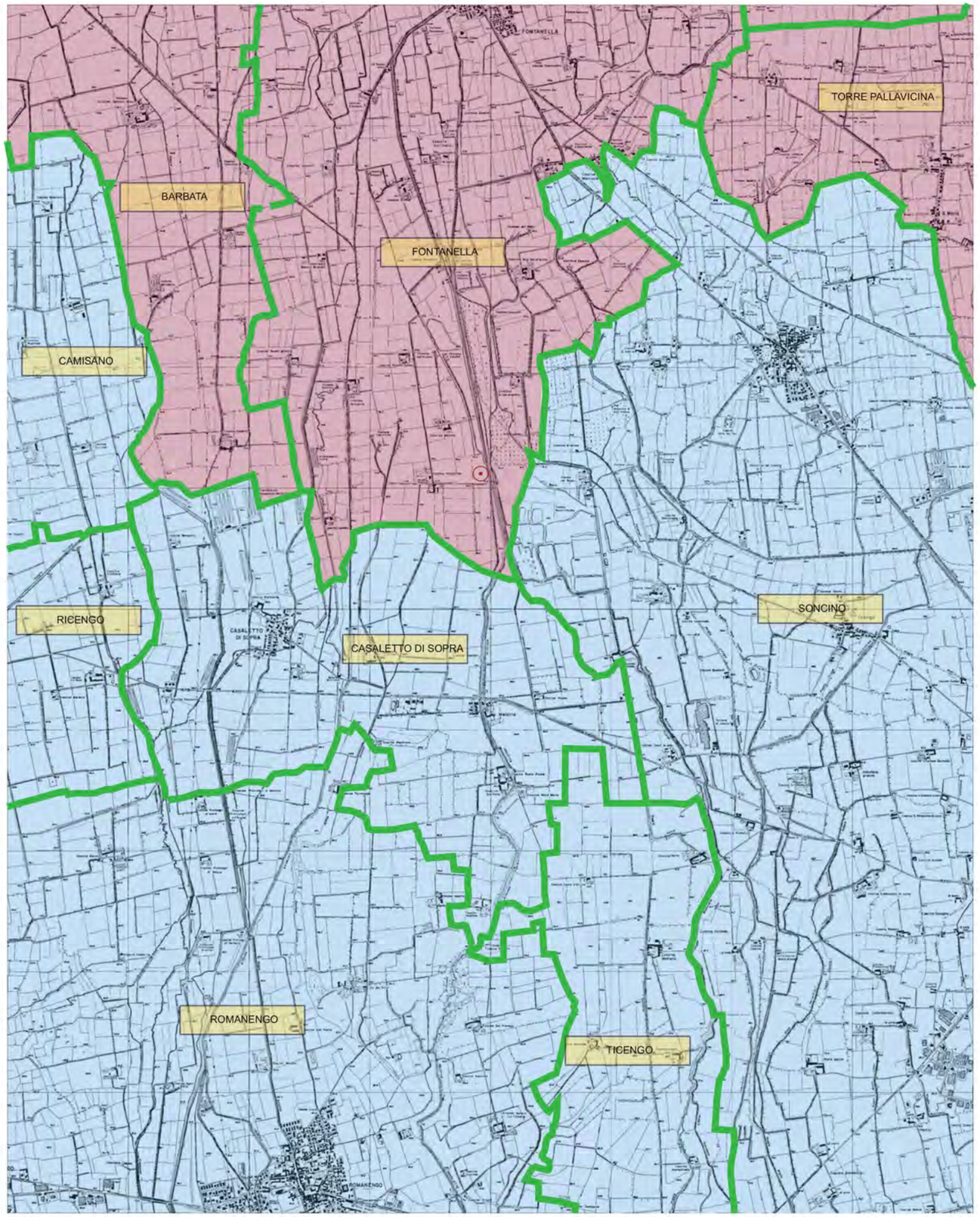
ALLEGATI



N

ALL-VIA-013 Tav.1

PENGAS ITALIANA SRL

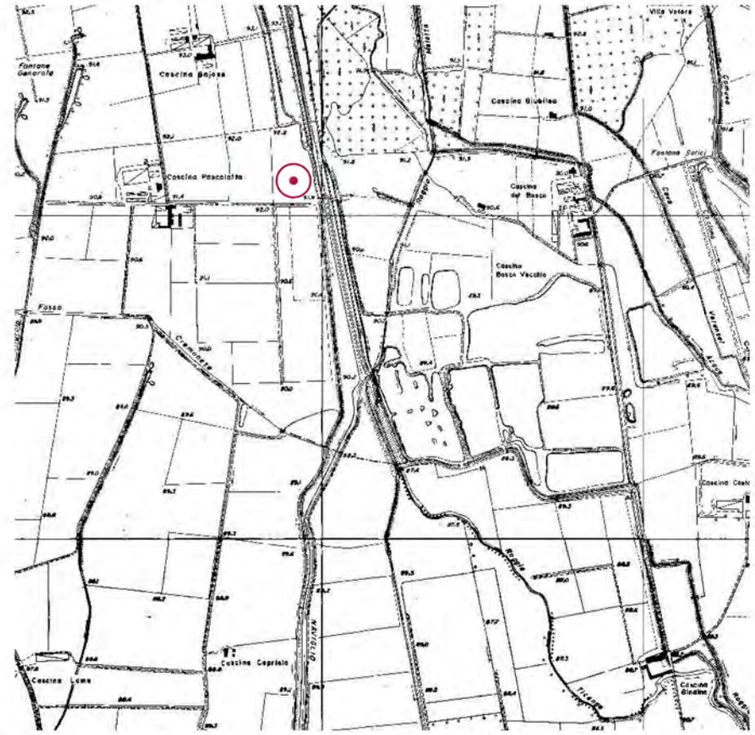
PERMESSO DI RICERCA

"CALCIO"

CARTA DI INQUADRAMENTO

LEGENDA

- Ubicazione dell'area
- Limiti amministrativi comunali
- Provincia di Cremona
- Provincia di Bergamo



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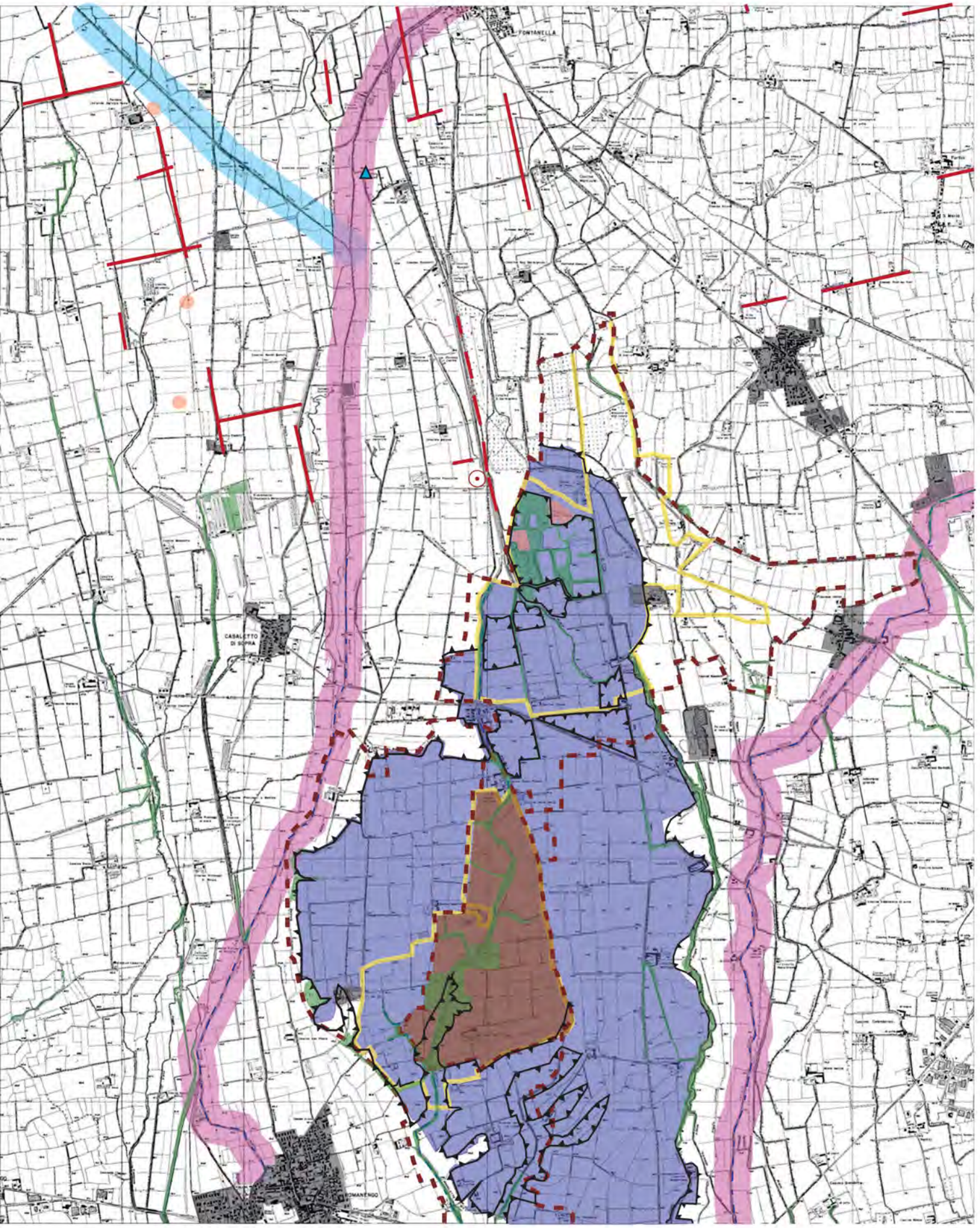
Metri



N

ALL-VIA-014 Tav.2

PENGAS ITALIANA SRL

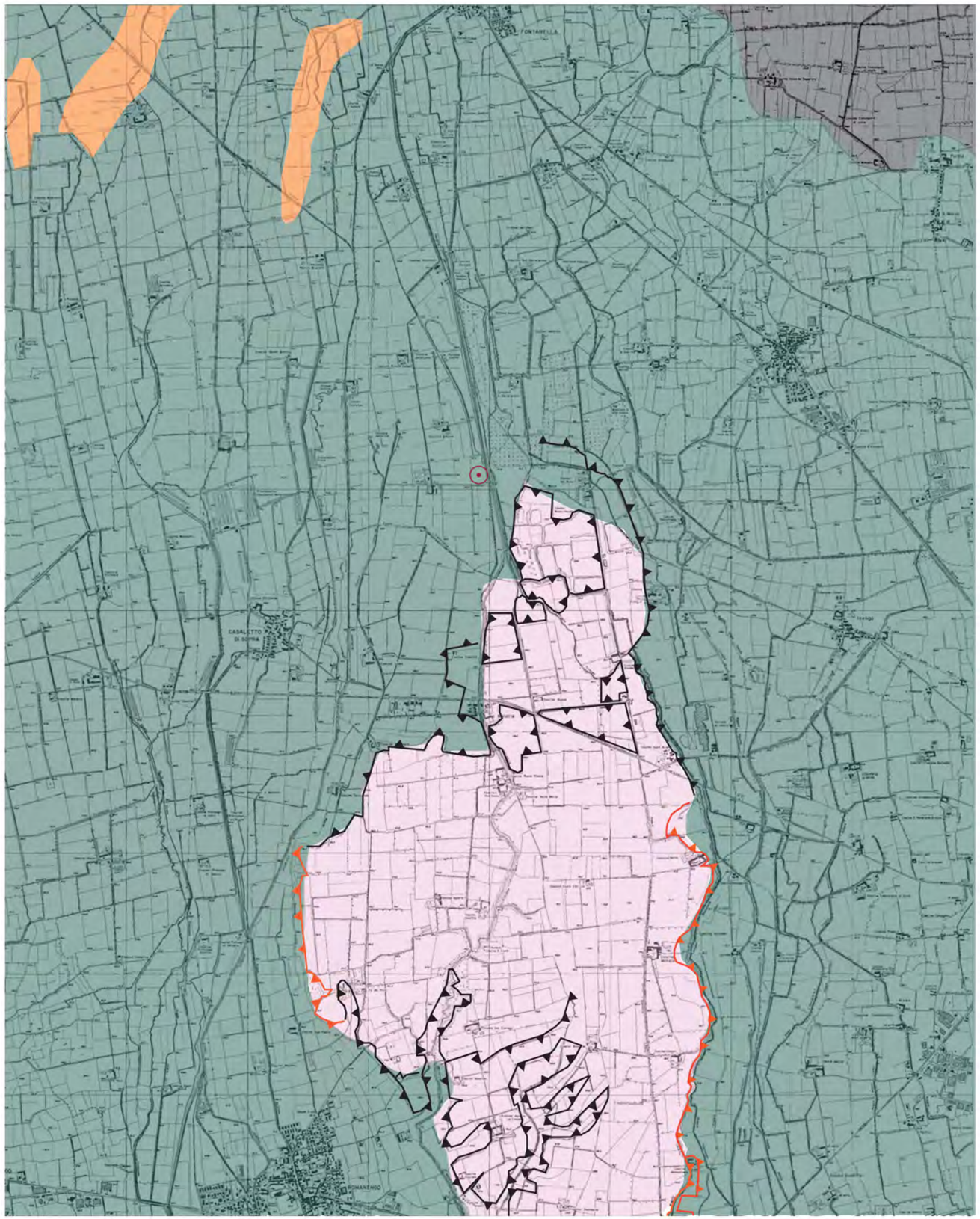
PERMESSO DI RICERCA

"CALCIO"

