, Slika 10).

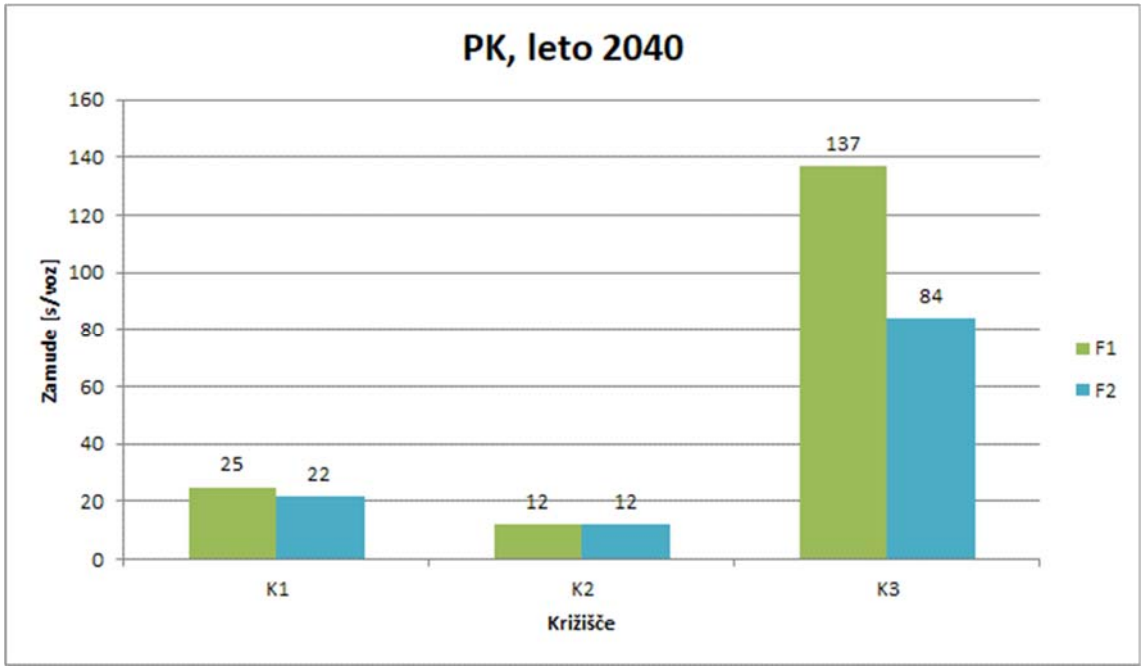
Preglednica 6: Nivo uslug leto 2040

	JK		PK	
Križišče	**F1**	**F2**	**F1**	**F2**
K1	C	C	C	C
K2	A	A	B	B
K3	F	E	F	F

Preglednica 7: Zamude [s/voz] leto 2040

	JK		PK	
Križišče	**F1**	**F2**	**F1**	**F2**
K1	21	20	25	22
K2	7	7	12	12
K3	75	49	137	84

Slika 9: Zamude JK, leto 2040



Slika 10: Zamude PK, leto 2040

5 Zaključki in predlogi

Novelacija prometne študije – del Ljubljanske in Kolodvorske ceste (od ceste R2-412/0359 Kranj (Kidričeva – Iskra) od km 1,115 do ceste R2-412/0210, Kranj (Iskra – Labore) do km 0,090) je bila izdelana za isto območje (območje urejanja OPPN KR SA 4) kot osnovna študija leta 2018.
Ponovna izdelava kapacitetne analize križišč na delu Ljubljanske in Kolodvorske ceste v zahodnem delu Kranja je bila potrebna, ker se bo na obravnavano območje preselila tudi Avtobusna postaja Kranj, ki bo dodatni generator prometnih obremenitev na tem območju.

Tako kot v osnovni študiji je bilo za kapacitetno analizo uporabljeno programsko orodje PTV Vistro. Merodajne prometne obremenitve za analizo smo določili na podlagi analize avtomatskih števcev prometa in predvidenih dodatnih obremenitvah zaradi avtobusnega prometa.

Opravili smo kapacitetno analizo treh ključnih križišč, preko katerih se bo obravnavano območje priključevalo na regionalno cesto R2-412, ki poteka skozi Kranj. Analiza je bila narejena za jutranjo in popoldansko konico za vmesno leto 2025 (v tem letu bi naj bila preseljena avtobusna postaja) in ciljno/plansko leto 2040 (vzpostavitev četrtega kraka na križišču K3 in preureditev režima voženj na avtobusni postaji).

Analizirali smo dva scenarija oziroma fazi prometne ureditve prometa na obravnavanem območju. Pri fazi 1 smo predvideli, da geometrija vseh treh križišč ostane ista. Tudi dostop do območja KR SA 4 ostane isti, torej izključno preko križišča K1 (Železniška postaja). Upoštevana je bila spremenjena raba območja (isto kot v osnovni študiji) in preselitev Avtobusne postaje Kranj.
Pri fazi 2 smo predvideli, da se na severnem delu območja vzpostavi nov dostop oziroma povezava neposredno v krožno križišče K3, kot četrti/zahodni krak. Krožno križišče je v tem primeru potrebno tudi rekonstruirati (povečati). Ob tem se predvidi tudi sprememba režima prihodov in odhodov avtobusov na avtobusno postajo in sicer se prihodi vršijo preko križišča K1 in odhodi preko križišča K3. Analizirani semaforizirani križišči ostajata geometrijsko enaki, kot pri fazi 1.

Kapacitetna analiza obravnavanih križišč v vmesnem letu 2025 (v fazi 1) je pokazala, da bo prišlo do težav najprej na križišču K3. Bolj problematična je popoldanska konica, ko je na območju več vozil. Že osnovna študija je pokazala, da ob optimizaciji krmilnih programov in/ali zamenjavi semaforskih naprav s polno prometnimi odvisnimi napravami, na dveh semaforiziranih križiščih ni pričakovati težav.

Kapacitetna analiza križišč v planskem letu 2040 (ko bi se naj izvršila faza 2) izkaže podobne rezultate kot pri analizi vmesnega leta. Križišče 1 in križišče 2 bi predvidoma do konca planske dobe v obeh scenarijih (faza 1 ali faza 2) ustrezno servisirali predvidene prometne obremenitve. Nekoliko bolj ugodna je faza 2, kjer pride do delne razbremenitve obeh semaforiziranih križišč, saj se prometne obremenitve iz obravnavanega območja preusmerijo tudi na novo povezavo na severu oziroma preko četrtega kraka na križišče K3.

Težave je pričakovati na krožnem križišču K3, še posebej, če se ne vzpostavi faza 2. V študiji smo predpostavili, da se bo krožno križišče povečalo, vendar kljub temu parametri presežejo kritične vrednosti in na obeh krakih regionalne ceste bo predvidoma prihajalo do daljših zamud in kolon.

Predlog

Predlagamo, da se ob morebitni preselitvi Avtobusne postaje Kranj na območje KR SA 4 v bližino Železniške postaje Kranj, kljub pomanjkanju prostora, čimprej rekonstruira (poveča radij) obstoječe trikrako krožno križišče in po možnosti prav tako vzpostavi četrti/zahodni krak.
V primeru rekonstrukcije priporočamo vzpostavitev dodatnega mimobežnega pasu iz smeri juga (Iskra) proti vzhodu (Stara cesta – most), ki bi zelo razbremenil krožno križišče in posledično zagotavljal tudi lažje vključevanje na ostalih treh krakih.

Slika 11: Predlog uvedbe mimobežnega pasu v krožnem križišču K3

Potrebno se je zavedati, da sta obe študiji (osnovna in novelacija) bile narejeni na podlagi zelo splošnih podatkov o novi/spremenjeni rabi znotraj območja KR SA 4 za katerega se sprejema OPPN.

Tudi preselitev glavne avtobusne postaje mesta Kranj bo imela za posledico številne spremembe potovanj in potovalnih navad Kranjčanov in okoliških prebivalcev, ki jih je v tem trenutku zelo težko napovedati s prometnimi modeli.

Generacija dodatnih prometnih obremenitev zaradi obeh zgoraj naštetih dejstev je bila predpostavljena na podlagi prejetih dokumentov, podatkov in strokovnih izkušenj pri podobnih projektih.

V kolikor bo v območju ali v vplivni okolici obravnavanega območja prišlo do večjih sprememb planirane namenske rabe prostora, je potrebno izračune ponoviti in ponovno preveriti ali bodo predlagane rešitve in ukrepi v zadostni meri sposobni servisirati prometne težnje v bodoče.

6 Priloge

- Rezultati kapacitetne analize Vistro 2020

Rezultati kapacitetne analize Vistro 2020

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2025_faza1_1.pdf

Scenario 19 jk_2025_Faza1
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	SEB Left	0,362	19,3	B
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,498	5,7	A
3	K03 - Aquasava	Roundabout	HCM 6th Edition	SEB Left		29,6	D

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	19,3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,362

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	280	62	164	25	499	364	112	524	48	23	33	17
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	6,00	25,00	4,00	17,00	8,00	5,00	5,00	5,00	17,00	45,00	37,00	45,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	36	0	14	0	0	0	0	29	17	26	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	300	102	176	41	535	390	120	562	80	42	61	31
Peak Hour Factor	0,8800	0,8600	0,7200	0,6300	0,8300	0,7800	0,8200	0,9600	0,8000	0,7200	0,7500	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	85	30	61	16	161	125	37	146	25	15	20	15
Total Analysis Volume [veh/h]	341	119	244	65	645	500	146	585	100	58	81	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	0	2	0	1	6	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	9	32	0	0	34	0	9	43	0	0	23	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	28	28	31	31	39	39	39	20	20
g / C, Green / Cycle	0,37	0,37	0,41	0,41	0,52	0,52	0,52	0,27	0,27
(v / s)_i Volume / Saturation Flow Rate	0,14	0,09	0,11	0,21	0,16	0,21	0,21	0,08	0,12
s, saturation flow rate [veh/h]	2435	1372	599	3050	914	1642	1560	750	1127
c, Capacity [veh/h]	650	512	249	1261	403	854	811	231	301
d1, Uniform Delay [s]	25,34	16,12	23,29	16,37	20,97	10,99	10,99	27,30	23,00
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	3,01	1,06	2,53	1,49	2,52	1,46	1,54	2,58	5,05
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,52	0,23	0,26	0,51	0,36	0,41	0,41	0,25	0,46
d, Delay for Lane Group [s/veh]	28,35	17,18	25,81	17,85	23,50	12,45	12,54	29,88	28,05
Lane Group LOS	C	B	C	B	C	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2,22	1,47	1,09	4,06	1,42	3,50	3,35	1,05	2,38
50th-Percentile Queue Length [m/ln]	16,90	11,20	8,32	30,93	10,82	26,70	25,53	8,04	18,13
95th-Percentile Queue Length [veh/ln]	3,99	2,65	1,96	7,31	2,56	6,31	6,03	1,90	4,28
95th-Percentile Queue Length [m/ln]	30,42	20,16	14,97	55,68	19,48	48,06	45,95	14,47	32,63

Movement, Approach, & Intersection Results

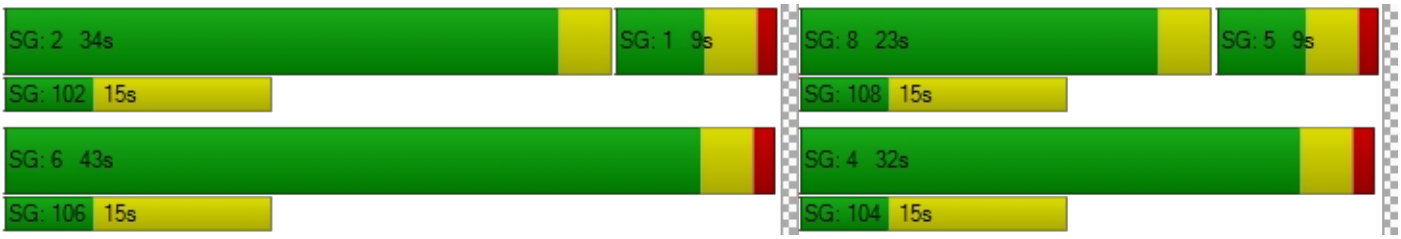
d_M, Delay for Movement [s/veh]	28,35	17,18	0,00	25,81	17,85	0,00	23,50	12,49	12,54	29,88	28,05	28,05
Movement LOS	C	B		C	B		C	B	B	C	C	C
d_A, Approach Delay [s/veh]	25,46			18,58			14,43			28,59		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	19,35											
Intersection LOS	B											
Intersection V/C	0,362											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,696	3,324	2,873	2,286
Crosswalk LOS	B	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	747	827	1040	533
d_b, Bicycle Delay [s]	14,73	12,91	8,64	20,17
l_b,int, Bicycle LOS Score for Intersection	2,319	2,145	2,245	1,885
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	5,7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,498