CARTA DEI VINCOLI

LEGENDA

- Popolamento arborei e arbustivi *tutelati ai sensi dell'art.3 Lr 27/04 D.Lgs.n.42/2004, art.142 e Rete Ecologica Provinciale (areali)*
- Rete ecologica provinciale dgr 1621-07(corridoi)
- Corsi d'acqua individuati *ai sensi dell'art.142 lett.c del D.Lgs.n.42/2004 inseriti nell'elenco di cui alla D.G.R. n. 12028 del 25-07-1986,*
- Aree Archeologiche *vincolate ai sensi dell'art. 142 lett. m e dell'art.10 D.Lgs. 22 gennaio 2004,*
- Parchi Locali di Interesse Sovracomunale *riconosciuti art. 31 L.R 86/83*
- Siti di Interesse Comunitario
- Riserve naturali *ai sensi dell'art.11 (L.R. 86/83).*
- Centri e nuclei storici *ai sensi dell'art. 19 della Norm. del PTPR*
- Pianalto della Melotta *art.15.1-5.1.1. dgr 6421/07 Melotta*
- Corsi d'acqua naturali ed artificiali *comma e art.22 del PTPR*
- Zone umide *dgr 1621-07*
- Orlo di scarpata dgr 1621-07
- Ubicazione dell'area



N

ALL-VIA-015

Tav.3

PENGAS ITALIANA SRL

PERMESSO DI RICERCA

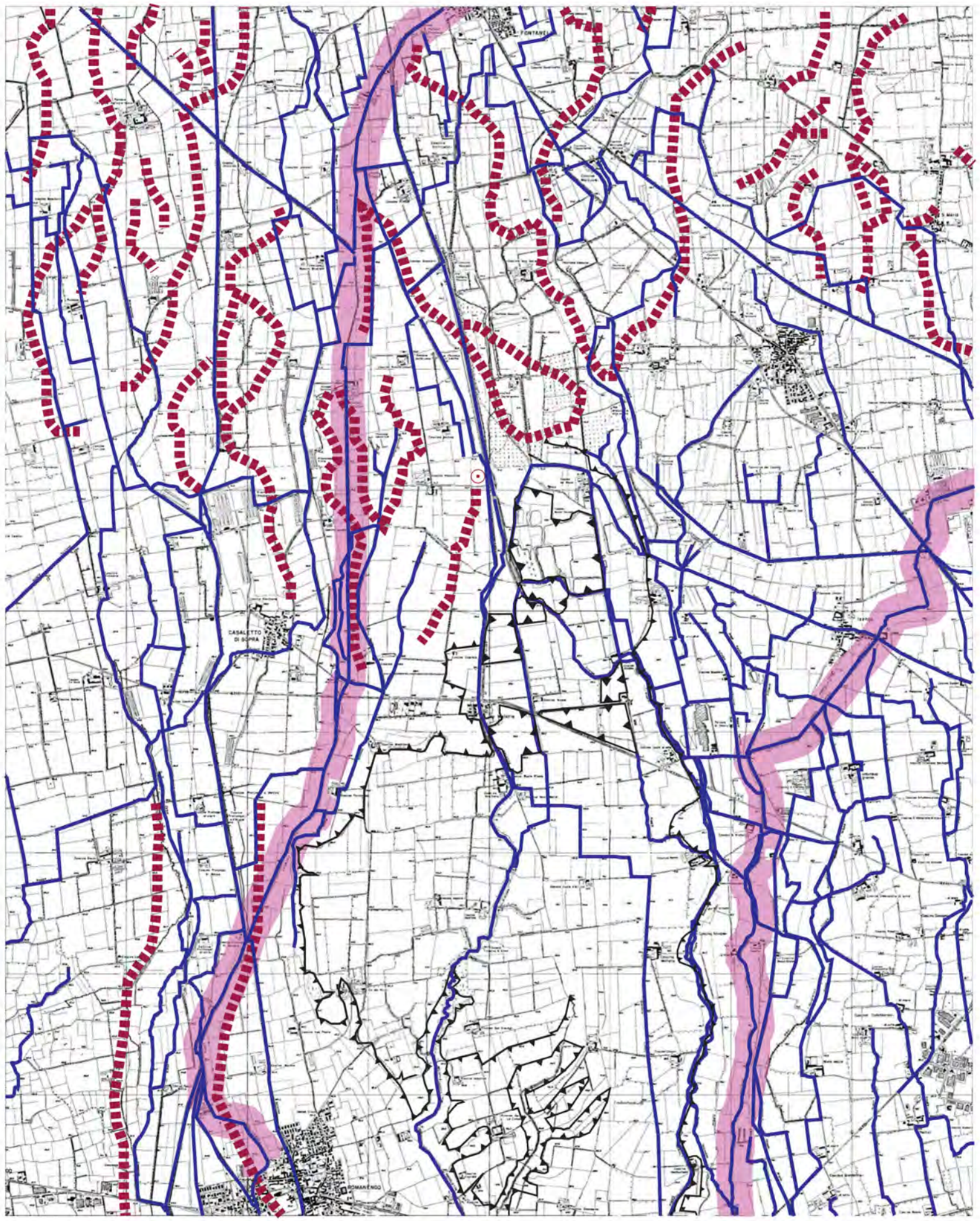
"CALCIO"

CARTA GEOLITOLOGICA

LEGENDA

- Ghiaie - ghiaie con sabbia
- Ciottoli e ghiaie, ghiaie sabbiose, sabbie limose e limi sabbiosi delle alluvioni attuali e recenti
- Alluvioni limo-argillose; morene argillose-limose-ghiaiose.
- Sabbie limose o argillose - Sabbie limose o argillose con sabbia
- Scarpate principali (>3 m)
- Scarpate secondarie (<3 m)

Ubicazione dell'area



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Metri

N

ALL-VIA-016 Tav.4

PENGAS ITALIANA SRL

PERMESSO DI RICERCA

"CALCIO"

CARTA GEOMORFOLOGICA

LEGENDA

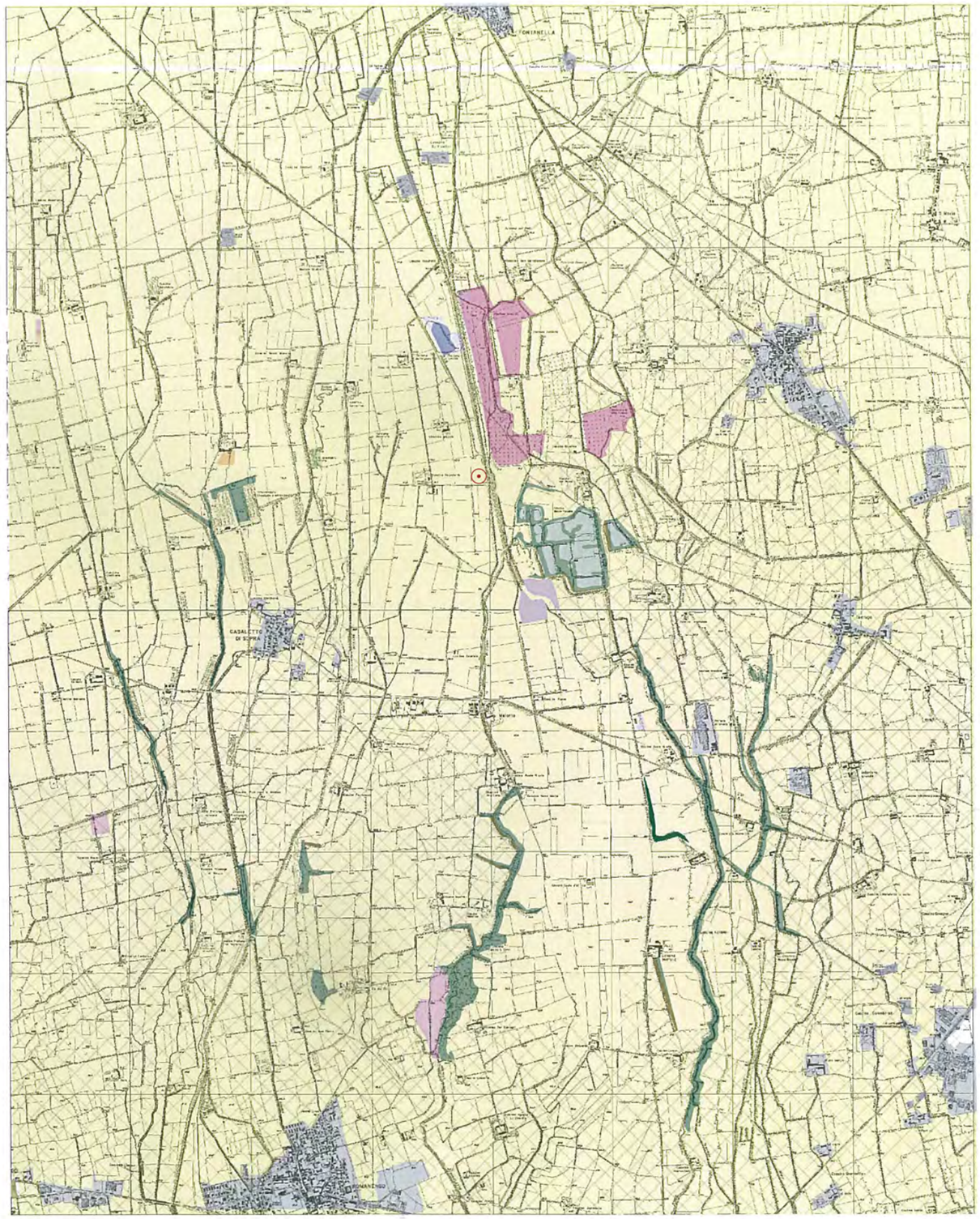
Acque superficiali

Corsi d'acqua naturali ed artificiali
comma e art.22 del PTPR

Orlo di scarpata *dgr 1621-07*

Paleoalvei

Ubicazione dell'area



N

ALL-VIA-017 Tav.5

PENGAS ITALIANA SRL

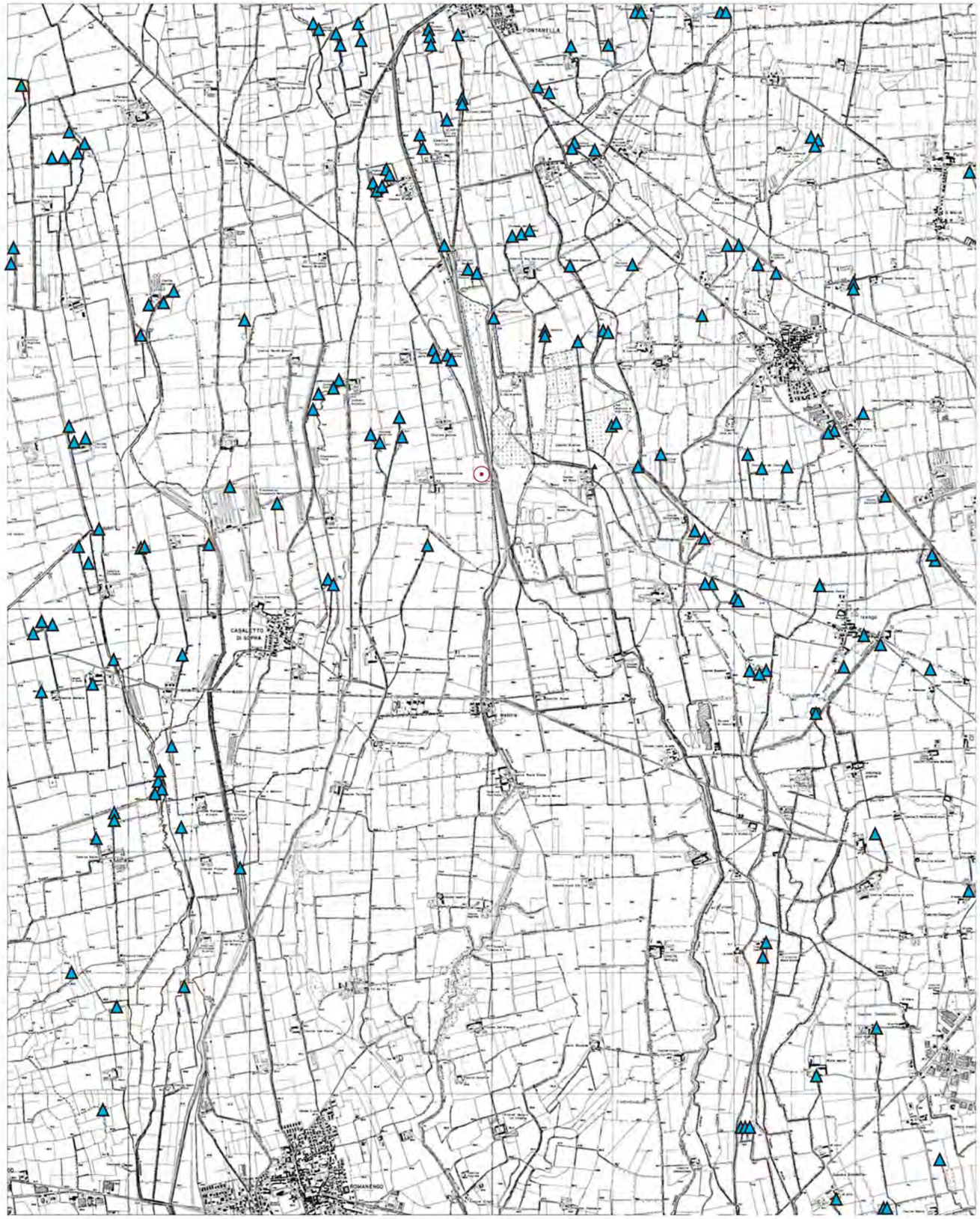
PERMESSO DI RICERCA
"CALCIO"

CARTA DELL' USO SUOLO

LEGENDA

- Zone urbanizzate
- Aree estrattive
- Specchi d'acqua per attività estrattive
- Laghi
- Seminativo semplice
- Seminativo semplice con presenza rada di filari
- Vegetazione arbustiva
- Pioppeti
- Vegetazione dei greti
- Vegetazione orticole protette

Ubicazione dell'area



N

ALL-VIA-018 Tav.6

PENGAS ITALIANA SRL

PERMESSO DI RICERCA

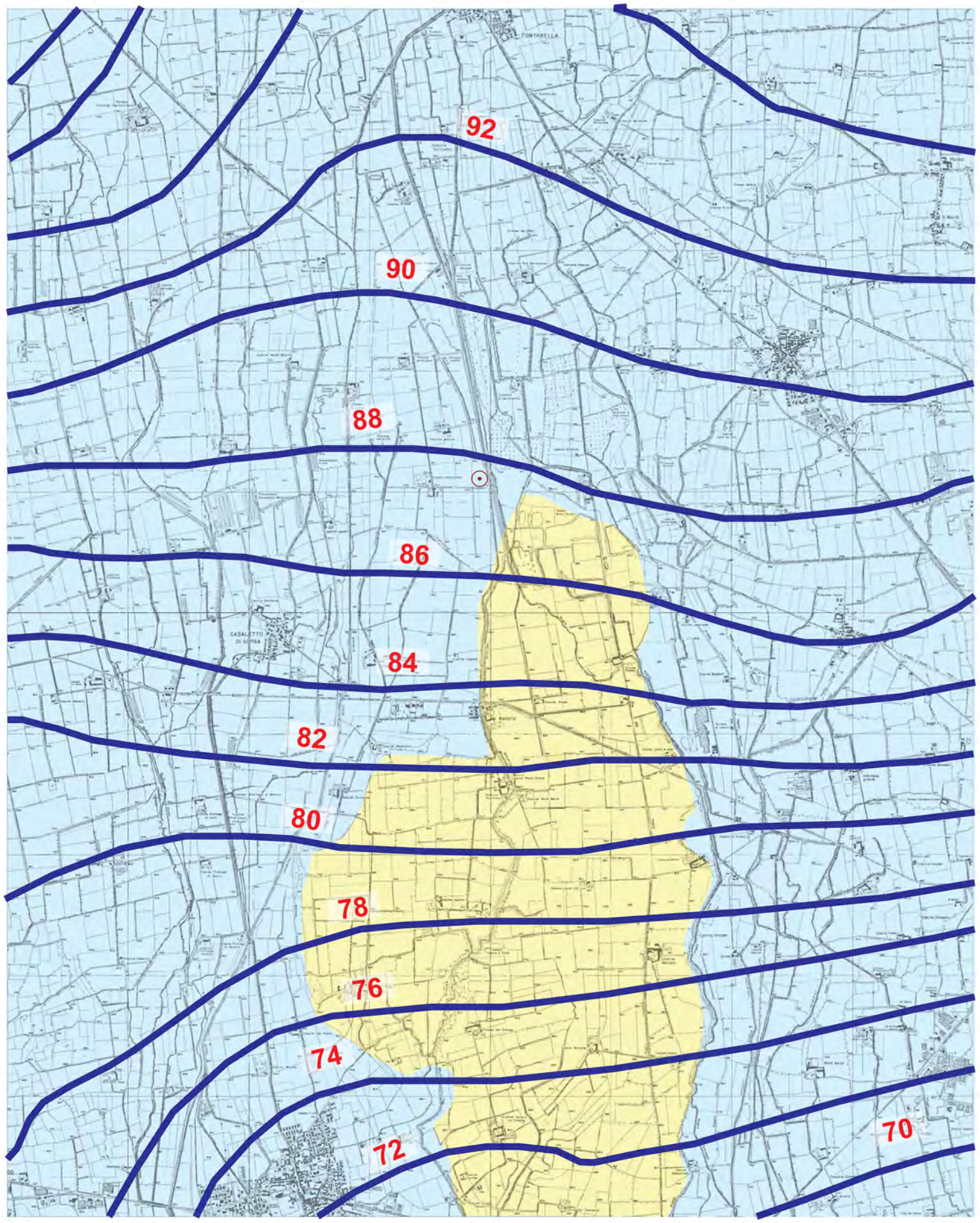
"CALCIO"

CARTA DEI FONTANILI

LEGENDA

Fontanili *dgr 1621-07*

Ubicazione dell'area



N

ALL-VIA-019 Tav.7

PENGAS ITALIANA SRL

PERMESSO DI RICERCA

“CALCIO”

CARTA IDROGEOLOGICA

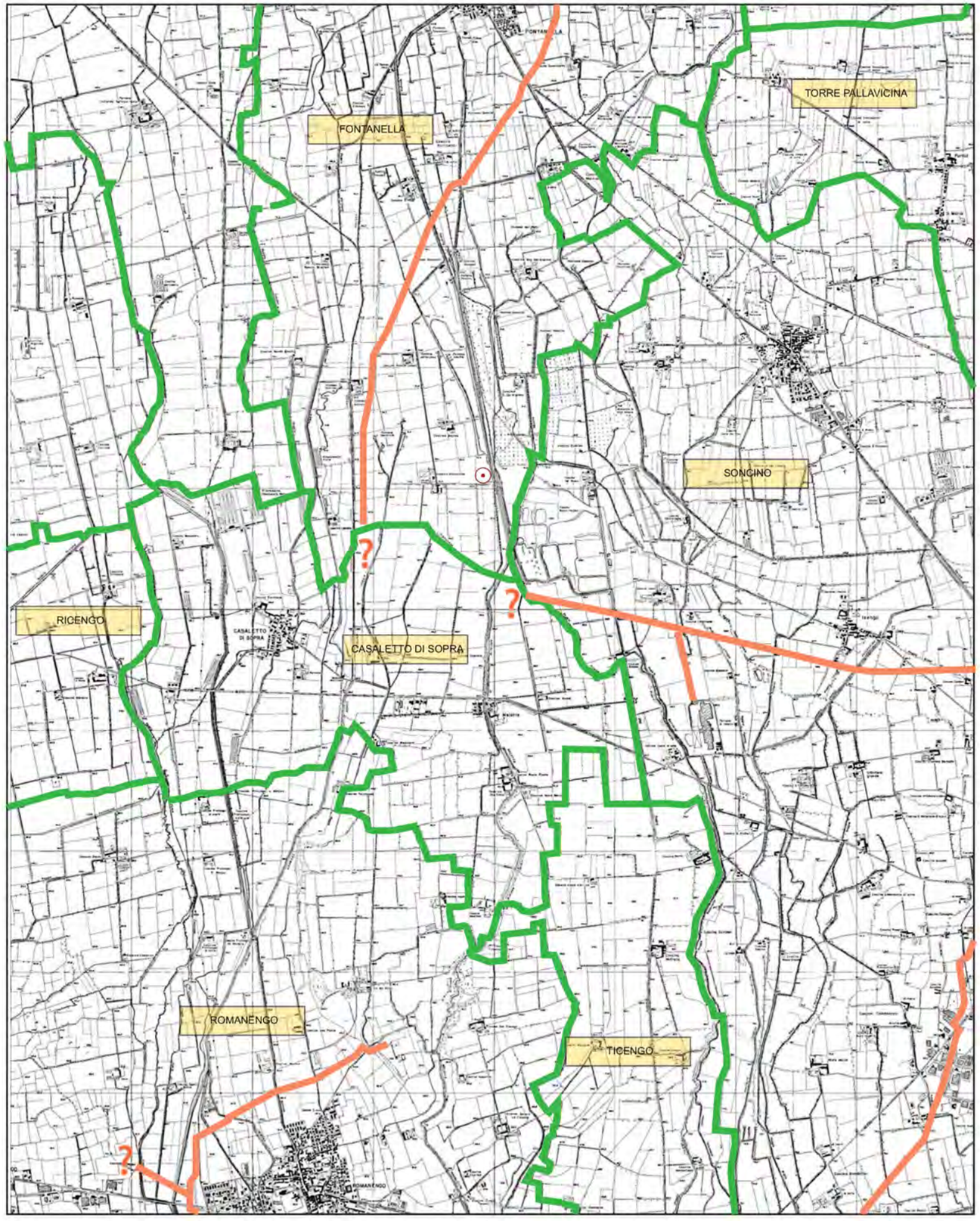
LEGENDA

Depositi superficiali incoerenti medi (Quaternario): ghiaie, sabbie grossolane. Permeabilità primaria elevata, localmente ridotta per la presenza di frazioni granulometriche più fini (limi e limi sabbiosi).

Depositi superficiali incoerenti medio-fini (Quaternario): sabbie e argille alluvionali e fluvio-lacustri, argille e limi di alterazione delle alluvioni antiche, ghiaie e sabbie a forte matrice argillosa con intercalazioni di livelli argillosi. Permeabilità primaria da media a bassa, localmente nulla.