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	171	651	490	211	24	115
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	4,00	8,00	7,00	25,00	20,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	13	4	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	725	538	230	28	123
Peak Hour Factor	0,8900	0,9100	0,7800	0,7700	0,6700	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	51	199	172	75	10	34
Total Analysis Volume [veh/h]	206	797	690	299	42	137
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	64	64	0	11	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	58	58	58	5
g / C, Green / Cycle	0,77	0,77	0,77	0,07
(v / s)_i Volume / Saturation Flow Rate	0,31	0,48	0,23	0,02
s, saturation flow rate [veh/h]	661	1656	3050	2538
c, Capacity [veh/h]	546	1281	2359	169
d1, Uniform Delay [s]	5,56	3,71	2,49	33,22
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	1,98	2,29	0,32	3,48
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,38	0,62	0,29	0,25
d, Delay for Lane Group [s/veh]	7,55	6,00	2,81	36,69
Lane Group LOS	A	A	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1,42	3,56	0,90	0,43
50th-Percentile Queue Length [m/ln]	10,79	27,15	6,87	3,31
95th-Percentile Queue Length [veh/ln]	2,55	6,41	1,62	0,78
95th-Percentile Queue Length [m/ln]	19,42	48,87	12,36	5,96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7,55	6,00	2,81	0,00	36,69	0,00
Movement LOS	A	A	A		D	
d_A, Approach Delay [s/veh]	6,32		2,81		36,69	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5,66					
Intersection LOS	A					
Intersection V/C	0,498					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1547	1547	133
d_b, Bicycle Delay [s]	1,93	1,93	32,67
l_b,int, Bicycle LOS Score for Intersection	3,215	2,129	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	29,6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Approach	Northbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		Yes	

Volumes

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Base Volume Input [veh/h]	30	581	647	101	279	155
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	7,00	9,00	4,00	5,00	2,00	2,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	12	21	0	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	635	715	108	299	172
Peak Hour Factor	0,7500	0,8500	0,9100	0,8100	0,8500	0,8400
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	11	187	196	33	88	51
Total Analysis Volume [veh/h]	44	747	786	133	352	205
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	359		47		817	
Exiting Flow Rate [veh/h]	1027		1173		187	
Demand Flow Rate [veh/h]	33	635	715	108	299	172
Adjusted Demand Flow Rate [veh/h]	44	747	786	133	352	205

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4,00	4,00	4,00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3,00	3,00	3,00
A (intercept)	1380,00	1380,00	1380,00
B (coefficient)	0,00102	0,00102	0,00102
HV Adjustment Factor	0,92	0,96	0,98
Entry Flow Rate [veh/h]	862	957	569
Capacity of Entry and Bypass Lanes [veh/h]	957	1316	600
Pedestrian Impedance	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	879	1264	588
X, volume / capacity	0,90	0,73	0,95

Movement, Approach, & Intersection Results

Lane LOS	D	B	F
95th-Percentile Queue Length [veh]	12,60	6,90	12,66
95th-Percentile Queue Length [m]	95,98	52,61	96,47
Approach Delay [s/veh]	32,67	13,68	51,55
Approach LOS	D	B	F
Intersection Delay [s/veh]	29,61		
Intersection LOS	D		

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Report File: K:\...\jk_2025_faza1_1.pdf

Scenario 19 jk_2025_Faza1
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	300	102	176	41	535	390	120	562	80	42	61	31	2440

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	183	725	538	230	28	123	1827

ID	Intersection Name	Northbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	33	635	715	108	299	172	1962

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Report File: K:\...\jk_2025_faza1_1.pdf

Scenario 19 jk_2025_Faza1
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	280	62	164	25	499	364	112	524	48	23	33	17	2151
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	36	0	14	0	0	0	0	29	17	26	13	135
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**300**	**102**	**176**	**41**	**535**	**390**	**120**	**562**	**80**	**42**	**61**	**31**	**2440**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	171	651	490	211	24	115	1662
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	27	13	4	2	0	46
		Other	0	0	0	0	0	0	0
		Future Total	**183**	**725**	**538**	**230**	**28**	**123**	**1827**

ID	Intersection Name	Volume Type	Northbound		Southwestbound		Southeastbound		Total Volume
			Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	Final Base	30	581	647	101	279	155	1793
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	1	12	21	0	0	6	40
		Other	0	0	0	0	0	0	0
		Future Total	**33**	**635**	**715**	**108**	**299**	**172**	**1962**

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Scenario 19 jk_2025_Faza1
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	135,000	58,52	41,48	79	56	135	100,00
					Added Trips Total			**79**	**56**	**135**	**100,00**

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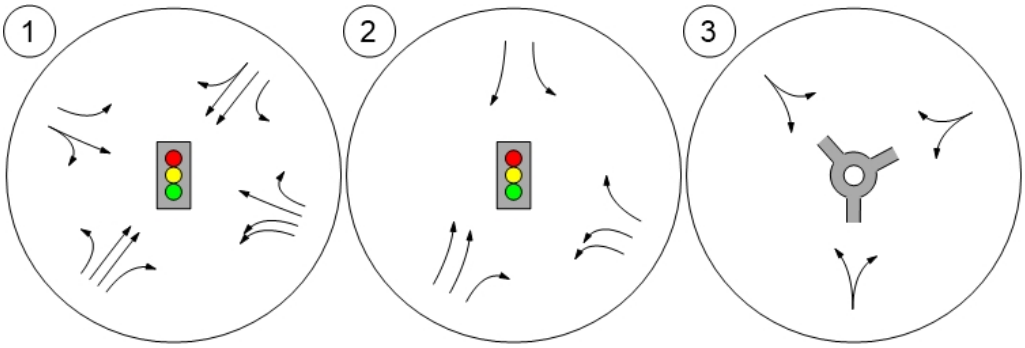
Scenario 19 jk_2025_Faza1
14. 10. 2020

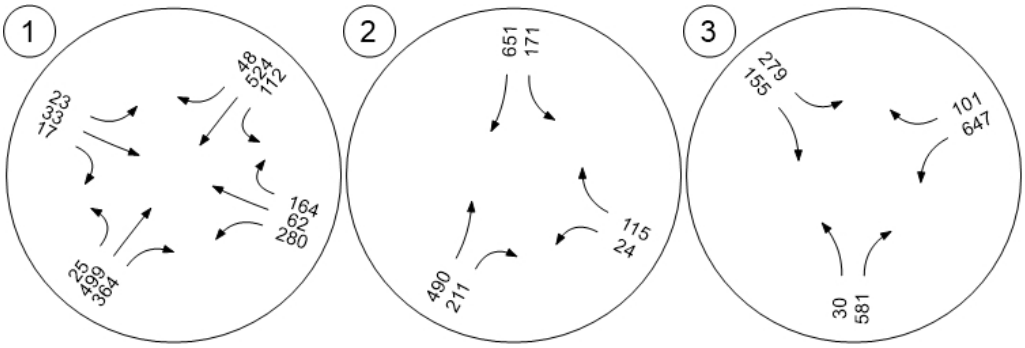
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	18,00	14	23,00	13
18: Center	46,00	36	46,00	26
19: Savska loka	2,00	2	8,00	4
20: Koroška	27,00	21	21,00	12
21: Gorenjesavska	7,00	6	2,00	1
Total	**100,00**	**79**	**100,00**	**56**

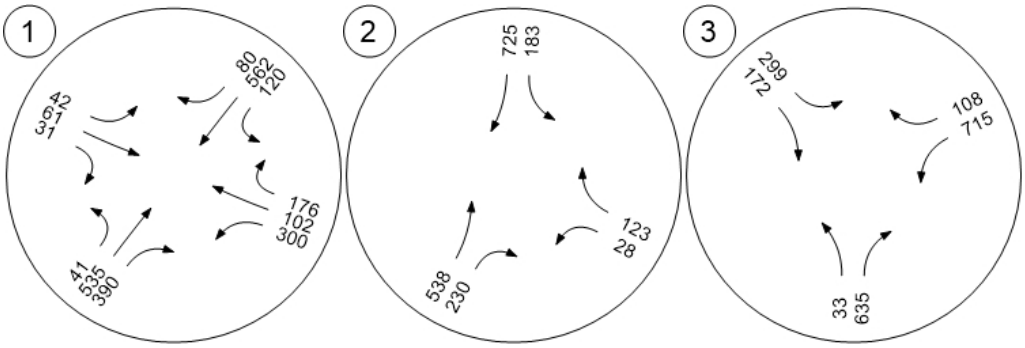
Lane Configuration and Traffic Control



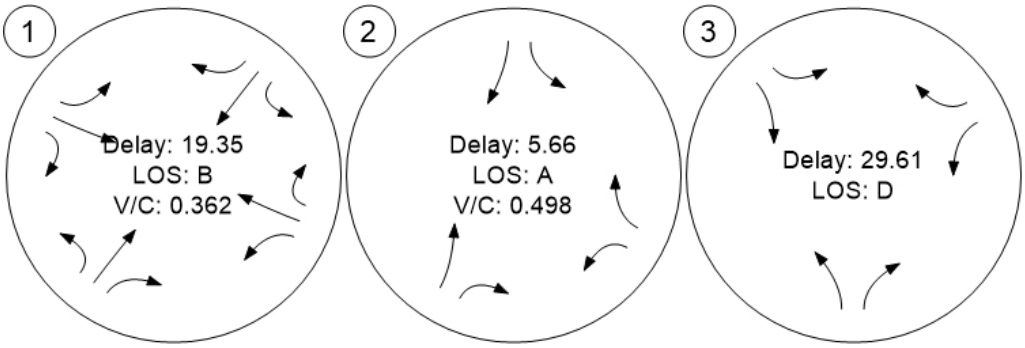
Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions



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Report File: K:\...\pk_2025_faza1_1.pdf

Scenario 18 pk_2025_Faza1
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	SWB Left	0,388	21,3	C
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,549	10,0	B
3	K03 - Aquasava	Roundabout	HCM 6th Edition	NB Right		63,4	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	21,3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,388

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	333	25	183	20	580	381	176	572	23	29	42	29
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	36,00	2,00	25,00	4,00	2,00	2,00	4,00	40,00	27,00	27,00	22,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	15	0	0	0	0	20	23	25	18
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	357	47	196	36	622	408	189	613	45	54	70	49
Peak Hour Factor	0,9000	0,7800	0,7600	0,7100	0,9500	0,9500	0,8600	0,9300	0,8200	0,6600	0,8100	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	99	15	64	13	164	107	55	165	14	20	22	23
Total Analysis Volume [veh/h]	397	60	258	51	655	429	220	659	55	82	86	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	7	2	0	1	6	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	9	34	0	0	32	0	9	41	0	0	25	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	30	30	29	29	37	37	37	22	22
g / C, Green / Cycle	0,40	0,40	0,39	0,39	0,49	0,49	0,49	0,29	0,29
(v / s)_i Volume / Saturation Flow Rate	0,17	0,05	0,09	0,21	0,23	0,22	0,22	0,08	0,14
s, saturation flow rate [veh/h]	2384	1224	540	3153	944	1656	1612	966	1233
c, Capacity [veh/h]	668	489	214	1219	388	817	795	324	362
d1, Uniform Delay [s]	25,33	14,20	25,30	17,81	24,62	12,32	12,32	23,94	21,89
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	3,86	0,51	2,61	1,70	5,91	1,74	1,79	1,88	4,73
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,59	0,12	0,24	0,54	0,57	0,44	0,44	0,25	0,49
d, Delay for Lane Group [s/veh]	29,19	14,71	27,91	19,51	30,52	14,06	14,11	25,81	26,61
Lane Group LOS	C	B	C	B	C	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2,54	0,67	0,91	4,36	2,58	3,92	3,83	1,33	2,93
50th-Percentile Queue Length [m/ln]	19,38	5,13	6,91	33,21	19,66	29,90	29,18	10,16	22,31
95th-Percentile Queue Length [veh/ln]	4,58	1,21	1,63	7,78	4,64	7,06	6,89	2,40	5,27
95th-Percentile Queue Length [m/ln]	34,88	9,24	12,44	59,29	35,39	53,83	52,53	18,28	40,15

Movement, Approach, & Intersection Results

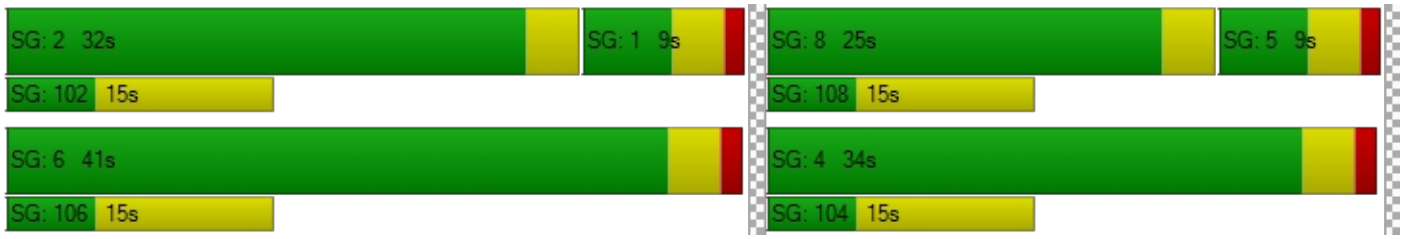
d_M, Delay for Movement [s/veh]	29,19	14,71	0,00	27,91	19,51	0,00	30,52	14,08	14,11	25,81	26,61	26,61
Movement LOS	C	B		C	B		C	B	B	C	C	C
d_A, Approach Delay [s/veh]	27,29			20,11			17,95			26,36		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21,34											
Intersection LOS	C											
Intersection V/C	0,388											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,811	3,437	2,952	2,236
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	773	987	587
d_b, Bicycle Delay [s]	13,50	14,11	9,63	18,73
l_b,int, Bicycle LOS Score for Intersection	2,314	2,142	2,330	1,989
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	10,0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,549

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	90	639	731	61	142	231
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	3,00	4,00	4,00	8,00	6,00	2,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	22	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	704	806	66	153	248
Peak Hour Factor	0,9400	0,8900	0,9000	0,9000	0,7100	0,6800
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	26	198	224	18	54	91
Total Analysis Volume [veh/h]	102	791	896	73	215	365
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	60	60	0	15	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	54	54	54	9
g / C, Green / Cycle	0,72	0,72	0,72	0,12
(v / s)_i Volume / Saturation Flow Rate	0,18	0,48	0,28	0,07
s, saturation flow rate [veh/h]	555	1656	3153	3013
c, Capacity [veh/h]	419	1192	2270	362
d1, Uniform Delay [s]	8,02	5,63	4,11	31,27
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	1,38	2,92	0,52	7,03
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,24	0,66	0,39	0,59
d, Delay for Lane Group [s/veh]	9,40	8,55	4,62	38,31
Lane Group LOS	A	A	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0,88	5,36	1,98	2,14
50th-Percentile Queue Length [m/ln]	6,72	40,84	15,07	16,28
95th-Percentile Queue Length [veh/ln]	1,59	9,16	3,56	3,84
95th-Percentile Queue Length [m/ln]	12,09	69,77	27,13	29,30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	9,40	8,55	4,62	0,00	38,31	0,00
Movement LOS	A	A	A		D	
d_A, Approach Delay [s/veh]	8,65		4,62		38,31	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	10,03					
Intersection LOS	B					
Intersection V/C	0,549					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1440	1440	240
d_b, Bicycle Delay [s]	2,94	2,94	29,04
l_b,int, Bicycle LOS Score for Intersection	3,033	2,299	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	63,4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Approach	Northbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		Yes	

Volumes

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Base Volume Input [veh/h]	148	816	647	293	175	72
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	1,00	4,00	3,00	1,00	3,00	3,00
Growth Factor	1,0721	1,0721	1,0721	1,0721	1,0721	1,0721
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	19	16	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	894	710	314	188	80
Peak Hour Factor	0,8600	0,8900	0,9000	0,9100	0,8600	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	47	251	197	86	55	22
Total Analysis Volume [veh/h]	188	1004	789	345	219	89
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	226		190		813	
Exiting Flow Rate [veh/h]	904		1270		538	
Demand Flow Rate [veh/h]	162	894	710	314	188	80
Adjusted Demand Flow Rate [veh/h]	188	1004	789	345	219	89

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4,00	4,00	4,00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3,00	3,00	3,00
A (intercept)	1380,00	1380,00	1380,00
B (coefficient)	0,00102	0,00102	0,00102
HV Adjustment Factor	0,97	0,98	0,97
Entry Flow Rate [veh/h]	1235	1161	318
Capacity of Entry and Bypass Lanes [veh/h]	1097	1138	603
Pedestrian Impedance	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	1060	1111	585
X, volume / capacity	1,13	1,02	0,53

Movement, Approach, & Intersection Results

Lane LOS	F	F	C
95th-Percentile Queue Length [veh]	31,03	22,14	3,07
95th-Percentile Queue Length [m]	236,45	168,68	23,36
Approach Delay [s/veh]	86,86	51,86	15,43
Approach LOS	F	F	C
Intersection Delay [s/veh]	63,44		
Intersection LOS	F		

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Report File: K:\...\pk_2025_faza1_1.pdf

Scenario 18 pk_2025_Faza1
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	357	47	196	36	622	408	189	613	45	54	70	49	2686

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	96	704	806	66	153	248	2073

ID	Intersection Name	Northbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	162	894	710	314	188	80	2348

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Report File: K:\...\pk_2025_faza1_1.pdf

Scenario 18 pk_2025_Faza1
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	333	25	183	20	580	381	176	572	23	29	42	29	2393
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	20	0	15	0	0	0	0	20	23	25	18	121
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**357**	**47**	**196**	**36**	**622**	**408**	**189**	**613**	**45**	**54**	**70**	**49**	**2686**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	90	639	731	61	142	231	1894
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	19	22	1	1	0	43
		Other	0	0	0	0	0	0	0
		Future Total	**96**	**704**	**806**	**66**	**153**	**248**	**2073**

ID	Intersection Name	Volume Type	Northbound		Southwestbound		Southeastbound		Total Volume
			Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	Final Base	148	816	647	293	175	72	2151
		Growth Factor	1,07	1,07	1,07	1,07	1,07	1,07	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	19	16	0	0	3	41
		Other	0	0	0	0	0	0	0
		Future Total	**162**	**894**	**710**	**314**	**188**	**80**	**2348**

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Scenario 18 pk_2025_Faza1
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	121,000	45,45	54,55	55	66	121	100,00
					Added Trips Total			**55**	**66**	**121**	**100,00**

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Scenario 18 pk_2025_Faza1
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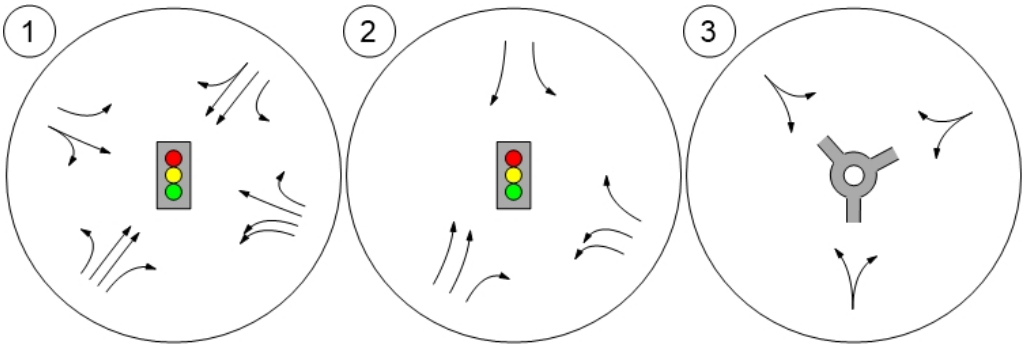
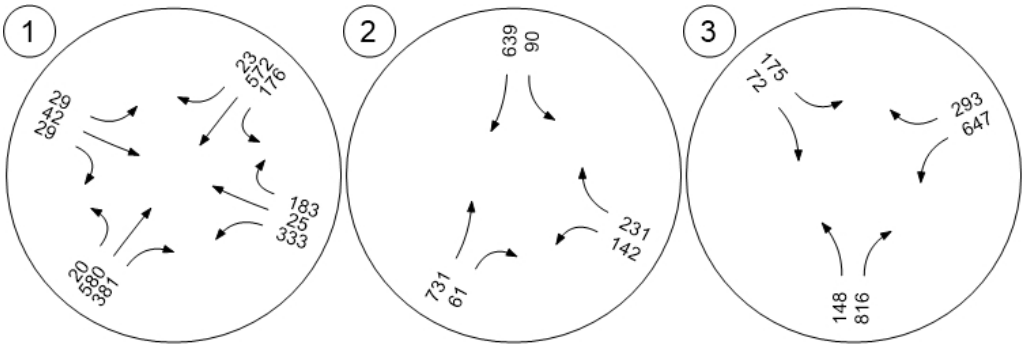
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	28,00	15	28,00	18
18: Center	36,00	20	36,00	25
19: Savska loka	2,00	1	2,00	1
20: Koroška	29,00	16	29,00	19
21: Gorenjesavska	5,00	3	5,00	3
Total	**100,00**	**55**	**100,00**	**66**

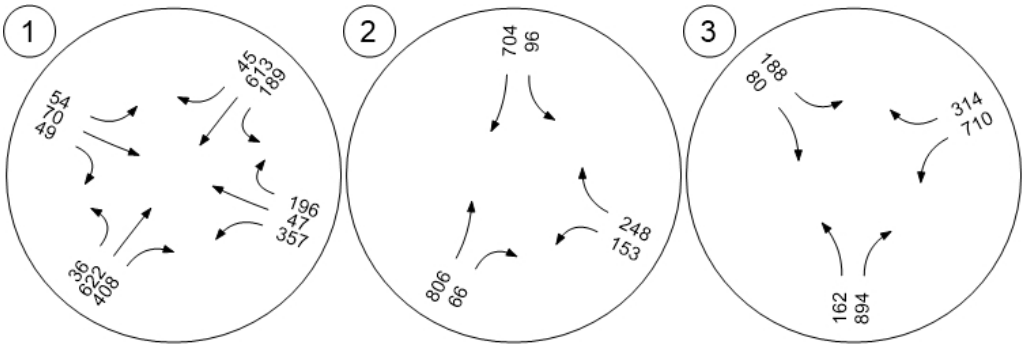
Lane Configuration and Traffic Control



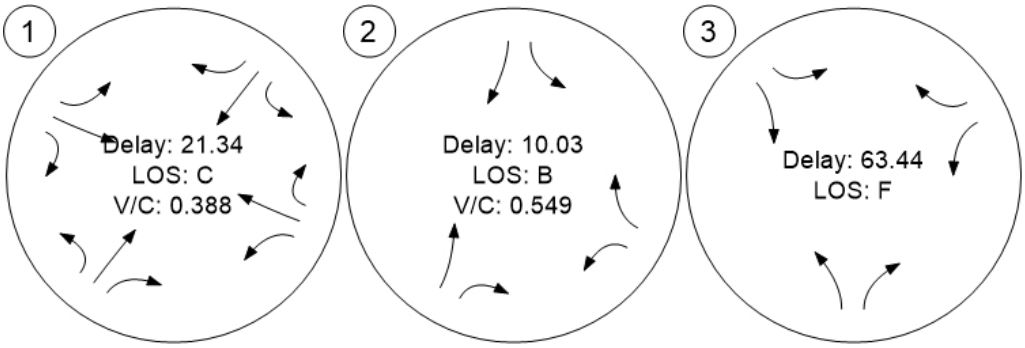
Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions



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Scenario 24 24 jk_2040_Faza1
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	NEB Left	0,417	21,3	C
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,574	6,9	A
3	K03 - Aquasava	Roundabout	HCM 6th Edition	SEB Left		75,4	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	21,3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,417