100 Isofreatiche, il numero indica il valore assoluto in m s.l.m.

Ubicazione dell’area



N

ALL-VIA-020 Tav.8

PENGAS ITALIANA SRL

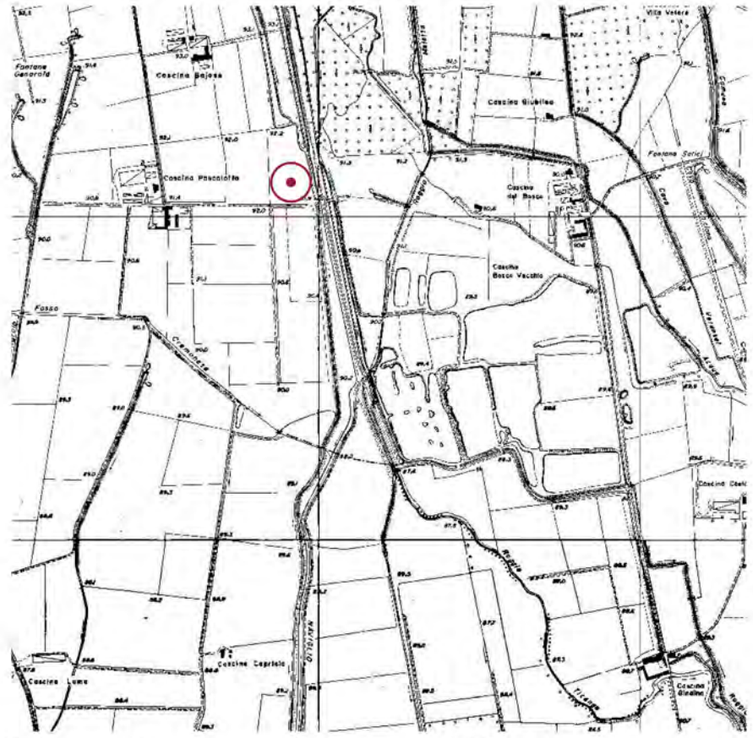
PERMESSO DI RICERCA

"CALCIO"

CARTA DEI METANODOTTI

LEGENDA

- Ubicazione dell'area
- Limiti amministrativi comunali
- Metanodotti
- ? Nessuna informazione



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Metri

N

ALL-VIA-021 Tav.9

PENGAS ITALIANA SRL

PERMESSO DI RICERCA

"CALCIO"

UBICAZIONE CANTIERE FONTANELLA 01
SU MAPPA SATELLITARE

LEGENDA

Ubicazione dell'area

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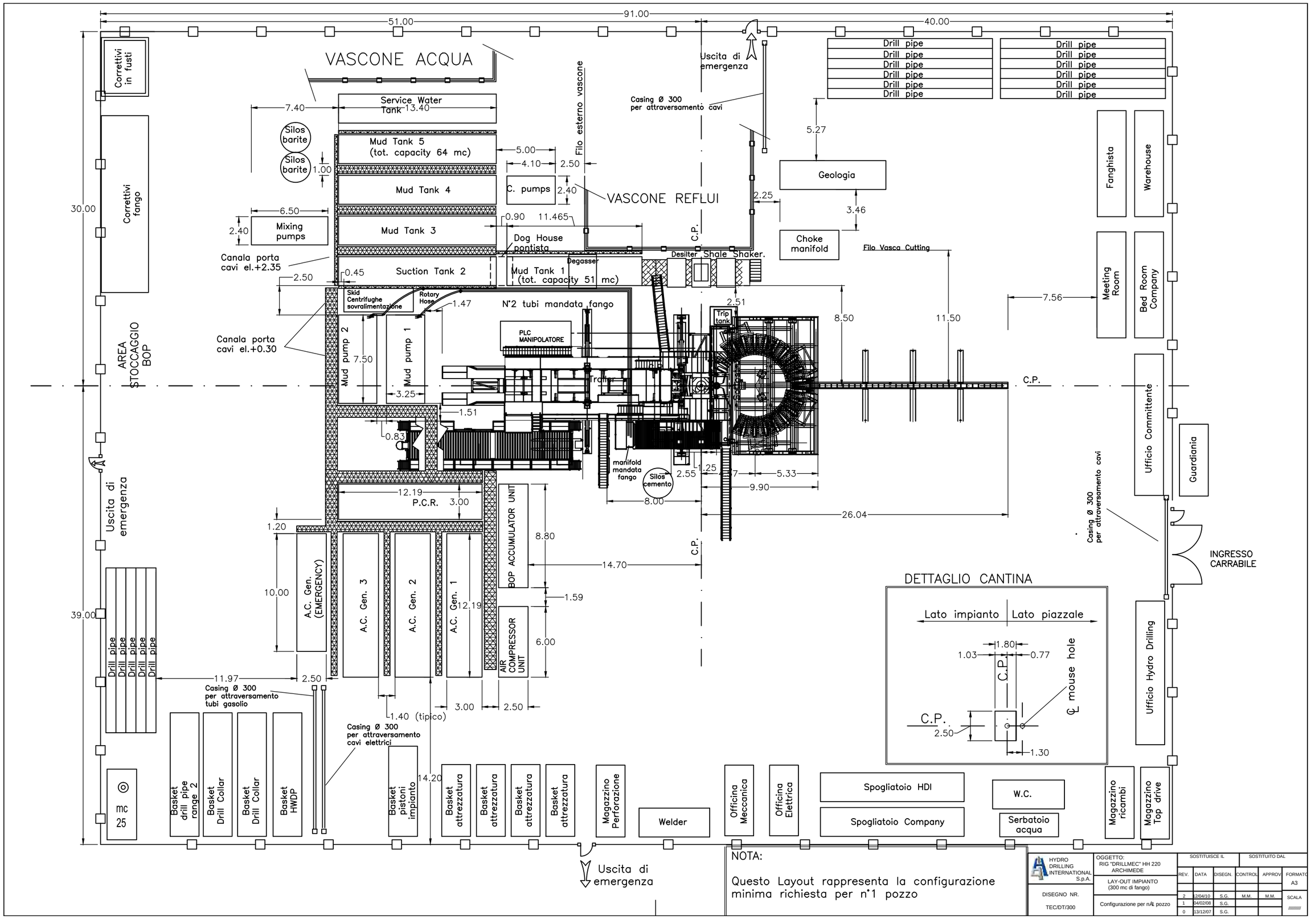
Metri



NOTA:

Questo Layout rappresenta la configurazione minima richiesta per n°1 pozzo

HYDRO DRILLING INTERNATIONAL S.p.A.	OGGETTO: RIG "DRILLMEC" HH 220 ARCHIMEDE	SOSTITUISCE IL			SOSTITUITO DAL		
		REV.	DATA	DISEGN.	CONTROL	APPROV.	FORMATO
	LAY-OUT IMPIANTO (300 mc di fango)						A3
DISEGNO NR. TEC/DT/300	Configurazione per n°1 pozzo	2	12/04/10	S.G.	M.M.	M.M.	SCALA
		1	04/02/08	S.G.			
		0	13/12/07	S.G.			

ALLEGATO 11

SIC "Cave Danesi"

estratto da: " Piano delle cave della provincia di Bergamo"

SIC IT20A0018 “Cave Danesi”

Il SIC IT20A0018 denominato “Cave Danesi” ricade nei territori comunali di Soncino e Casaletto di Sopra, entrambi nel settore nord orientale della Provincia di Cremona. Il SIC Cave Danesi interessa terreni prevalentemente di proprieta privata.
In particolare il settore centrale del sito e caratterizzato dalla estesa presenza di bacini, anch’essi di proprieta privata, derivanti dalle attivita estrattive e dai recuperi ambientali portati a compimento, nell’ambito delle attivita autorizzate ed a seguito dei recuperi imposti dall’autorita preposta, dalla vicina fornace “Laterizi Danesi”, tuttora attiva e da cui il sito prende il nome, durante la sua pluridecennale pregressa attività.
Il sito ricade all’interno del PLIS “Parco del Pianalto di Romanengo e dei Navigli cremonesi”, istituito dalla Provincia di Cremona con Deliberazioni di Giunta Provinciale n. 116 del 4 marzo 2003, n. 277 del 25 maggio 2003 e n. 332 del 17 giugno 2005.
Il Parco tutela con misure di carattere urbanistico l’intero pianalto di Romanengo, dove e collocata anche la Riserva Naturale Naviglio di Melotta (istituita dalla Legge Regionale 30 novembre 1983, n. 86, art. 37).
Le cave “Danesi” sono l’insieme di numerosi laghi di cava venutisi a formare con l’estrazione di argille. La presenza dei laghi di cava caratterizza, sia ecologicamente che paesaggisticamente, il territorio del SIC. Si tratta, infatti di ambienti ormai rari in pianura, in quanto le zone umide planiziali naturali, svincolate dal contesto perifluviale, con il passare degli anni sono soggette a naturale interrimento. Questi ambienti ospitano una vegetazione acquatica di notevole interesse conservazionistico ed ecosistemico.

Gli habitat presenti

Il SIC Cave Danesi e caratterizzato dalla presenza di vegetazione strettamente legata alla presenza di acqua; si sviluppano, infatti, comunita differenti. Si passa da vegetazione prettamente acquatica (pleustofitica e rizofitica) a vegetazione ancora strettamente legata alla presenza di acqua (elofitica, vegetazione erbacea di ambienti ripariali periodicamente inondati), passando attraverso aree di prateria umida e dominate da vegetazione erbacea e/o arbustiva nitrofila, fino ad arrivare
alle formazioni arbustive e arboree di ambiente ripariale. Queste ultime possono essere piu o meno influenzate dalla presenza della specie esotica *Robinia pseudacacia*.
Nelle aree a carattere prevalentemente di tipo agricolo e stato osservato un profondo impoverimento nella biodiversita ambientale, soprattutto a causa di una intensivo e perdurato sfruttamento.
Le superfici boscate all’interno del SIC si presentano come formazioni lineari, che si sviluppano lungo i bordi dei laghi di cava, lungo le scarpate di cava e lungo le principali rogge presenti nel SIC.
La componente vegetale attuale mette in risalto la notevole influenza dell’azione antropica sull’area, che ha modificato profondamente il quadro originario, riducendolo, in bouna parte, a stadi lontani dal climax e/o ad aspetti quasi totalmente artificiali. Le tendenze evolutive in atto evidenziano tuttavia una connessione dinamica fra le differenti tipologie presenti e dimostrano che la potenzialita del territorio non e stata del tutto alterata.
Per quanto concerne la vegetazione arboreo e arbustiva presente all’interno del SIC, e importante evidenziare la sua struttura lineare, perimetrale agli specchi d’acqua, in corrispondenza dei setti di terreno lasciati a dividere i singoli laghi di cava, e lungo le rogge e i canali. Se si escludono le cenosi relitte presenti lungo i corsi d’acqua e i canali, in cui la specie dominante e la robinia, accompagnata anche da farnie, carpini e olmi, i consorzi arborei e arbustivi presenti manifestano la loro origine artificiale.
Si tratta, infatti, nella maggior parte dei casi, di formazioni messe a dimora nell’ambito dei piani estrattivi, quali elementi del recupero ambientale e naturalistico delle cave. In ogni caso, l’impianto di consorzi arborei sufficientemente sintonizzati con le condizioni edafiche e stazionali del luogo e l’utilizzo di sesti di impianto piu o menbo “naturaliformi” consente di prevedere il rapido raggiungimento di condizioni generali prossime a quelle rilevabili in natura.

Anche la vicinanza di consorzi arborei spontanei favorisce la colonizzazione da parte di specie solitamente non utilizzate negli impianti e l'innesco di fenomeni di successione vegetale che concorrono al conseguimento di parametri di naturalita elevati.
Gli habitat sono rappresentati da vegetazione acquatica dei Laghi eutrofici naturali con vegetazione del *Magnopotamion* o *Hydrocharition* e da formazioni forestali igrofile delle Foreste alluvionali di *Alnus glutinosa* e *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) e delle Foreste miste riparie di grandi fiumi a *Quercus robur*, *Ulmus laevis* e *Ulmus minor*, *Fraxinus excelsior* o *Fraxinus angustifolia* (*Ulmenion minoris*).
La superficie complessiva di questi ambienti risulta piuttosto limitata, soprattutto per le formazioni forestali compresse a strette fasce lungo i bacini e le aree riparie.

- **3150 - Laghi eutrofici naturali con vegetazione del *Magnopotamion* o *Hydrocharition***: si tratta di popolamenti paucispecifici di pleustofite e idrofite sommerse di acque ferme permanenti, anche di livello stagionalmente variabile. Tali popolamenti richiedono una buona illuminazione che permetta alle idrofite sommerse di resistere anche nei momenti di sicura torbidità delle acque. Quindi, questi popolamenti non devono subire ombreggiamento dalle chiome delle essenze arboree che popolano le rive dei bacini o da altre tipologie di vegetazioni vascolari o batteriche galleggianti. Le acque ferme della pianura tendono generalmente a convergere verso un livello eutrofico piuttosto elevato nel quale le specie tipiche di questo habitat risultano effettivamente competitive. L'eccesso di eutrofia provoca però la crescita concorrente delle microalghe che tendono a oscurare le idrofite e quindi a escluderle progressivamente dall'habitat stesso. Le pleustofite risultano meno affette da tale dinamica per cui si conservano anche in condizioni di marcata eutrofia costituendo coperture estese e continue ma di estrema povertà floristica. Frequentemente le specie risultano oggetto di pascolo da parte di ornitofauna e altre specie gravitanti in questi ambienti, per cui una costante e abbondante frequentazione della componente animale può limitare in modo drastico lo sviluppo di questa vegetazione. I fattori di pressione che insistono su questo habitat sono il progressivo interramento e l'espansione della vegetazione elofitica.

- **91F0 - Foreste miste riparie di grandi fiumi a *Quercus robur*, *Ulmus laevis* e *Ulmus minor*, *Fraxinus excelsior* o *Fraxinus angustifolia* (*Ulmenion minoris*)**: queste superfici boscate occupano le scarpate e le zone perimetrali dei laghi di cava. Da sottolineare, in chiave dinamica, l'apprezzabile presenza di robinia (*Robinia pseudoacacia*) nell'ambito di queste cenosi. Da evidenziare la struttura lineare di queste formazioni, che risentono quindi fortemente dell'effetto margine. Questa formazione ricopre circa il 5% della superficie totale del sito. Questo habitat può essere inquadrato nella classe *Querco-Fagetea* Br.-Bl. et Vl. 1973, nell'ordine *Fagetalia sylvaticae* Pawlowski in Pawlowski et al. 1928 e nell'alleanza *Alnion incanae* Pawlowski in Pawlowski et Wallisch 1928. L'habitat è l'espressione di una ecologia complessa e diversificata, si mantiene in un equilibrio stabile, fintanto che maldestri interventi dell'uomo o imprevedibili rimaneggiamenti del suolo non sconvolgono l'assetto della foresta. Nel caso di perturbazioni antropiche il pericolo è rappresentato dall'ingresso delle specie esotiche. La ridottissima estensione territoriale di queste foreste e la facilità di propagazione delle specie esotiche diffusamente presenti, consigliano una gestione conservativa, che non alteri gli equilibri ecologici tra le specie e rispettosa dei processi dinamici naturali che, in condizioni di suolo adatte, in tempi molto rapidi, rispetto a quelli medi di sviluppo di una foresta, portano a stadi prossimi a quelli maturi. La gestione dovrebbe favorire la dinamica spontanea nelle aree occupate dal querco-ulmeto, nelle quali ci si potrebbe limitare alla reintroduzione di specie arbustive ed erbacee di sottobosco, proprie di questo habitat.

- **91E0* - Foreste alluvionali di *Alnus glutinosa* e *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*)**: si tratta di boschi ripari che si

presentano fisionomicamente come saliceti arbustivi, con salice grigio (*Salix cinerea*), salice fragile (*Salix fragilis*), salice da ceste (*Salix triandra*), pallon di neve (*Viburnum opulus*), sambuco nero (*Sambucus nigra*), sanguinello (*Cornus sanguinea*) e biancospino (*Crataegus monogyna*). Dal punto di vista fitosociologico posso essere rispettivamente inquadrate nell'alleanza *Salicion albae* Soó 1930. L'alleanza *Salicion albae* Soó 1930 è inquadrata nell'ordine *Salicetalia purpureae* Moor 1958 e nella classe *Salicetea purpureae* Moor 1958. Tale habitat è "prioritario", interessa circa il 4% della superficie del SIC. Si tratta di formazioni a struttura prevalentemente lineare, situate lungo le sponde dei laghi di cava e lungo alcune rogge e canali. Generalmente queste cenosi rimangono stabili fino a quando non mutano le condizioni idrologiche delle stazioni sulle quali si sviluppano; in caso di allagamenti più frequenti con permanenze durature di acqua affiorante tendono a regredire verso formazioni erbacee; in caso di allagamenti sempre meno frequenti tendono ad evolvere verso cenosi mesofile più stabili.

Elenco delle specie botaniche:

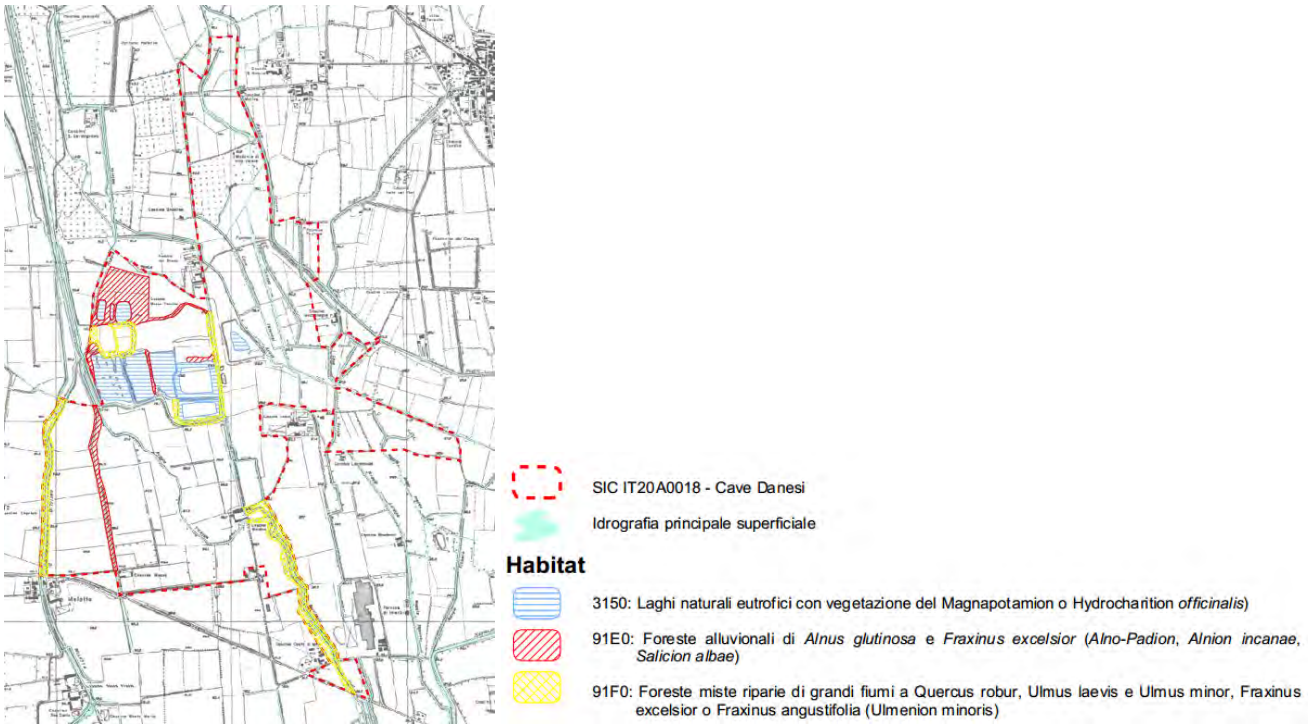
- *Arum maculatum*
- *Carex leporina*
- *Carex pallescens*
- *Carex pendula*
- *Carex pilosa*
- *Circaea lutetiana*
- *Coronilla emerus*
- *Dryopteris affinis*
- *Dryopteris carthusiana*
- *Dryopteris dilatata*
- *Euphorbia amygdaloides*
- *Euphorbia dulcis*
- *Helleborus foetidus*
- *Leucojum aestivum*
- *Leucojum vernum*
- *Luzula forsteri*
- *Luzula pilosa*
- *Montia fontana*
- *Oplismenus undulatifolius*
- *Poa palustris*
- *Polygonatum odoratum*
- *Polystichum aculeatum*
- *Primula vulgaris*
- *Quercus cerris*
- *Rosa gallica*
- *Scirpus sylvaticus*
- *Stachys sylvatica*
- *Valeriana dioica*
- *Vinca major*

La fauna

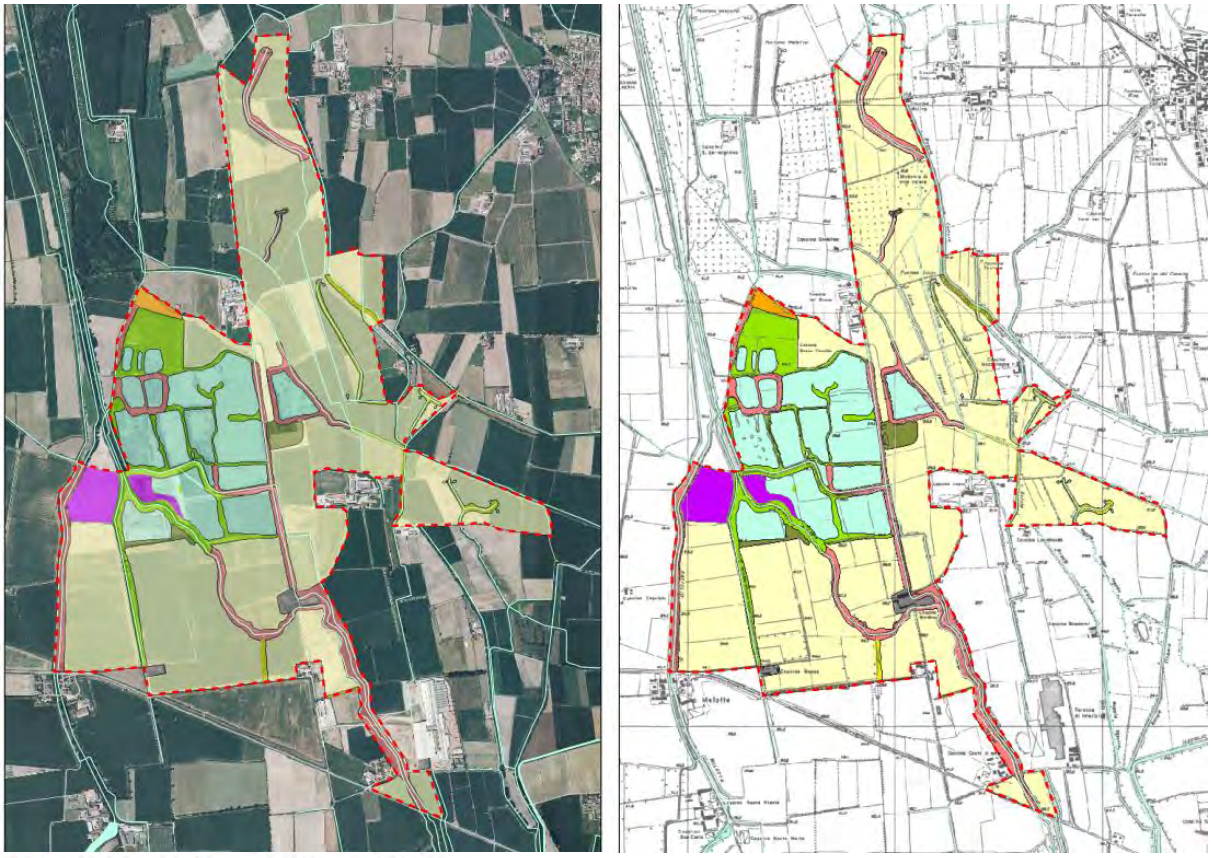
Il sito assume particolare rilevanza per la presenza di comunità faunistiche di rilievo per uccelli, pesci (8 specie elencate nell'All. II tra cui la lampreda padana) rettili e insetti. Nelle acque del sito è stato rinvenuto anche il Gambero di fiume. La vulnerabilità maggiore è data