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	280	62	164	25	499	364	112	524	48	23	33	17
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	6,00	25,00	4,00	17,00	8,00	5,00	5,00	5,00	17,00	45,00	37,00	45,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	36	0	14	0	0	0	0	29	17	26	13
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	113	204	45	621	453	139	652	89	46	67	34
Peak Hour Factor	0,8800	0,8600	0,7200	0,6300	0,8300	0,7800	0,8200	0,9600	0,8000	0,7200	0,7500	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	99	33	71	18	187	145	42	170	28	16	22	16
Total Analysis Volume [veh/h]	397	131	283	71	748	581	170	679	111	64	89	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	0	2	0	1	6	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	9	33	0	0	33	0	9	42	0	0	24	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	29	29	30	30	38	38	38	21	21
g / C, Green / Cycle	0,39	0,39	0,40	0,40	0,51	0,51	0,51	0,28	0,28
(v / s)_i Volume / Saturation Flow Rate	0,16	0,10	0,13	0,25	0,19	0,25	0,25	0,09	0,14
s, saturation flow rate [veh/h]	2406	1372	543	3050	873	1642	1563	742	1127
c, Capacity [veh/h]	654	531	211	1220	358	832	792	236	316
d1, Uniform Delay [s]	25,62	15,60	26,79	17,89	24,99	12,11	12,11	27,02	22,49
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	4,15	1,11	4,26	2,31	4,47	2,03	2,13	2,82	5,25
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,61	0,25	0,34	0,61	0,47	0,49	0,49	0,27	0,48
d, Delay for Lane Group [s/veh]	29,77	16,70	31,05	20,19	29,45	14,14	14,24	29,84	27,74
Lane Group LOS	C	B	C	C	C	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2,63	1,59	1,35	5,13	1,84	4,42	4,22	1,16	2,60
50th-Percentile Queue Length [m/ln]	20,02	12,11	10,30	39,10	14,06	33,64	32,19	8,86	19,79
95th-Percentile Queue Length [veh/ln]	4,73	2,86	2,43	8,85	3,32	7,86	7,59	2,09	4,67
95th-Percentile Queue Length [m/ln]	36,04	21,80	18,53	67,41	25,30	59,90	57,87	15,95	35,61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29,77	16,70	0,00	31,05	20,19	0,00	29,45	14,18	14,24	29,84	27,74	27,74
Movement LOS	C	B		C	C		C	B	B	C	C	C
d_A, Approach Delay [s/veh]	26,53			21,13			16,89			28,36		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21,27											
Intersection LOS	C											
Intersection V/C	0,417											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,758	3,450	2,959	2,321
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	773	800	1013	560
d_b, Bicycle Delay [s]	14,11	13,50	9,13	19,44
l_b,int, Bicycle LOS Score for Intersection	2,431	2,235	2,352	1,918
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	6,9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,574

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	171	651	490	211	24	115
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	4,00	8,00	7,00	25,00	20,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	13	4	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	837	623	267	32	143
Peak Hour Factor	0,8900	0,9100	0,7800	0,7700	0,6700	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	60	230	200	87	12	40
Total Analysis Volume [veh/h]	239	920	799	347	48	159
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	64	64	0	11	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	58	58	58	5
g / C, Green / Cycle	0,77	0,77	0,77	0,07
(v / s)_i Volume / Saturation Flow Rate	0,40	0,56	0,26	0,02
s, saturation flow rate [veh/h]	597	1656	3050	2538
c, Capacity [veh/h]	494	1281	2359	169
d1, Uniform Delay [s]	6,96	4,34	2,61	33,30
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	3,37	3,49	0,39	4,16
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,48	0,72	0,34	0,28
d, Delay for Lane Group [s/veh]	10,33	7,82	3,00	37,46
Lane Group LOS	B	A	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2,06	4,95	1,10	0,50
50th-Percentile Queue Length [m/ln]	15,73	37,69	8,36	3,82
95th-Percentile Queue Length [veh/ln]	3,71	8,59	1,97	0,90
95th-Percentile Queue Length [m/ln]	28,31	65,48	15,04	6,88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10,33	7,82	3,00	0,00	37,46	0,00
Movement LOS	B	A	A		D	
d_A, Approach Delay [s/veh]	8,34		3,00		37,46	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6,91					
Intersection LOS	A					
Intersection V/C	0,574					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1547	1547	133
d_b, Bicycle Delay [s]	1,93	1,93	32,67
l_b,int, Bicycle LOS Score for Intersection	3,472	2,219	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	75,4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Approach	Northbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		Yes	

Volumes

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Base Volume Input [veh/h]	30	581	647	101	279	155
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	7,00	9,00	4,00	5,00	2,00	2,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	1	12	21	0	0	6
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	38	735	826	126	347	199
Peak Hour Factor	0,7500	0,8500	0,9100	0,8100	0,8500	0,8400
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	13	216	227	39	102	59
Total Analysis Volume [veh/h]	51	865	908	156	408	237
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	416		55		944	
Exiting Flow Rate [veh/h]	1186		1359		218	
Demand Flow Rate [veh/h]	38	735	826	126	347	199
Adjusted Demand Flow Rate [veh/h]	51	865	908	156	408	237

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	4,00	4,00	4,00
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	3,00	3,00	3,00
A (intercept)	1380,00	1380,00	1380,00
B (coefficient)	0,00102	0,00102	0,00102
HV Adjustment Factor	0,92	0,96	0,98
Entry Flow Rate [veh/h]	998	1108	658
Capacity of Entry and Bypass Lanes [veh/h]	903	1306	527
Pedestrian Impedance	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	829	1254	517
X, volume / capacity	1,11	0,85	1,25

Movement, Approach, & Intersection Results

Lane LOS	F	C	F
95th-Percentile Queue Length [veh]	24,76	11,38	25,55
95th-Percentile Queue Length [m]	188,68	86,70	194,66
Approach Delay [s/veh]	85,13	20,58	152,04
Approach LOS	F	C	F
Intersection Delay [s/veh]	75,41		
Intersection LOS	F		

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza1_1.pdf

Scenario 24 24 jk_2040_Faza1
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	349	113	204	45	621	453	139	652	89	46	67	34	2812

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	213	837	623	267	32	143	2115

ID	Intersection Name	Northbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	38	735	826	126	347	199	2271

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza1_1.pdf

Scenario 24 24 jk_2040_Faza1
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	280	62	164	25	499	364	112	524	48	23	33	17	2151
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	36	0	14	0	0	0	0	29	17	26	13	135
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**349**	**113**	**204**	**45**	**621**	**453**	**139**	**652**	**89**	**46**	**67**	**34**	**2812**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	171	651	490	211	24	115	1662
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	27	13	4	2	0	46
		Other	0	0	0	0	0	0	0
		Future Total	**213**	**837**	**623**	**267**	**32**	**143**	**2115**

ID	Intersection Name	Volume Type	Northbound		Southwestbound		Southeastbound		Total Volume
			Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	Final Base	30	581	647	101	279	155	1793
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	1	12	21	0	0	6	40
		Other	0	0	0	0	0	0	0
		Future Total	**38**	**735**	**826**	**126**	**347**	**199**	**2271**

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza1_1.pdf

Scenario 24 24 jk_2040_Faza1
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	135,000	58,52	41,48	79	56	135	100,00
					Added Trips Total			**79**	**56**	**135**	**100,00**

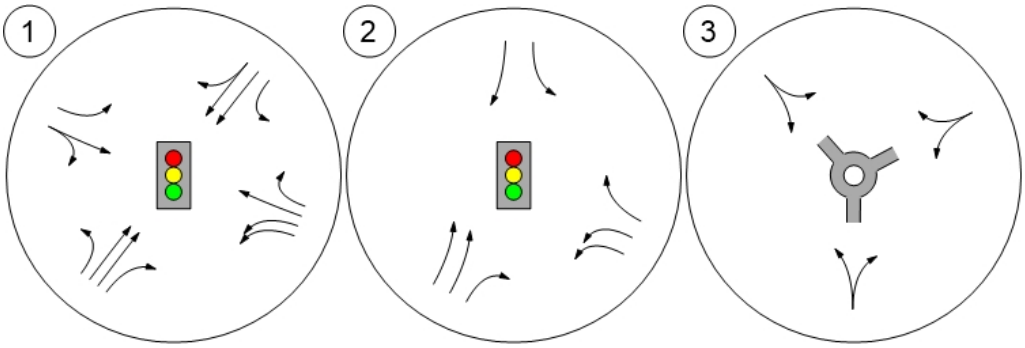
Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza1_1.pdf

Scenario 24 24 jk_2040_Faza1
14. 10. 2020

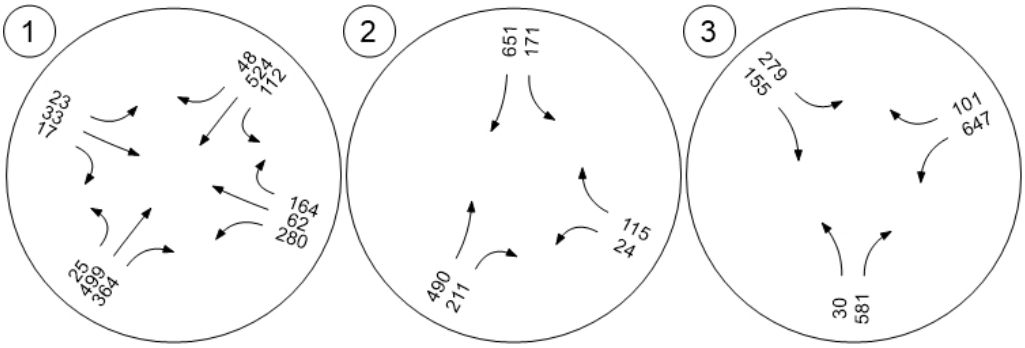
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	18,00	14	23,00	13
18: Center	46,00	36	46,00	26
19: Savska loka	2,00	2	8,00	4
20: Koroška	27,00	21	21,00	12
21: Gorenjesavska	7,00	6	2,00	1
Total	**100,00**	**79**	**100,00**	**56**

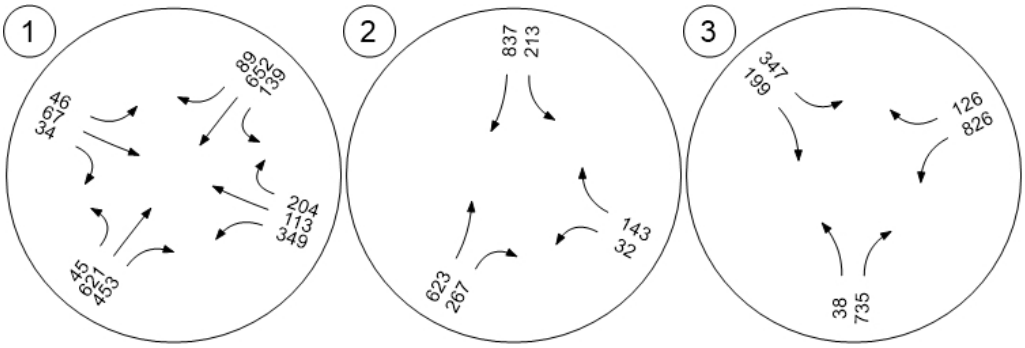
Lane Configuration and Traffic Control



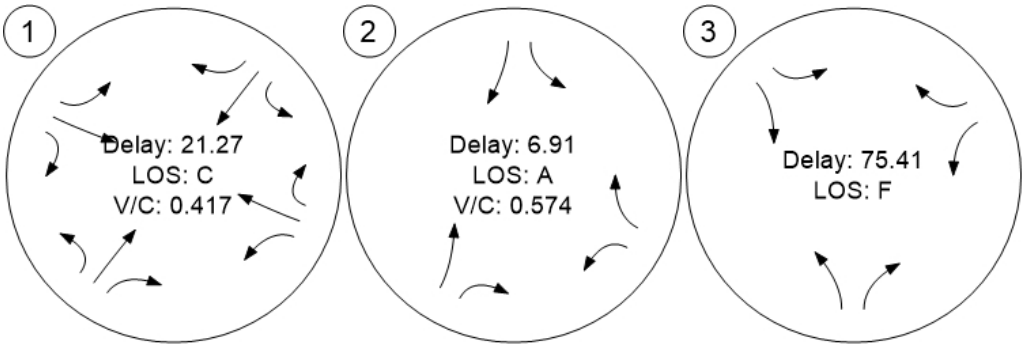
Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions



Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\pk_2040_faza1_1.pdf

Scenario 30 pk_2040_Faza1_f
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	SEB Right	0,551	24,5	C
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,636	11,9	B
3	K03 - Aquasava	Roundabout	HCM 6th Edition	NB Right		136,6	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	24,5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,551

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	333	25	183	20	580	381	176	572	23	29	42	29
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	36,00	2,00	25,00	4,00	2,00	2,00	4,00	40,00	27,00	27,00	22,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	20	0	15	0	0	0	0	20	23	25	18
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	414	51	228	40	722	474	219	712	49	59	77	54
Peak Hour Factor	0,9000	0,7800	0,7600	0,7100	0,9500	0,9500	0,8600	0,9300	0,8200	0,6600	0,8100	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	115	16	75	14	190	125	64	191	15	22	24	25
Total Analysis Volume [veh/h]	460	65	300	56	760	499	255	766	60	89	95	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	7	2	0	1	6	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	13	34	0	0	30	0	11	41	0	0	21	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	30	30	27	27	37	37	37	18	18
g / C, Green / Cycle	0,40	0,40	0,36	0,36	0,49	0,49	0,49	0,24	0,24
(v / s)_i Volume / Saturation Flow Rate	0,18	0,05	0,12	0,24	0,27	0,25	0,25	0,09	0,16
s, saturation flow rate [veh/h]	2496	1224	487	3153	949	1656	1614	961	1233
c, Capacity [veh/h]	667	489	175	1135	375	817	796	269	296
d1, Uniform Delay [s]	24,81	14,26	29,75	20,24	25,76	12,88	12,88	27,81	25,78
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	5,75	0,56	4,77	3,15	9,53	2,29	2,35	3,28	11,28
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,69	0,13	0,32	0,67	0,68	0,51	0,51	0,33	0,67
d, Delay for Lane Group [s/veh]	30,57	14,82	34,53	23,39	35,29	15,17	15,23	31,09	37,06
Lane Group LOS	C	B	C	C	D	B	B	C	D
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3,13	0,73	1,15	5,70	3,31	4,78	4,68	1,63	3,95
50th-Percentile Queue Length [m/ln]	23,82	5,59	8,77	43,46	25,19	36,46	35,65	12,45	30,11
95th-Percentile Queue Length [veh/ln]	5,63	1,32	2,07	9,62	5,95	8,37	8,23	2,94	7,11
95th-Percentile Queue Length [m/ln]	42,88	10,06	15,79	73,31	45,34	63,79	62,68	22,40	54,21