dai processi di interramento delle aree acquatiche e palustri e dalla limitata superficie delle aree con vegetazione forestale.
Ben sette sono le specie di chirotteri nel sito. Tra di esse spicca la presenza di *Myotis emarginatus*, specie inserita nell'Allegato II della Direttiva Habitat e che gode di uno status di conservazione negativo a scala nazionale e globale (Lista rossa italiana e IUCN). La specie è stata individuata nei resti abbandonati della Cascina Mandriano, al confine sud-est del sito, ed è quindi accertato che gli habitat di Cave Danesi offrono un sito idoneo alla presenza e alla potenziale riproduzione della specie. Il Vespertilio smarginato predilige formazioni forestali a latifoglie alternate a zone umide e spazi aperti, ma frequenta ambienti anche più aperti come coltivi,
prati da sfalcio e pascoli. Caccia principalmente ditteri e ragni, che cattura mentre sono posati sulla vegetazione, sui muri delle stalle o delle abitazioni o al suolo.
Le altre specie sono più comuni e diffuse, tra di esse il Vespertilio di Daubenton che è comunque specie di rilevante interesse ed è stata rilevata in volo di alimentazione sui laghi di cava, dove caccia principalmente ditteri acquatici che cattura in volo sfiorando la superficie dell'acqua. I rifugi estivi e le colonie riproduttive si trovano negli alberi cavi, in bat box, in costruzioni antropiche, spesso in prossimità dell'ambiente idrico (darsene, ponti). Predilige ambiti con presenza di formazioni forestali e zone umide, che rappresentano l'ambiente di foraggiamento elettivo.
Il Serotino comune è considerato specie generalista e ubiquitaria; mostra una spiccata "antropofilia" sfruttando gli edifici come quartieri estivi e riproduttivi.
L'Orecchione bruno è specie primariamente forestale, ma caccia anche presso alberi isolati e in ambienti aperti e ecotonali.
Il Pipistrello albolimbato è una specie spiccatamente antropofila e termofila. Si rifugia nei più vari tipi di interstizi presenti all'interno o all'esterno delle costruzioni, ma anche in fessure artificiali di cave e miniere.
Il Pipistrello nano è specie in origine forestale, ma denota un elevato livello di adattabilità ecologica. Utilizza ambienti di foraggiamento vari come formazioni forestali, agroecosistemi, zone umide e abitati.
Altra specie molto comune e frequente è il Pipistrello di Savi (in abbondanza seconda al Pipistrello albolimbato); prevalentemente antropofila, possiede una notevole plasticità nella preferenza dell'habitat.
Tra i pesci si segnalano: *Lethenteron zanandreai, Barbus meridionalis, Barbus plebejus, Chondrostoma genei, Cobitis taenia, Cottus gobio, Leuciscus souffia, Sabanejewia larvata, Alburnus alburnus alborella, Anguilla anguilla, Esox lucius, Gasterosteus aculeatus, Knipowitschia punctatissima, Leuciscus cephalus, Padogobius martensii, Phoxinus phoxinus, Rutilus erythrophthalmus, Scardinius erythrophthalmus, Tinca tinca*.
Tra gli invertebrati: *Austropotamobius pallipes, Cerambyx cerdo, Lucanus cervus, Lycaena dispar*.
Rettili: *Anguis fragilis, Elaphe longissima, Hierophis viridiflavus, Lacerta bilineata, Natrix natrix helvetica, Natrix tessellata, Podarcis muralis*.
Mammiferi: *Arvicola terrestris, Crocidura leucodon, Crocidura suaveolens, Apodemus sylvaticus, Erinaceus europaeus, Lepus europaeus, Martes foina, Micromys minutus, Muscardinus avellanarius, Mustela nivalis, Mustela putorius, Myoxus glis, Neomys fodiens, Sorex araneus, Talpa europaea, Vulpes vulpes*.
Anfibi: *Bufo bufo, Bufo viridis, Hyla intermedia, Rana dalmatina, Triturus vulgaris*.

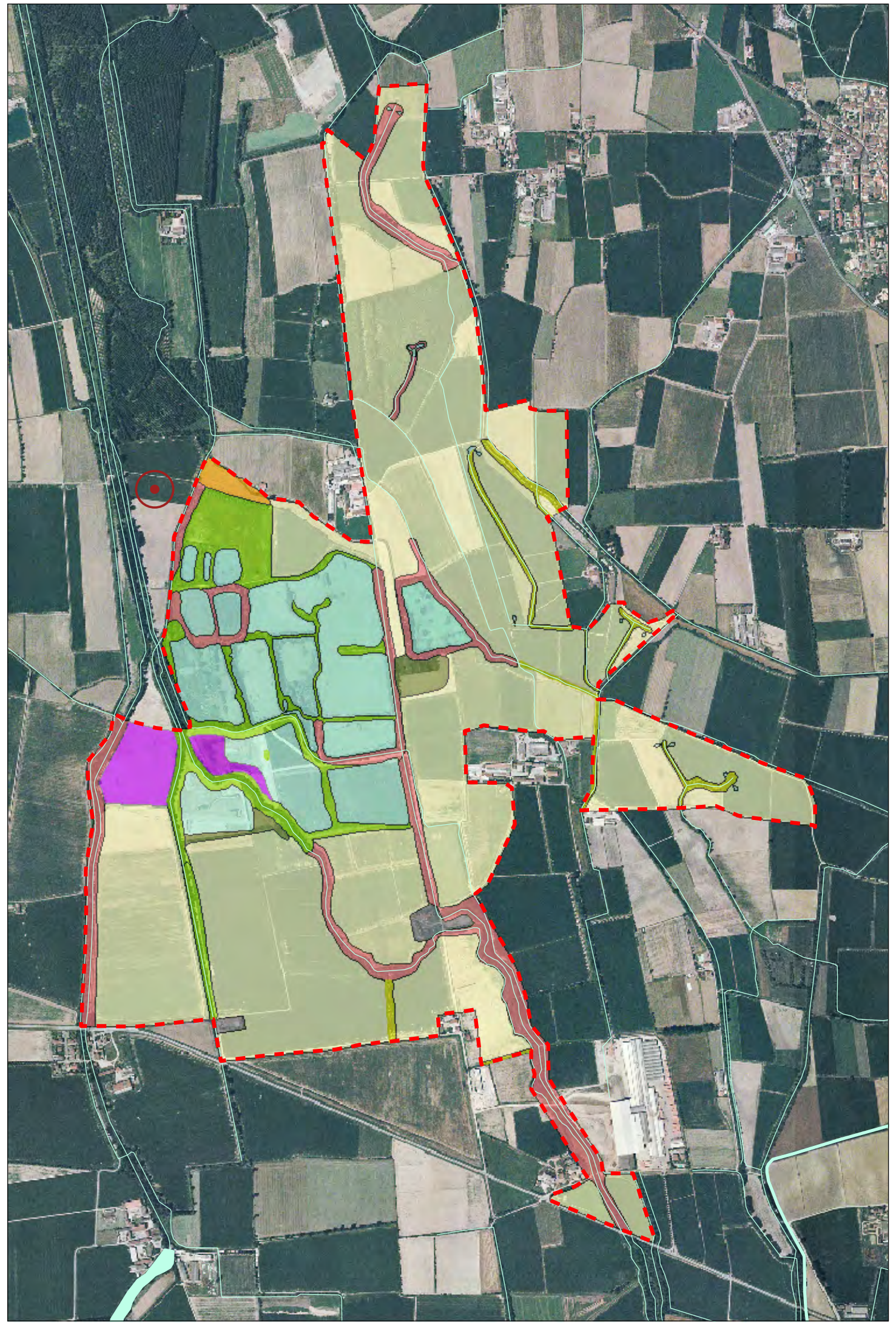
Il SIC Cave Danesi

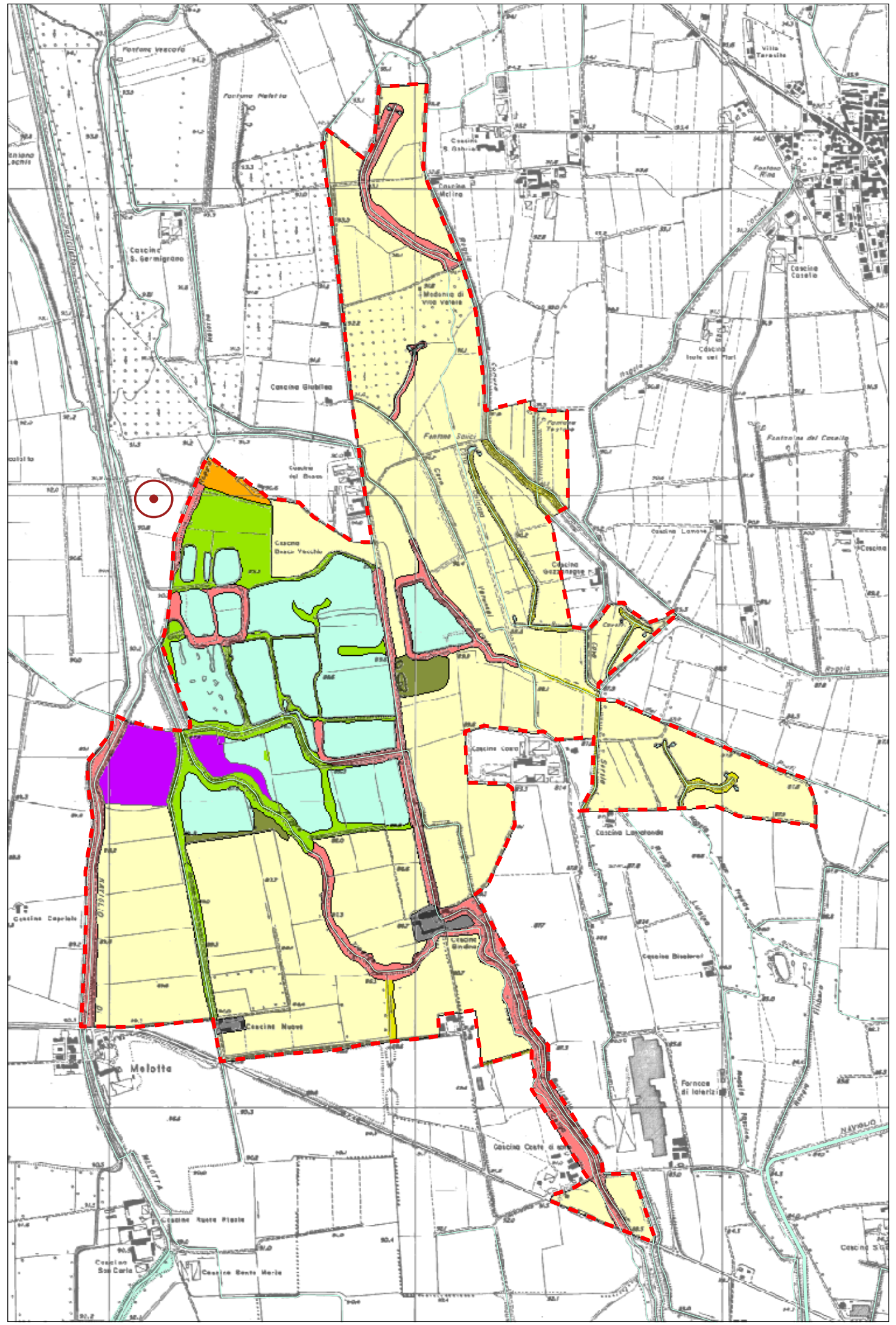


Il SIC Cave Danesi e gli habitat inclusi



Il SIC Cave Danesi e l'uso del suolo





Provincia di Cremona

NATURA 2000

Phytosfera Studio associato

FaunaViva Studio di Consulenze Ambientali

G·R·A·I·A Gestione e Ricerca Ambientale Ittica Acque

Piano di Gestione SIC IT20A0018 Cave Danesi

CARTA DELL'USO DEL SUOLO NEL SIC

Legenda

SIC IT20A0018 - Cave Danesi

Ubicazione dell'area

Uso del suolo e vegetazione

Tipi

- Formazione igrofila a salice
- Vegetazione dei prati umidi
- Vegetazione ruderale
- Vegetazione prativa
- Filari e siepi
- Formazione boschiva a elevato impatto antropico
- Seminativi
- Aree urbanizzate
- Aree idriche

Base cartografica: CTR 1994 Regione Lombardia 1:10000
Base Ortofotografica: ortofoto Regione Lombardia
Dati vettoriali: CT10 Regione Lombardia, Rete Natura 2000

0 250 500 750 1.000 m

ALLEGATO 12

CARATTERISTICHE IMPIANTO DI PERFORAZIONE
HH 220 FA

VALUTAZIONE IMPATTO RUMORE / EMISSIONI INQUINANTI

HYDRO DRILLING S.r.l.

EXHIBIT B
LAND DRILLING RIG HH220 FA

DISTRIBUTION LIST

Date of issue: 20/05/2016

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HYDRO DRILLING S.r.l.

SUMMARY OF THE HOISTING EQUIPMENT RATINGS

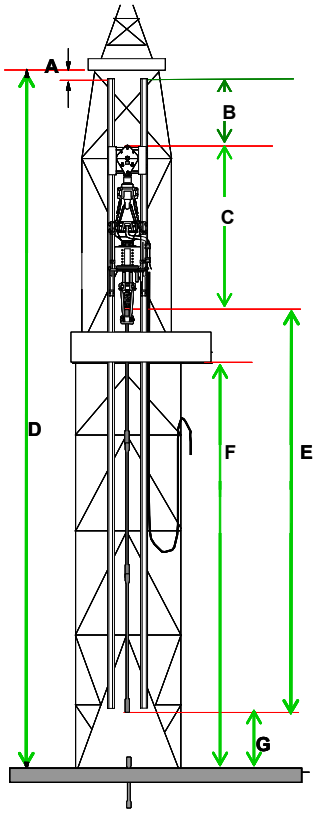
MAX. RATED LOAD CAPACITIES CONSIDERING MAX. number of LINES INSTALLED					
ITEM	***DESCRIPTION***				***Remarks***
1	MAST	Static Hook load capacity With max. Number of lines	t No	200 Not Conventional rig (4 lines)	
2	CROWN BLOCK	Rated load capacity	t	400	
3	TRAVELLING BLOCK	Rated load capacity	t	Not Conventional rig	
4	HOOK BLOCK	Rated load capacity	t	Not Conventional rig	
5	SWIVEL HEAD	Rated load capacity	t	Not Conventional rig	
6	TOP DRIVE	Rated load capacity	t	200	
7	RAKING PLATFORM	DP Stands capacity DC Stands capacity	No No	Q.ty 12 racking bins and fingers to vertically rack the following quantities 2500m of 5" DP	Q.ty 12 racking bins and fingers to vertically rack the following quantities 2500m of 3 ½" DP
8	RIG FLOOR SET BACK	Rated load capacity	t	Not Conventional rig	
9	ROTARY CAPACITY	Rated load capacity	t	200	
10	DRAWWORKS: main drum Single line	Rated load capacity	t	Not Conventional rig	
11	DRILLING LINE	Breaking strength Nominal diameter type	t in :	112 Ton each lines 34 mm each SO 10425 (API 9A)	Q.ty 4 x 34 mm with 28 m lenght
12	DEAD LINE ANCHOR	Rated load capacity	t	Not Conventional rig	
13	Max. load that Rig can handle: In drilling mode (Drilling line with safety factor >**3**)		t	150	Incluso il peso del Top Drive
14	Max. load that Rig can handle: In running casing mode (Drilling line with safety factor > **2**		t	200	Incluso il peso del Top Drive

1.1 SYMBOLS OF UNITS USED IN THIS SPECIFICATION

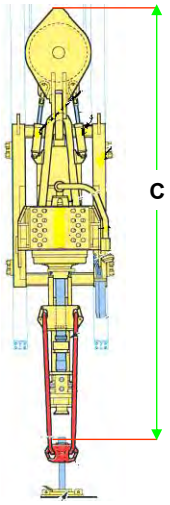
Symbol	*Name*
in	Inch
ft	Foot
lb/ft	Pound Per Foot
lb	Pound
bbl	Barrel
gal	Gallon
psi	Pound Square Inch
HP	Horse Power
ppm	Part Per Million
m	Meter
cm	Centimetre
mm	Millimeter
l	Liter
m^3	Cubic Meter
S m^3	Standard Cubic Meter
m^3/ d	Cubic Meter Per Day

Symbol	*Name*
bar	Bar
kW	Kilowatt
kg/m	Kilogramme Per Meter
V	Volt
A	Ampere
Hz	Hertz
kVA	Kilo-Volt-Ampere
min	Minute
dbA	Decibel
deg	Degree
knots	Miles Per Hour
No	Number
RPM	Revolutions Per Minute
t	Metric Ton
d	Day

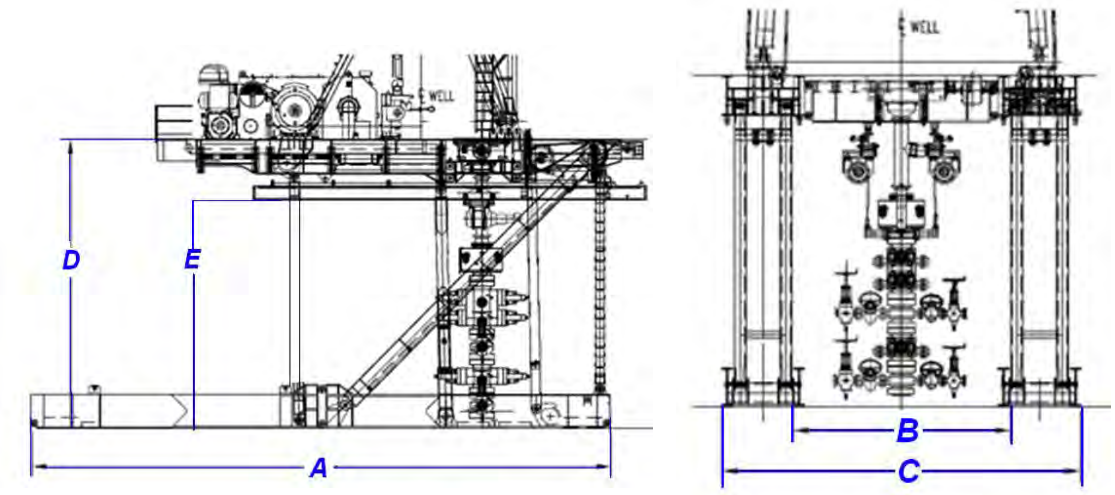
1.2 MAIN DIMENSIONS OF THE MAST



DIMENSIONS	
A	
B	
C	
D	21.30
E+G	16
F	
G	1.5



1.3 MAIN DIMENSIONS OF SUBSTRUCTURE



A	**Unconventional rig /see Drw Drilmec S0003030**
B	**Unconventional rig /see Drw Drilmec S0003030**
C	**Unconventional rig /see Drw Drilmec S0003030**
D	**Unconventional rig /see Drw Drilmec S0003030**
E	**Unconventional rig /see Drw Drilmec S0003030**

1.4 DRAWINGS

.1	**RIG GENERAL LAY- OUT**		
1	Rig General Lay-Out	:	TEC-DT-HH220 AR-001A
2	Rig General Lay-Out on Cluster	:	
3	Rig Civil Engineer Lay-Out	:	TEC-DT-HH220 AR-003A
4	Rig Skidding System Lay-Out	:	Skidding system not required
5	Rig General Lay-Out Drawing showing the hazardous areas as per applicable Rules.	:	TEC-DT-HH220 AR-027A TEC-DT-HH220 AR-028 TEC-DT-HH220 AR-029
.2	**POWER PLANT & ELECTRIC SYSTEM**		
1	Power Plant Block Diagram	:	TEC-DT-HH220 AR-034
2	Electrical Transformer(SCR or VFD) and Drilling Motors Block Diagram	:	TEC-DT-HH220 AR-033A
3	A.C. Electrical Users Flow Diagram	:	TEC-DT-HH220 AR-033B
4	Emergency Generator Users Flow Diagram.	:	TEC-DT-HH220 AR-035
.3	**MUD, WATER, CIRCULATING SYSTEM**		
1	Schematic Drawing of Low Pressure Mud Circulating System	:	TEC-DT-HH220 AR-016
2	Schematic Drawing of Drill Water Circulating lines	:	TEC-DT-HH220 AR-016
3	Schematic Drawing of Cleaned and Reusable Water lines	:	TEC-DT-HH220 AR-016
4	Schematic Drawing of Drilling Solids Removal System	:	TEC-DT-HH220 AR-016
.4	**WELL CONTROL EQUIPMENT**		
1	Schematic drawing of the Well Control and High Pressure Mud Circulating system showing: All the connecting lines between BOP stack, Rig Floor mud manifold, choke manifold, cementing unit, mud gas separator, flare lines.	:	TEC-DT-HH220 AR-015
2	BOP Stacks Configurations, showing the over all dimensions	:	TEC-DT-HH220 AR-011A
3	Choke Manifold Lay-Out Drawing	:	TEC-DT-HH220 AR-008A
4	Schematic Drawing of BOP Control System including Accumulator Unit, Remote Control Panels, Alarms And Emergency Back Up System	:	TEC-DT-HH220 AR-009
5	Schematic Drawing of Diverter System	:	TEC-DT-HH220 AR-010A
.5	**INSTRUMENTATION**		
1	Schematic Drawing of Rig lay-out showing all indicator and recording instruments		TEC-DT-HH220 AR-004
.6	**SAFETY SYSTEMS**		
1	Electrical earthing schematic	:	TEC-DT-HH220 AR-005

	drawing		
2	Fire fighting equipment lay-out drawing	:	TEC-DT-HH220 AR-006
3	Safety equipment lay-out drawing	:	TEC-DT-HH220 AR-007
7	**ACCOMMODATION CAMP**		
1	Camp lay-out Drawing	:	
2	Camp Civil Engineer Requirements	:	

1.5 RIG GENERAL DATA

1	Rig Owner		Hydro Drilling Srl Piazza Garibaldi 31 Alessandria
2	Rig Operation Management	:	Hydro Drilling Srl Ravenna Via Buozzi 56
3	Rig Name		Drillmec HH220FA
4	Rig Year of Construction or Assembly	:	2007
5	Actual Rig Status (Drilling-Idle-etc)	:	Idle
6	Actual Rig Location.	:	Alessandria
7	Average Fuel daily Consumption in Normal Drilling Operation	m^3/d	4,070 in Drilling, 2,230 in WO/Well abandon
8	Total Truck Trips Required to move the Rig Between Locations	No	60
8.1	Standard Truck Trips Required to Move the Rig Between Locations	No	39
8.2	Out of Standard Truck Trips Required to Move the Rig Between Locations	No	21
9	Estimated Rig Up Time (Days)	No	12 (average)
10	Rated Hoisting Capacity of Crane Requested To handle The Heaviest Load during the Rig UP/Down	t	100

1.5.1 RIG TYPE

1	Rig Nominal Drilling Capability with 5 in OD Drill Pipes	m	3730
2	Electrical Power Generation AC-AC or AC-DC	type:	AC/DC
3	Electro/meccanic or Elecro/hydraulic	type:	Elecro/hydraulic
4	Mast suitable for single, dual or triple stand	:	1 single R3

1.6 RIG STORAGE CAPACITIES

.1	**DIESEL FUEL**		
1	Diesel Fuel total storage tank capacity	m^3	23
2	Diesel Fuel storage tanks quantity	No.	1
3	Diesel Fuel tank capacity of each	m^3	23
4	Diesel Fuel day-tank capacity	m^3	N/A
.2	**POTABLE WATER AT RIG SITE**		
1	Potable Water total capacity	m^3	5
.3	**DRILL WATER**		
1	Drilling Water total capacity	m^3	58
2	Drill Water tanks quantity	No.	1

3	Drill Water tank capacity of each	m^3	58
4	Dedicated Use of each tank	:	Water
.4	**LIQUID MUD**		
1	Liquid Mud Tanks total capacity	m^3	300
2	Liquid Mud tank quantity	No	5
3	Liquid Mud tank capacity of each	m^3	65
.5	**BULK BARITE**		
1	Silos for Bulk Barite total capacity	m^3	70 on rental basis if required
2	Silos for Bulk Barite quantity	No	2
3	Silo capacity of each	m^3	35
.6	**PIPE RACK**		
1	Pipe Rack capacity	t	300
2	Dimensions	:	Drillmec type