Movement, Approach, & Intersection Results

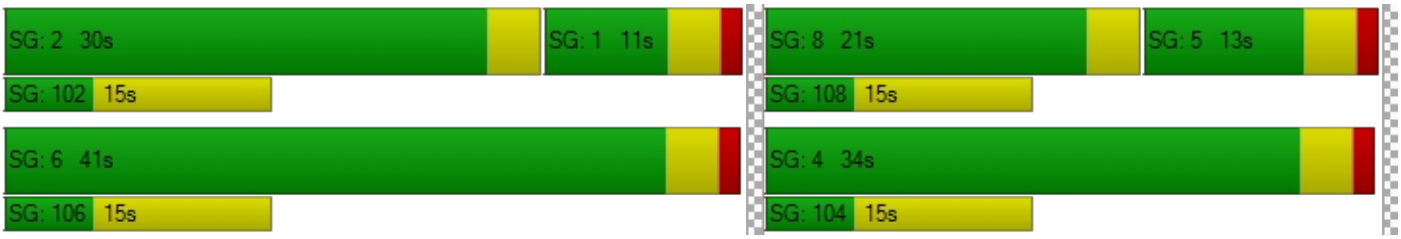
d_M, Delay for Movement [s/veh]	30,57	14,82	0,00	34,53	23,39	0,00	35,29	15,19	15,23	31,09	37,06	37,06
Movement LOS	C	B		C	C		D	B	B	C	D	D
d_A, Approach Delay [s/veh]	28,62			24,15			19,94			35,20		
Approach LOS	C			C			B			D		
d_I, Intersection Delay [s/veh]	24,50											
Intersection LOS	C											
Intersection V/C	0,551											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,807	3,284	3,046	2,265
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	720	987	480
d_b, Bicycle Delay [s]	13,50	15,36	9,63	21,66
l_b,int, Bicycle LOS Score for Intersection	2,426	2,233	2,451	2,032
Bicycle LOS	B	B	B	B

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	11,9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,636

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	90	639	731	61	142	231
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	3,00	4,00	4,00	8,00	6,00	2,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	19	22	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	814	932	77	178	288
Peak Hour Factor	0,9400	0,8900	0,9000	0,9000	0,7100	0,6800
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	30	229	259	21	63	106
Total Analysis Volume [veh/h]	119	915	1036	86	251	424
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	60	60	0	15	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	54	54	54	9
g / C, Green / Cycle	0,72	0,72	0,72	0,12
(v / s)_i Volume / Saturation Flow Rate	0,24	0,55	0,33	0,08
s, saturation flow rate [veh/h]	486	1656	3153	3013
c, Capacity [veh/h]	366	1192	2270	362
d1, Uniform Delay [s]	9,78	6,57	4,38	31,68
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	2,35	4,76	0,66	10,50
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,32	0,77	0,46	0,69
d, Delay for Lane Group [s/veh]	12,12	11,34	5,04	42,18
Lane Group LOS	B	B	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1,23	7,51	2,45	2,64
50th-Percentile Queue Length [m/ln]	9,40	57,23	18,65	20,09
95th-Percentile Queue Length [veh/ln]	2,22	12,00	4,41	4,74
95th-Percentile Queue Length [m/ln]	16,91	91,47	33,57	36,15

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12,12	11,34	5,04	0,00	42,18	0,00
Movement LOS	B	B	A		D	
d_A, Approach Delay [s/veh]	11,43		5,04		42,18	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	11,90					
Intersection LOS	B					
Intersection V/C	0,636					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1440	1440	240
d_b, Bicycle Delay [s]	2,94	2,94	29,04
l_b,int, Bicycle LOS Score for Intersection	3,266	2,414	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	136,6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Approach	Northbound		Southwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Right	Left	Thru
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Crosswalk	No		No		Yes	

Volumes

Name	Ljubljanska cesta		Stara cesta		Gorenjesavska cesta	
Base Volume Input [veh/h]	148	816	647	293	175	72
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	1,00	4,00	3,00	1,00	3,00	3,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	19	16	0	0	3
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	1035	821	365	218	93
Peak Hour Factor	0,8600	0,8900	0,9000	0,9100	0,8600	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	54	291	228	100	63	26
Total Analysis Volume [veh/h]	217	1163	912	401	253	103
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Number of Conflicting Circulating Lanes	1		1		1	
Circulating Flow Rate [veh/h]	261		219		939	
Exiting Flow Rate [veh/h]	1045		1470		624	
Demand Flow Rate [veh/h]	187	1035	821	365	218	93
Adjusted Demand Flow Rate [veh/h]	217	1163	912	401	253	103

Lanes

Overwrite Calculated Critical Headway	No	No	No
User-Defined Critical Headway [s]	3,50	3,50	3,50
Overwrite Calculated Follow-Up Time	No	No	No
User-Defined Follow-Up Time [s]	2,50	2,50	2,50
A (intercept)	1380,00	1380,00	1380,00
B (coefficient)	0,00102	0,00102	0,00102
HV Adjustment Factor	0,97	0,98	0,97
Entry Flow Rate [veh/h]	1429	1345	367
Capacity of Entry and Bypass Lanes [veh/h]	1058	1104	530
Pedestrian Impedance	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	1022	1078	514
X, volume / capacity	1,35	1,22	0,69

Movement, Approach, & Intersection Results

Lane LOS	F	F	C
95th-Percentile Queue Length [veh]	54,30	41,30	5,33
95th-Percentile Queue Length [m]	413,78	314,74	40,58
Approach Delay [s/veh]	178,83	122,51	24,77
Approach LOS	F	F	C
Intersection Delay [s/veh]	136,59		
Intersection LOS	F		

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\pk_2040_faza1_1.pdf

Scenario 30 pk_2040_Faza1_f
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	414	51	228	40	722	474	219	712	49	59	77	54	3099

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	112	814	932	77	178	288	2401

ID	Intersection Name	Northbound		Southwestbound		Southeastbound		Total Volume
		Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	187	1035	821	365	218	93	2719

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\pk_2040_faza1_1.pdf
Scenario 30 pk_2040_Faza1_f
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	333	25	183	20	580	381	176	572	23	29	42	29	2393
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	20	0	15	0	0	0	0	20	23	25	18	121
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**414**	**51**	**228**	**40**	**722**	**474**	**219**	**712**	**49**	**59**	**77**	**54**	**3099**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	90	639	731	61	142	231	1894
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	19	22	1	1	0	43
		Other	0	0	0	0	0	0	0
		Future Total	**112**	**814**	**932**	**77**	**178**	**288**	**2401**

ID	Intersection Name	Volume Type	Northbound		Southwestbound		Southeastbound		Total Volume
			Thru	Right	Left	Right	Left	Thru	
3	K03 - Aquasava	Final Base	148	816	647	293	175	72	2151
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	3	19	16	0	0	3	41
		Other	0	0	0	0	0	0	0
		Future Total	**187**	**1035**	**821**	**365**	**218**	**93**	**2719**

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\pk_2040_faza1_1.pdf

Scenario 30 pk_2040_Faza1_f
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	121,000	45,45	54,55	55	66	121	100,00
					Added Trips Total			**55**	**66**	**121**	**100,00**

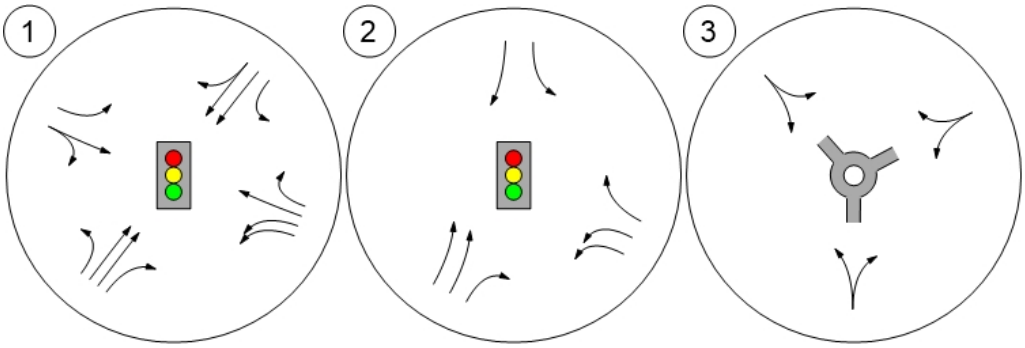
Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\pk_2040_faza1_1.pdf

Scenario 30 pk_2040_Faza1_f
14. 10. 2020

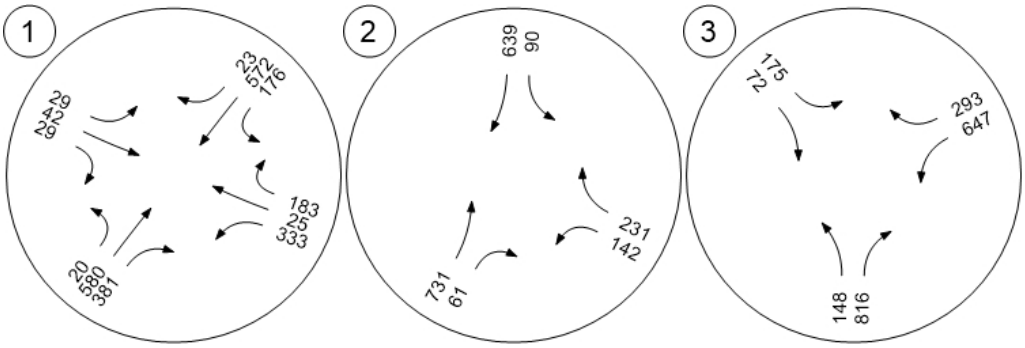
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	28,00	15	28,00	18
18: Center	36,00	20	36,00	25
19: Savska loka	2,00	1	2,00	1
20: Koroška	29,00	16	29,00	19
21: Gorenjesavska	5,00	3	5,00	3
Total	**100,00**	**55**	**100,00**	**66**

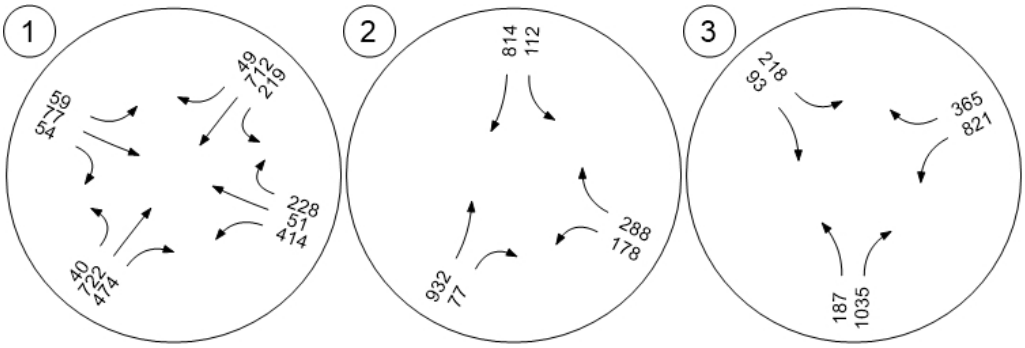
Lane Configuration and Traffic Control



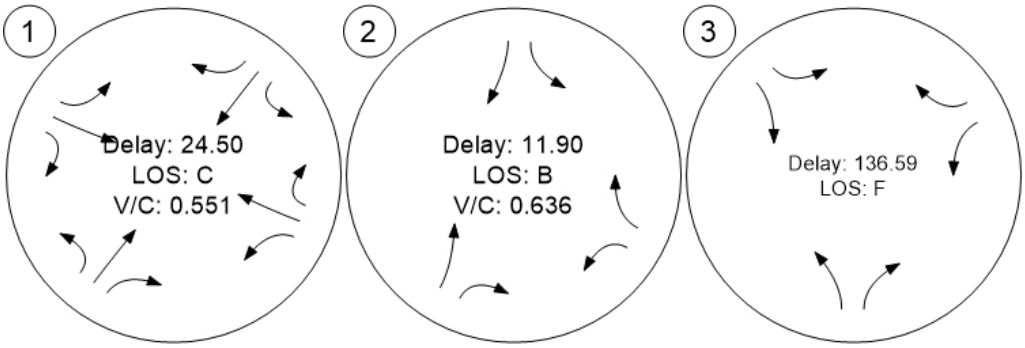
Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions



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Report File: K:\...\jk_2040_faza2_1.pdf

Scenario 29 jk_2040_Faza2_f
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	SWB Left	0,390	20,3	C
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,558	6,7	A
3	K03 - Aquasava	Roundabout	HCM 6th Edition	NB Right		49,0	E

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	20,3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,390

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	280	62	164	25	499	364	112	524	20	15	33	17
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	6,00	25,00	4,00	17,00	8,00	5,00	5,00	5,00	17,00	45,00	37,00	45,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	32	4	13	1	0	13	7	21	8	13	7
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	109	208	44	622	453	152	659	46	27	54	28
Peak Hour Factor	0,8800	0,8600	0,7200	0,6300	0,8300	0,7800	0,8200	0,9600	0,8000	0,7200	0,7500	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	99	32	72	17	187	145	46	172	14	9	18	13
Total Analysis Volume [veh/h]	397	127	289	70	749	581	185	686	58	38	72	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	0	2	0	1	6	0	0	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	9	32	0	0	34	0	9	43	0	0	23	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	28	28	31	31	39	39	39	20	20
g / C, Green / Cycle	0,37	0,37	0,41	0,41	0,52	0,52	0,52	0,27	0,27
(v / s)_i Volume / Saturation Flow Rate	0,16	0,09	0,12	0,25	0,21	0,23	0,23	0,05	0,11
s, saturation flow rate [veh/h]	2452	1372	567	3050	867	1642	1598	745	1126
c, Capacity [veh/h]	678	512	234	1261	369	854	831	227	300
d1, Uniform Delay [s]	25,17	16,23	24,48	17,11	24,54	11,21	11,22	26,83	22,69
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	3,68	1,15	3,25	2,07	4,81	1,66	1,70	1,59	4,21
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,59	0,25	0,30	0,59	0,50	0,44	0,44	0,17	0,42
d, Delay for Lane Group [s/veh]	28,85	17,38	27,73	19,17	29,36	12,87	12,92	28,41	26,89
Lane Group LOS	C	B	C	B	C	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2,66	1,58	1,24	4,97	1,98	3,85	3,76	0,67	2,09
50th-Percentile Queue Length [m/ln]	20,27	12,05	9,41	37,90	15,06	29,35	28,64	5,11	15,90
95th-Percentile Queue Length [veh/ln]	4,79	2,85	2,22	8,63	3,56	6,93	6,77	1,21	3,76
95th-Percentile Queue Length [m/ln]	36,49	21,68	16,95	65,76	27,10	52,84	51,55	9,19	28,62

Movement, Approach, & Intersection Results

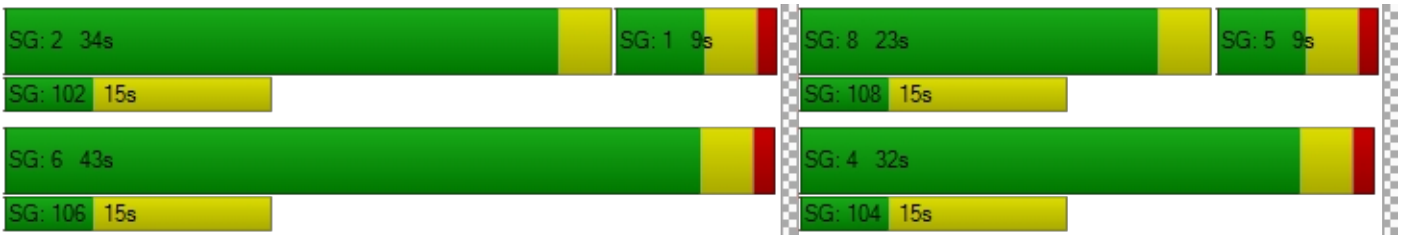
d_M, Delay for Movement [s/veh]	28,85	17,38	0,00	27,73	19,17	0,00	29,36	12,89	12,92	28,41	26,89	26,89
Movement LOS	C	B		C	B		C	B	B	C	C	C
d_A, Approach Delay [s/veh]	26,07			19,91			16,17			27,25		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	20,30											
Intersection LOS	C											
Intersection V/C	0,390											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,774	3,464	2,904	2,259
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	747	827	1040	533
d_b, Bicycle Delay [s]	14,73	12,91	8,64	20,17
l_b,int, Bicycle LOS Score for Intersection	2,424	2,235	2,326	1,829
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	6,7
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,558

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	171	623	490	211	24	115
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	4,00	8,00	7,00	25,00	20,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	2	38	10	2	2	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	215	813	620	265	32	143
Peak Hour Factor	0,8900	0,9100	0,7800	0,7700	0,6700	0,9000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	60	223	199	86	12	40
Total Analysis Volume [veh/h]	242	893	795	344	48	159
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	64	64	0	11	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	58	58	58	5
g / C, Green / Cycle	0,77	0,77	0,77	0,07
(v / s)_i Volume / Saturation Flow Rate	0,40	0,54	0,26	0,02
s, saturation flow rate [veh/h]	600	1656	3050	2538
c, Capacity [veh/h]	496	1281	2359	169
d1, Uniform Delay [s]	6,98	4,18	2,61	33,30
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	3,41	3,16	0,39	4,16
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,49	0,70	0,34	0,28
d, Delay for Lane Group [s/veh]	10,39	7,35	2,99	37,46
Lane Group LOS	B	A	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	2,10	4,59	1,09	0,50
50th-Percentile Queue Length [m/ln]	15,98	35,01	8,30	3,82
95th-Percentile Queue Length [veh/ln]	3,77	8,11	1,96	0,90
95th-Percentile Queue Length [m/ln]	28,76	61,80	14,94	6,88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10,39	7,35	2,99	0,00	37,46	0,00
Movement LOS	B	A	A		D	
d_A, Approach Delay [s/veh]	8,00		2,99		37,46	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6,70					
Intersection LOS	A					
Intersection V/C	0,558					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1547	1547	133
d_b, Bicycle Delay [s]	1,93	1,93	32,67
l_b,int, Bicycle LOS Score for Intersection	3,432	2,215	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	49,0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta			Gorenjesavska cesta			Kolodvorska cesta			Stara cesta		
Approach	Northbound			Southbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Ljubljanska cesta			Gorenjesavska cesta			Kolodvorska cesta			Stara cesta		
Base Volume Input [veh/h]	10	30	581	279	142	13	3	10	2	632	15	101
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	7,00	9,00	2,00	2,00	2,00	2,00	2,00	2,00	4,00	2,00	5,00
Growth Factor	1,0000	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	5	0	5	0	4	2	1	7	21	15	6	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	37	728	347	181	18	5	19	23	802	25	126
Peak Hour Factor	1,0000	0,7500	0,8500	0,8500	0,8400	1,0000	1,0000	1,0000	1,0000	0,9100	1,0000	0,8100
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	4	12	214	102	54	5	1	5	6	220	6	39
Total Analysis Volume [veh/h]	15	49	856	408	215	18	5	19	23	881	25	156
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	441			957			1552			73		
Exiting Flow Rate [veh/h]	1159			221			59			1369		
Demand Flow Rate [veh/h]	15	37	728	347	181	18	5	19	23	802	25	126
Adjusted Demand Flow Rate [veh/h]	15	49	856	408	215	18	5	19	23	881	25	156

Lanes

Overwrite Calculated Critical Headway	No	Yes	No	Yes
User-Defined Critical Headway [s]	3,50	3,50	3,50	3,50
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	2,50	2,50	2,50	2,50
A (intercept)	1380,00	1380,00	1380,00	1380,00
B (coefficient)	0,00102	0,00063	0,00102	0,00063
HV Adjustment Factor	0,92	0,98	0,98	0,96
Entry Flow Rate [veh/h]	1001	654	48	1106
Capacity of Entry and Bypass Lanes [veh/h]	881	759	284	1319
Pedestrian Impedance	1,00	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	810	744	278	1267
X, volume / capacity	1,14	0,86	0,17	0,84

Movement, Approach, & Intersection Results

Lane LOS	F	D	C	C
95th-Percentile Queue Length [veh]	26,72	10,35	0,60	10,90
95th-Percentile Queue Length [m]	203,63	78,90	4,56	83,09
Approach Delay [s/veh]	96,89	31,37	16,42	19,59
Approach LOS	F	D	C	C
Intersection Delay [s/veh]	49,00			
Intersection LOS	E			

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza2_1.pdf

Scenario 29 jk_2040_Faza2_f
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	349	109	208	44	622	453	152	659	46	27	54	28	2751

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	215	813	620	265	32	143	2088

ID	Intersection Name	Northbound			Southbound			Northeastbound			Southwestbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	K03 - Aquasava	15	37	728	347	181	18	5	19	23	802	25	126	2326

Vistro File: K:\...\Kr_Sava_novelacija.vistro
Report File: K:\...\jk_2040_faza2_1.pdf

Scenario 29 jk_2040_Faza2_f
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	280	62	164	25	499	364	112	524	20	15	33	17	2115
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	32	4	13	1	0	13	7	21	8	13	7	119
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**349**	**109**	**208**	**44**	**622**	**453**	**152**	**659**	**46**	**27**	**54**	**28**	**2751**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	171	623	490	211	24	115	1634
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	2	38	10	2	2	0	54
		Other	0	0	0	0	0	0	0
		Future Total	**215**	**813**	**620**	**265**	**32**	**143**	**2088**

ID	Intersection Name	Volume Type	Northbound			Southbound			Northeastbound			Southwestbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	K03 - Aquasava	Final Base	10	30	581	279	142	13	3	10	2	632	15	101	1818
		Growth Factor	1,00	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	5	0	5	0	4	2	1	7	21	15	6	0	66
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**15**	**37**	**728**	**347**	**181**	**18**	**5**	**19**	**23**	**802**	**25**	**126**	**2326**

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Report File: K:\...\jk_2040_faza2_1.pdf

Scenario 29 jk_2040_Faza2_f
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	135,000	58,52	41,48	79	56	135	100,00
					Added Trips Total			**79**	**56**	**135**	**100,00**

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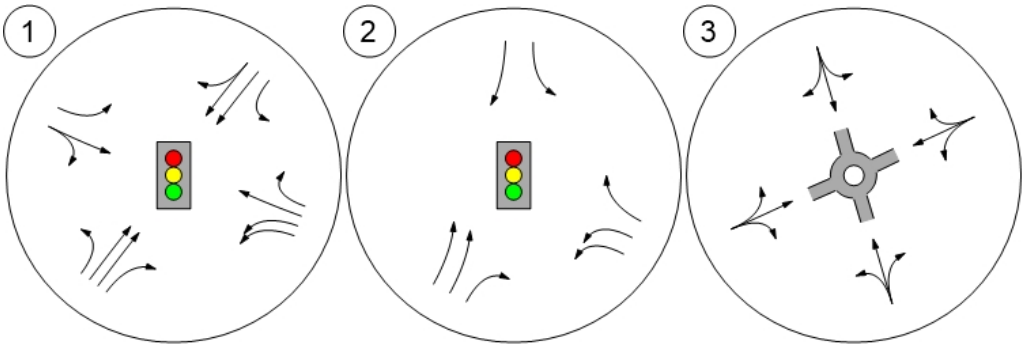
Report File: K:\...\jk_2040_faza2_1.pdf

Scenario 29 jk_2040_Faza2_f
14. 10. 2020

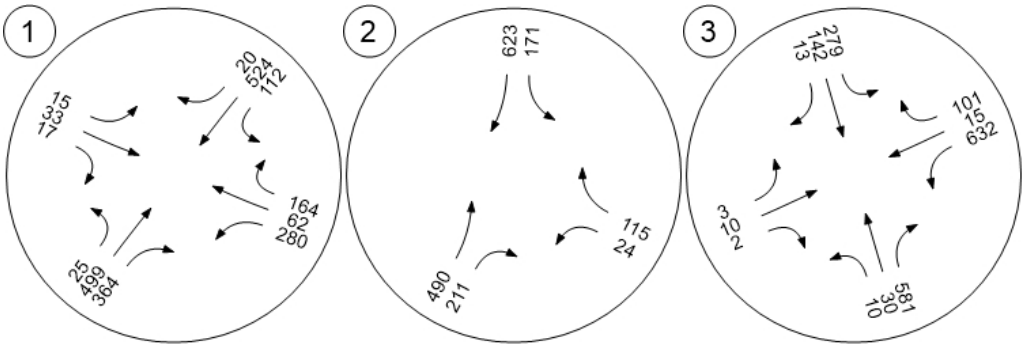
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	18,00	14	23,00	13
18: Center	46,00	36	46,00	26
19: Savska loka	2,00	2	8,00	4
20: Koroška	27,00	21	21,00	12
21: Gorenjesavska	7,00	6	2,00	1
Total	**100,00**	**79**	**100,00**	**56**

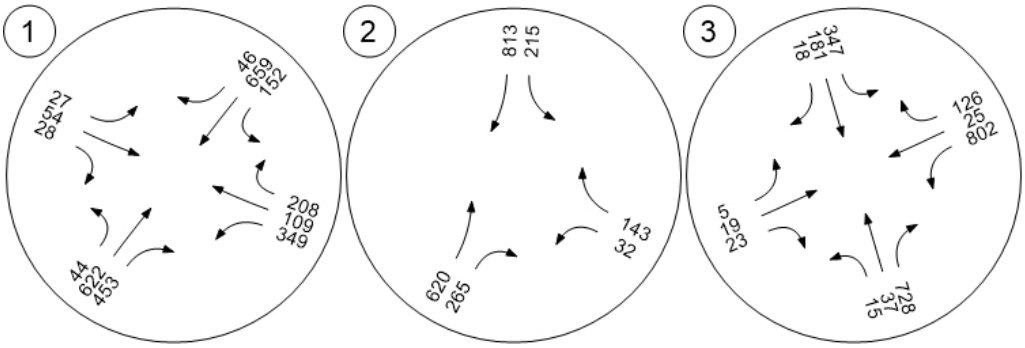
Lane Configuration and Traffic Control



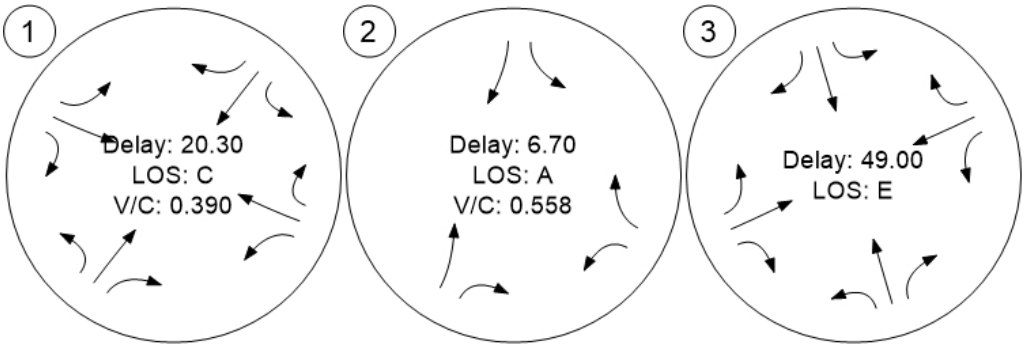
Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions



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Report File: K:\...\pk_2040_faza2_1.pdf

Scenario 27 27 pk_2040_Faza2
14. 10. 2020

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	K01 - Železniška postaja	Signalized	HCM 6th Edition	SWB Left	0,461	21,7	C
2	K02 - Iskra	Signalized	HCM 6th Edition	NWB Left	0,634	11,6	B
3	K03 - Aquasava	Roundabout	HCM 6th Edition	NB Right		84,3	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: K01 - Železniška postaja

Control Type:	Signalized	Delay (sec / veh):	21,7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,461

Intersection Setup

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Approach	Westbound			Northeastbound			Southwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	2	0	1	1	0	1	0	0	1	0	0	1
Entry Pocket Length [m]	60,00	30,48	15,00	60,00	30,48	20,00	30,48	30,48	55,00	30,48	30,48	45,00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	15,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Ljubljanska cesta - center			Lj- M			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	333	20	188	15	585	381	176	572	8	24	36	14
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	5,00	36,00	2,00	25,00	4,00	2,00	2,00	4,00	40,00	27,00	27,00	22,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	18	2	14	2	0	13	9	14	9	13	9
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	414	43	236	33	730	474	232	721	24	39	58	26
Peak Hour Factor	0,9000	0,7800	0,7600	0,7100	0,9500	0,9500	0,8600	0,9300	0,8200	0,6600	0,8100	0,5300
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	115	14	78	12	192	125	67	194	7	15	18	12
Total Analysis Volume [veh/h]	460	55	311	46	768	499	270	775	29	59	72	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	ProtPer	Permiss	Unsign	Permiss	Permiss	Unsign	ProtPer	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	5	4	0	7	2	0	1	6	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lag	-	-	-	-	-	Lag	-	-	-	-	-
Minimum Green [s]	5	5	0	0	5	0	5	5	0	0	5	0
Maximum Green [s]	60	60	0	0	60	0	60	60	0	0	60	0
Amber [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
All red [s]	1,0	1,0	0,0	0,0	0,0	0,0	1,0	1,0	0,0	0,0	0,0	0,0
Split [s]	12	31	0	0	32	0	12	44	0	0	19	0
Vehicle Extension [s]	3,0	3,0	0,0	0,0	3,0	0,0	3,0	3,0	0,0	0,0	3,0	0,0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2,0	2,0	0,0	0,0	2,0	0,0	2,0	2,0	0,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	2,0	2,0	0,0	0,0	1,0	0,0	2,0	2,0	0,0	0,0	1,0	0,0
Minimum Recall	No	No			No		No	No			No	
Maximum Recall	No	No			No		No	No			No	
Pedestrian Recall	No	No			No		No	No			No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	C	L	C
C, Cycle Length [s]	75	75	75	75	75	75	75	75	75
L, Total Lost Time per Cycle [s]	4,00	4,00	3,00	3,00	4,00	4,00	4,00	3,00	3,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	2,00	0,00	2,00	0,00	0,00	2,00	0,00
l2, Clearance Lost Time [s]	0,00	2,00	1,00	1,00	0,00	2,00	2,00	1,00	1,00
g_i, Effective Green Time [s]	27	27	29	29	40	40	40	16	16
g / C, Green / Cycle	0,36	0,36	0,39	0,39	0,53	0,53	0,53	0,21	0,21
(v / s)_i Volume / Saturation Flow Rate	0,18	0,04	0,09	0,24	0,29	0,24	0,24	0,06	0,10
s, saturation flow rate [veh/h]	2586	1224	497	3153	946	1656	1635	970	1256
c, Capacity [veh/h]	706	441	200	1219	417	883	872	248	268
d1, Uniform Delay [s]	24,62	16,08	25,85	18,65	24,19	10,81	10,81	28,41	25,68
k, delay calibration	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	4,62	0,58	2,67	2,48	7,59	1,71	1,73	2,25	5,42
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,65	0,12	0,23	0,63	0,65	0,46	0,46	0,24	0,45
d, Delay for Lane Group [s/veh]	29,24	16,66	28,52	21,13	31,78	12,52	12,54	30,66	31,10
Lane Group LOS	C	B	C	C	C	B	B	C	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3,27	0,67	0,83	5,42	3,08	4,05	4,01	1,07	2,21
50th-Percentile Queue Length [m/ln]	24,94	5,11	6,36	41,28	23,49	30,89	30,55	8,19	16,80
95th-Percentile Queue Length [veh/ln]	5,89	1,21	1,50	9,23	5,55	7,30	7,22	1,93	3,97
95th-Percentile Queue Length [m/ln]	44,88	9,19	11,45	70,37	42,28	55,61	54,99	14,74	30,24

Movement, Approach, & Intersection Results

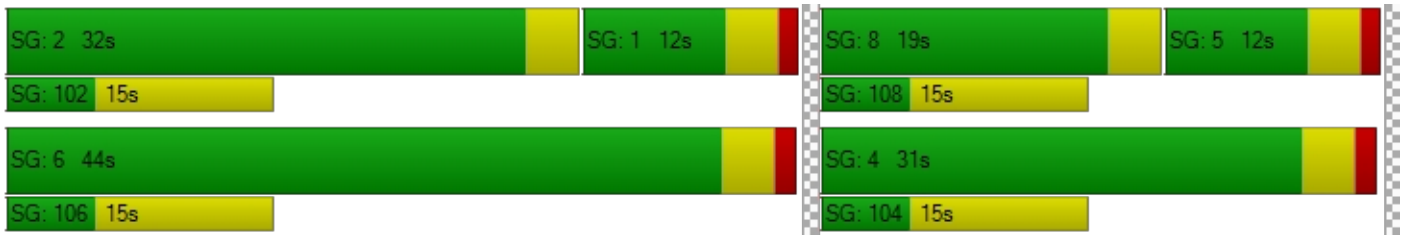
d_M, Delay for Movement [s/veh]	29,24	16,66	0,00	28,52	21,13	0,00	31,78	12,53	12,54	30,66	31,10	31,10
Movement LOS	C	B		C	C		C	B	B	C	C	C
d_A, Approach Delay [s/veh]	27,90			21,54			17,37			30,96		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	21,73											
Intersection LOS	C											
Intersection V/C	0,461											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9,0	9,0	9,0	9,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	29,04	29,04	29,04	29,04
l_p,int, Pedestrian LOS Score for Intersection	2,829	3,385	2,994	2,166
Crosswalk LOS	C	C	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	720	773	1067	427
d_b, Bicycle Delay [s]	15,36	14,11	8,17	23,21
l_b,int, Bicycle LOS Score for Intersection	2,409	2,231	2,446	1,857
Bicycle LOS	B	B	B	A

Sequence

Ring 1	2	1	8	5	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: K02 - Iskra

Control Type:	Signalized	Delay (sec / veh):	11,6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0,634

Intersection Setup

Name	Ljubljanska cesta		Stara cesta			
Approach	Southbound		Northeastbound		Northwestbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	1	0	0	1	1	0
Entry Pocket Length [m]	65,00	30,48	30,48	15,00	20,00	30,48
No. of Lanes in Exit Pocket	0	1	0	0	0	0
Exit Pocket Length [m]	0,00	15,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00		50,00		50,00	
Grade [%]	0,00		0,00		0,00	
Curb Present	No		No		No	
Crosswalk	No		No		No	

Volumes

Name	Ljubljanska cesta		Stara cesta			
Base Volume Input [veh/h]	90	628	726	61	136	236
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	3,00	4,00	4,00	8,00	6,00	2,00
Growth Factor	1,2447	1,2447	1,2447	1,2447	1,2447	1,2447
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	35	12	1	1	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	817	916	77	170	294
Peak Hour Factor	0,9400	0,8900	0,9000	0,9000	0,7100	0,6800
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	30	229	254	21	60	108
Total Analysis Volume [veh/h]	119	918	1018	86	239	432
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	1 - Coordination Group
Cycle Length [s]	75
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	56,0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0,00

Phasing & Timing

Control Type	Permissive	Permissive	Permissive	Unsignalized	Permissive	Unsignalized
Signal Group	0	2	2	0	6	0
Auxiliary Signal Groups						
Lead / Lag	-	-	-	-	Lag	-
Minimum Green [s]	0	5	5	0	5	0
Maximum Green [s]	0	60	60	0	60	0
Amber [s]	0,0	3,0	3,0	0,0	3,0	0,0
All red [s]	0,0	3,0	3,0	0,0	3,0	0,0
Split [s]	0	61	61	0	14	0
Vehicle Extension [s]	0,0	3,0	3,0	0,0	3,0	0,0
Walk [s]	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0
Delayed Vehicle Green [s]	0,0	0,0	0,0	0,0	0,0	0,0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	0,0	2,0	2,0	0,0	2,0	0,0
I2, Clearance Lost Time [s]	0,0	4,0	4,0	0,0	4,0	0,0
Minimum Recall		No	No		No	
Maximum Recall		No	No		No	
Pedestrian Recall		No	No		No	
Detector Location [m]	0,0	0,0	0,0	0,0	0,0	0,0
Detector Length [m]	0,0	0,0	0,0	0,0	0,0	0,0
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00	1,00	1,00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L
C, Cycle Length [s]	75	75	75	75
L, Total Lost Time per Cycle [s]	6,00	6,00	6,00	6,00
l1_p, Permitted Start-Up Lost Time [s]	2,00	0,00	0,00	0,00
l2, Clearance Lost Time [s]	4,00	4,00	4,00	4,00
g_i, Effective Green Time [s]	55	55	55	8
g / C, Green / Cycle	0,73	0,73	0,73	0,11
(v / s)_i Volume / Saturation Flow Rate	0,24	0,55	0,32	0,08
s, saturation flow rate [veh/h]	494	1656	3153	3013
c, Capacity [veh/h]	382	1214	2312	321
d1, Uniform Delay [s]	8,73	5,98	3,94	32,51
k, delay calibration	0,50	0,50	0,50	0,50
I, Upstream Filtering Factor	1,00	1,00	1,00	1,00
d2, Incremental Delay [s]	2,11	4,41	0,61	14,44
d3, Initial Queue Delay [s]	0,00	0,00	0,00	0,00
Rp, platoon ratio	1,00	1,00	1,00	1,00
PF, progression factor	1,00	1,00	1,00	1,00

Lane Group Results

X, volume / capacity	0,31	0,76	0,44	0,74
d, Delay for Lane Group [s/veh]	10,84	10,40	4,55	46,95
Lane Group LOS	B	B	A	D
Critical Lane Group	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	1,14	6,89	2,17	2,68
50th-Percentile Queue Length [m/ln]	8,67	52,52	16,52	20,42
95th-Percentile Queue Length [veh/ln]	2,05	11,20	3,90	4,82
95th-Percentile Queue Length [m/ln]	15,60	85,33	29,73	36,76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10,84	10,40	4,55	0,00	46,95	0,00
Movement LOS	B	B	A		D	
d_A, Approach Delay [s/veh]	10,45		4,55		46,95	
Approach LOS	B		A		D	
d_I, Intersection Delay [s/veh]	11,63					
Intersection LOS	B					
Intersection V/C	0,634					

Other Modes

g_Walk,mi, Effective Walk Time [s]	0,0	0,0	0,0
M_corner, Corner Circulation Area [m²/ped]	0,00	0,00	0,00
M_CW, Crosswalk Circulation Area [m²/ped]	0,00	0,00	0,00
d_p, Pedestrian Delay [s]	0,00	0,00	0,00
l_p,int, Pedestrian LOS Score for Intersection	0,000	0,000	0,000
Crosswalk LOS	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1467	1467	213
d_b, Bicycle Delay [s]	2,67	2,67	29,93
l_b,int, Bicycle LOS Score for Intersection	3,271	2,399	1,560
Bicycle LOS	C	B	A

Sequence

Ring 1	2	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: K03 - Aquasava

Control Type:	Roundabout	Delay (sec / veh):	84,3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes		

Intersection Setup

Name	Ljubljanska cesta			Gorenjesavska cesta			Stara cesta			Kolodvorska cesta		
Approach	Northbound			Southbound			Westbound			Northeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [m]	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30	3,30
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [m]	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48	30,48
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [m]	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Speed [km/h]	50,00			50,00			50,00			50,00		
Grade [%]	0,00			0,00			0,00			0,00		
Crosswalk	No			Yes			No			Yes		

Volumes

Name	Ljubljanska cesta			Gorenjesavska cesta			Stara cesta			Kolodvorska cesta		
Base Volume Input [veh/h]	15	153	826	175	67	5	641	6	293	5	10	10
Base Volume Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Heavy Vehicles Percentage [%]	2,00	1,00	4,00	3,00	3,00	2,00	3,00	2,00	1,00	2,00	2,00	2,00
Growth Factor	1,0000	1,2447	1,2447	1,2447	1,2447	1,0000	1,2447	1,0000	1,2447	1,0000	1,0000	1,0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	1	8	0	2	1	11	5	0	2	11	22
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	191	1036	218	85	6	809	11	365	7	21	32
Peak Hour Factor	1,0000	0,8600	0,8900	0,8600	0,9000	1,0000	0,9000	1,0000	0,9100	1,0000	1,0000	1,0000
Other Adjustment Factor	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000
Total 15-Minute Volume [veh/h]	5	56	291	63	24	2	225	3	100	2	5	8
Total Analysis Volume [veh/h]	19	222	1164	253	94	6	899	11	401	7	21	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	289			957			251			1283		
Exiting Flow Rate [veh/h]	1055			636			1493			37		
Demand Flow Rate [veh/h]	19	191	1036	218	85	6	809	11	365	7	21	32
Adjusted Demand Flow Rate [veh/h]	19	222	1164	253	94	6	899	11	401	7	21	32

Lanes

Overwrite Calculated Critical Headway	Yes	Yes	Yes	Yes
User-Defined Critical Headway [s]	3,50	3,50	3,50	3,50
Overwrite Calculated Follow-Up Time	Yes	Yes	Yes	Yes
User-Defined Follow-Up Time [s]	2,50	2,50	2,50	2,50
A (intercept)	1440,00	1440,00	1440,00	1440,00
B (coefficient)	0,00063	0,00063	0,00063	0,00063
HV Adjustment Factor	0,97	0,97	0,98	0,98
Entry Flow Rate [veh/h]	1455	364	1343	62
Capacity of Entry and Bypass Lanes [veh/h]	1202	792	1232	646
Pedestrian Impedance	1,00	1,00	1,00	1,00
Capacity per Entry Lane [veh/h]	1162	770	1203	634
X, volume / capacity	1,21	0,46	1,09	0,09

Movement, Approach, & Intersection Results

Lane LOS	F	B	F	A
95th-Percentile Queue Length [veh]	42,78	2,43	29,95	0,31
95th-Percentile Queue Length [m]	325,97	18,53	228,25	2,38
Approach Delay [s/veh]	117,90	10,88	71,61	6,76
Approach LOS	F	B	F	A
Intersection Delay [s/veh]	84,30			
Intersection LOS	F			

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Report File: K:\...\pk_2040_faza2_1.pdf

Scenario 27 27 pk_2040_Faza2
14. 10. 2020

Turning Movement Volume: Summary

ID	Intersection Name	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	414	43	236	33	730	474	232	721	24	39	58	26	3030

ID	Intersection Name	Southbound		Northeastbound		Northwestbound		Total Volume
		Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	112	817	916	77	170	294	2386

ID	Intersection Name	Northbound			Southbound			Westbound			Northeastbound			Total Volume
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	K03 - Aquasava	19	191	1036	218	85	6	809	11	365	7	21	32	2800

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Scenario 27 27 pk_2040_Faza2
14. 10. 2020

Turning Movement Volume: Detail

ID	Intersection Name	Volume Type	Westbound			Northeastbound			Southwestbound			Southeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
1	K01 - Železniška postaja	Final Base	333	20	188	15	585	381	176	572	8	24	36	14	2352
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	0	18	2	14	2	0	13	9	14	9	13	9	103
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**414**	**43**	**236**	**33**	**730**	**474**	**232**	**721**	**24**	**39**	**58**	**26**	**3030**

ID	Intersection Name	Volume Type	Southbound		Northeastbound		Northwestbound		Total Volume
			Left	Thru	Thru	Right	Left	Right	
2	K02 - Iskra	Final Base	90	628	726	61	136	236	1877
		Growth Factor	1,24	1,24	1,24	1,24	1,24	1,24	-
		In Process	0	0	0	0	0	0	0
		Net New Trips	0	35	12	1	1	0	49
		Other	0	0	0	0	0	0	0
		Future Total	**112**	**817**	**916**	**77**	**170**	**294**	**2386**

ID	Intersection Name	Volume Type	Northbound			Southbound			Westbound			Northeastbound			Total Volume
			Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
3	K03 - Aquasava	Final Base	15	153	826	175	67	5	641	6	293	5	10	10	2206
		Growth Factor	1,00	1,24	1,24	1,24	1,24	1,00	1,24	1,00	1,24	1,00	1,00	1,00	-
		In Process	0	0	0	0	0	0	0	0	0	0	0	0	0
		Net New Trips	4	1	8	0	2	1	11	5	0	2	11	22	67
		Other	0	0	0	0	0	0	0	0	0	0	0	0	0
		Future Total	**19**	**191**	**1036**	**218**	**85**	**6**	**809**	**11**	**365**	**7**	**21**	**32**	**2800**

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Report File: K:\...\pk_2040_faza2_1.pdf

Scenario 27 27 pk_2040_Faza2
14. 10. 2020

Trip Generation summary

Added Trips

Zone ID: Name	Land Use variables	Code	Ind. Var.	Rate	Quantity	% In	% Out	Trips In	Trips Out	Total Trips	% of Total Trips
1: KR SA 4	Dodatna generacija prometa			1,000	121,000	45,45	54,55	55	66	121	100,00
					Added Trips Total			**55**	**66**	**121**	**100,00**

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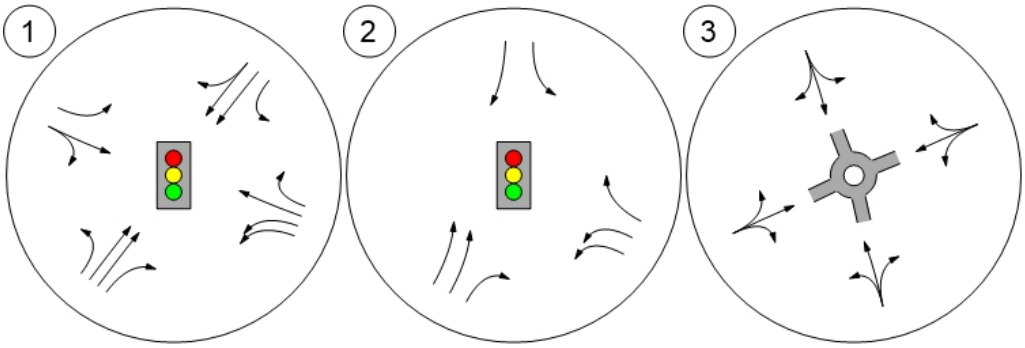
Scenario 27 27 pk_2040_Faza2
14. 10. 2020

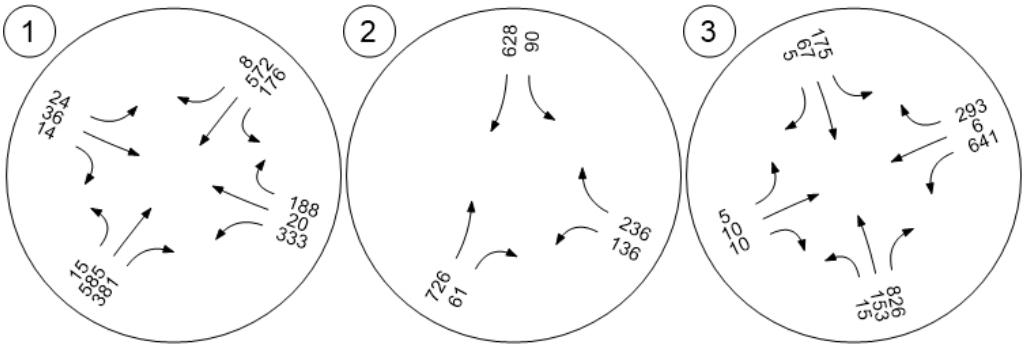
Trip Distribution summary

Zone / Gate	Zone 1: KR SA 4			
	To KR SA 4:		From KR SA 4:	
	Share %	Trips	Share %	Trips
17: Medvode	28,00	15	28,00	18
18: Center	36,00	20	36,00	25
19: Savska loka	2,00	1	2,00	1
20: Koroška	29,00	16	29,00	19
21: Gorenjesavska	5,00	3	5,00	3
Total	**100,00**	**55**	**100,00**	**66**

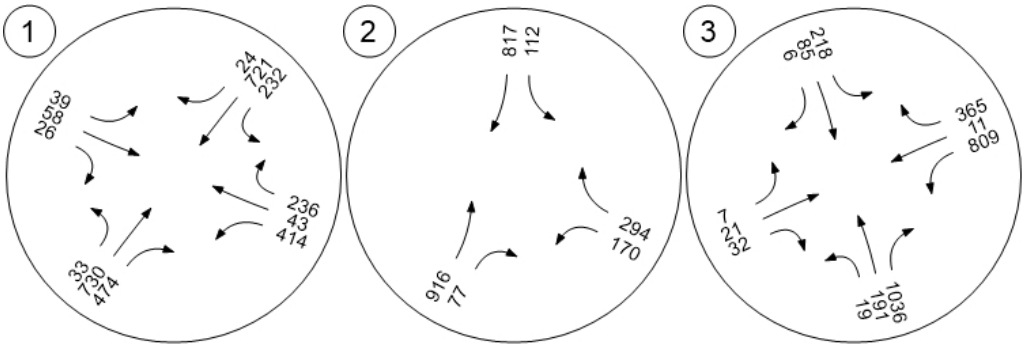
Lane Configuration and Traffic Control



Traffic Volume - Base Volume



Traffic Volume - Future Total Volume



Traffic Conditions