1.7 RIG POWER PLANT

1.7.1 ELECTRICAL POWER GENERATOR SYSTEM

.1	**A.C. ELECTRIC GENERATOR SYSTEM**		
1	Diesel Engine/Generator sets	No.	3
2	Continuous power of each set	HP	1800
3	Total continuous power	HP	5400
4	Diesel Engine/Generator sets enclosed for noise attenuation	yes/no	Yes
.2	**DIESEL ENGINE**		
1	Diesel Engine quantity	No.	3
2	make type	:	MTU-Detroit Mod. 12V4000G41
3	Diesel Engine low emission type	yes/no	Yes
4	Diesel Engine low fuel consumption type	yes/no	Yes
5	Diesel Engine mufflers with spark arrestors	yes/no	Yes
6	Mufflers	type	Silenced w/t spark arrestor
.3	**A.C. ELECTRIC GENERATORS**		
1	A.C. electric generator quantity	No.	3
2	make type	:	Leroy Somer LSA 51.2 M60/4p
3	A.C. Generator Rated Power	kVA	1750
4	A.C. Generator output Voltage	V	600
5	A.C. Generator frequency	Hz	60

1.7.2 ELECTRICAL POWER TRANSFORMER SYSTEM

.1	**ELECTRICAL CONVERSION SYSTEM**	:				
1	make		Bentec			
2	type	type	Scr			
3	Number of generators can be connected with the conversion system	No.	4			
4	motor drivers quantity	No.	2			
5	Number of motors the conversion system can run simultaneously	No.	4			
6	Power Control Room Air conditioning system	:	Yes			
.2	**ELECTRICAL TRANSFORMERS**					
1	Electrical Transformers quantity	No.	1	1	1	1
2	Electric Transformers make-type	:	Bentec	Bentec	Bentec	Bentec
3	Transformer output voltage	V	600/460	600/220	480/220	480/380
4	Transformer output power	kVA	750	350	70	50
5	Transformer frequency	Hz	60	60	60	60

1.7.3 ELECTRICAL POWER FOR 3RD PARTY EQUIPMENT

.1	**POWER FOR MUD LOGGING UNIT**		
1	Power available	kVA	50
2	Output Voltage	V	380, 3F +N
3	Output Ampere	A	75
.2	**POWER FOR MUD ENGINEER CABIN**		
1	Power available	kVA	5
2	Output Voltage	V	380, 3F +N
3	Output Ampere	A	7.3
.3	**POWER FOR DECANTING CENTRIFUGES**		
1	Power available	kVA	220
2	Output Voltage	V	440
3	Output Ampere	A	Note: any centrifuge used by operator must be equipped with soft start to reduce the absorption at start
.4	**POWER FOR OTHER THIRD PARTY ELECTRICAL USERS**		
1	Power available	kVA	50
2	Output Voltage	V	380, 3F +N
3	Output Ampere	A	75

1.7.4 ELECTRICAL LIGHTING SYSTEM

.1	**FIXED LIGHTING SYSTEM**		
1	Lighting system complies with some rules	:	UNI 10380 - ISO 8995 - ATEX 95 (94/9/CE)
2	Lighting around well location	No.	2
3	Lighting around well location	type	400W Metal Iodure

4	Lighting around shale shaker area	No.	2
5	Lighting around shale shaker area	type	Lampade EEX-D 160 W
6	Lighting on mud tanks	No.	4+4
7	Lighting on mud tanks	type	400W Metal Iodure
8	Lighting around mud pumps	No.	1
9	Lighting around mud pumps	type	400W Metal Iodure
10	Lighting around pipe rack area	No.	2
11	Lighting around pipe rack area	type	400W Metal Iodure
12	Lighting on rig floor	No.	5
13	Lighting on rig floor	type	400W Metal Iodure
14	Lighting along the mast	No.	6
15	Lighting along the mast	type	130 W
16	Lighting on derrickman platform	No.	1
	Lighting on derrickman platform	type	400W Metal Iodure
.2	**PORTABLE FLOODLIGHTS**		
1	Portable floodlights	No.	3
2	Portable floodlights	type	
3	Portable floodlights power	W	400W

1.7.5 A.C. EMERGENCY POWER GENERATOR

.1	**EMERGENCY DIESEL ENGINE**		
1	Diesel Engine sound proof	yes/no	Yes
2	Diesel Engine make-type	:	Scania DC 12
3	Rated Power	HP	325
4	Diesel Engine Muffler with spark arrestor	**yes/no**	Yes
.2	**EMERGENCY A.C. GENERATOR**		
1	Emergency A.C. Generator make-type	:	Stamford HC44D
2	Rated Continuous Power	kVA	350
3	Output voltage	V	460
4	A.C. Generator frequency	Hz	
5	Emergency Generator automatic start in case of main circuit failure	**yes/no**	Yes
6	Emergency Generator with its Own Control Panel	**yes/no**	Yes
3	**USERS FED SIMULTANEOUSLY :**		
1	Emergency lighting on rig floor and along the mast	**yes/no**	Yes
1a	Emergency lighting on other working area	**yes/no**	Yes
2	Emergency lighting around diesel engine plant	**yes/no**	Yes
3	Emergency lighting inside PCR cabin	**yes/no**	Yes
4	Emergency lighting on the escape ways.	**yes/no**	Yes
5	Emergency lighting on safe breathing areas	**yes/no**	Yes
6	Emergency lighting in Mini Accommodation camp	**yes/no**	
7	Emergency lighting in Company office	**yes/no**	Yes
	Emergency lighting in Tool Pusher office	**yes/no**	Yes
8	Radio Communication system in Company Office	**yes/no**	Yes

9	Emerg.lighting (red lights) on top of mast	yes/no	Yes
10	Electric recharging pump for BOP accumulator Unit	yes/no	Yes
11	One Electrical air compressor Unit	yes/no	Yes

1.7.6 HAZARDOUS AREAS CLASSIFICATION

.1	**HAZARDOUS AREAS**		
1	Which Rules the Rig follows to classify the areas	:	EN-60079 or API RP-505
2	Electric components installed in areas classified "HAZARDOUS" are certified according to Rules	:	Directive 94/9/EC (ATEX)

1.7.7 EMERGENCY ELECTRICAL SHUT DOWN DEVICE

.1	**EMERGENCY SHUT DOWN STATIONS**		
1	Emergency shut down Stations (ESD)	No	1 in Driller consolle, n.2 in the PCR cabin, n. 1 out of the PCR cabin
2	Number of Partial ESD stations	No	
3	Partial ESD station Location	:	
4	Number of Total ESD stations	No	
5	Total ESD station Location	:	

1.8 RIG AIR SERVICE

.1	**ELECTRICAL AIR COMPRESSOR**		
1	Quantity	No	2
2	Sound proofed	yes/no	GA-30
3	Make-type	:	40
4	Motor power	HP	4.2 each
5	Max. service pressure	bar	10
.2	**DIESEL DRIVEN AIR COMPRESSOR**		
2	Quantity	No	1 silenced
3	Make-type	:	Kaeser M80
4	Motor power	HP	80
5	Max. service pressure	bar	7
.3	**AIR VESSEL**		
1	Quantity	No	2
2	Air vessel capacity of each	m^3	500
3	Air vessel location	:	Near air compressor
4	Air vessel in compliance with any rules	:	PED
.4	**Air Dryers**		
1	Make-type	:	1 Hitema
2	Air Driers Flow Rate Capacity	m^3/min	6200 lt/min
3	Max. service pressure.	bar	10

1.9 HOISTING EQUIPMENT SYSTEM

1.9.1 MAST & ACCESSORIES

.1	**MAST**		
1	Mast make	:	Drillmec HH 220 Mast
2	Mast type	:	Self erecting Hydraulic
3	Built as per ISO-API standard	No.	API 4F
4	Clear height of Mast	m	22 (from rig floor to top of mast)
4.1	Suitable for: single, double, triple stands.	:	Single R3
5	Maximum rated static hook load with guy lines, if applicable, for stated number of lines to travelling block	t	200 Ton included Top Drive weight
5.1	Max. lines strung on travelling block	No.	4 x 34 mm
6	Maximum rated wind velocity with rated capacity of pipe racked	m/s	
6.1	Maximum rated wind velocity without pipe setback	m/s	Maximum wind for mast: **56m/sec** Maximum wind for vertical pipe rack: **31m/sec**
7	**RACKING PLATFORM**		
7.1	5" Drill Pipe Stands Capacity	m	Not conventional rig. Capacity n. 272 DP 5" R3 for a total of about 3700 meters
7.2	6.3/4" Drill Collars Stands Capacity	m	- 18 Joints of 6 1/2" DC - 03 Joints of 8" DC
7.3	Fingers Suitable to Rack the following Tubular Size		
a	Drill Pipes OD Body	in	5-in, 3.1/2-in
b	Drill Collars OD Body	in-in	8, 6.1/2,- 4.3/4
8	Racking Platform Wind Break	yes/no	Not Conventional rig
8.1	Wind Break height	m	
8.2	Wind Break type	:	
.2.	**MAST ACCESSORIES**		
1	Stairs going to the racking platform and to crown block complete with safety cage	yes/no	Not conventional rig
2	Red lights on top of Mast	yes/no	Yes
3	Upper Part of Mast painted for day signalling to Air-Navigation	yes/no	Yes
.4	CASING STABBING BOARD		N/A (Not Conventional rig)
4.1	Type	;	
4.2	Adjustable Height From To	m-m	
3	Casing Stabbing Board Safety Devices		
a)	Winch fail safe brake	yes/no	
b)	Emergency Arrestor In Case Of Winch Cable/Brake Failure	yes/no	
c)	Automatic locking when the winch control valve is in the neutral position.	yes/no	
e)	Top And /Bottom Track Limit	yes/no	

			CONTRACTOR'S OFFER
	Switches		
f)	Shock absorber at track bottom.	yes/no	
.5	ON MAST VIDEO CAMERA		N/A (Not Conventional rig)
1	Quantity	No	
2	make type	:	
3	Certified to be installed in hazardous area	yes/no	
4	Location		
5.1	Monitor	No	
1	make and type		
2	Location	:	
3	Certified to be installed in hazardous area	yes/no	
.5	**TOP DRIVE GUIDANCE SYSTEM**		
1	Top Drive Guidance (torque tube, rails,)	Type	Not Conventional rig (Top Drive pantographe)
2	Are also the traveling block guided with?	yes/no	

1.9.2 SUBSTRUCTURE & RIG FLOOR

.1.	**SUBSTRUCTURE**		
1	Substructure make-type	:	Drillmec HH 220 Hydraulic
2	Rated Rotary Load Capacity	t	200
3	Rated Pipe Setback Load Capacity	t	Not Conventional rig
4	Substructure built as per ISO-API standard	No.	API 4F
5	Clear height between Rotary Beams And Ground Level	m	7 (suff. for BOP 13 5/8" 10M)
6	Rig Floor Height From Ground Level	m	7.71
7	Free height of trasversal bracings	m	
.2.	**RIG FLOOR**		
1	Rig Floor over all Dimensions	m-m	6x5.8
2	Rig Floor Drains Collecting System	yes/no	Yes
2.1	Drains discharging to	:	Flow line/Cellar
3	Rotary Table Drains Collecting System	yes/no	
3.1	Drains discharging to	:	
6	Rig Floor ingress-egress stairs	No.	3
7	Drains Discharging to	:	
8	Rig Floor Wind Breaks	yes/no	Not Applicable
8.1	Wind Break height	m	
8.2	Wind Break type	:	
.3	**DRILLER'S CABIN**		
1	Dimensions Length, wide, height	:	7500 x 2435 x 2585 (mm)
2	Complete with	:	
3	Cabin Air conditioning system	yes/no	Yes
4	Cabin heating system	yes/no	Yes
5	Microphone to talk with the rig floor crew	yes/no	Yes

1.9.3 DRAWWORKS & ACCESSORIES

.1	**DRAWWORKS**		Not Applicable (not conventional rig)
1	make-type	:	**Hydraulic Hoist System**
2	Rated input power	HP	1224
3	Single line Drum rated pull capacity	t	n. 1 hydraulic piston 200 Ton
4	Drum grooved for OD line	in	34 mm (4 drillin lines)
.1.1	**Drawworks Power**		
1	Number of Electric Motors	No.	See Hydraulic hoist system
2	make	:	
3	type	:	
4	Output Power	HP	
.1.2	**Drawworks Auxiliary Brake**		
1	make	:	See Hydraulic hoist system
2	type	:	
3	Emergency Back-Up System	yes/no	
4	Emergency Back-Up System	type	
.2.	**AUTOMATIC DRILLER SYSTEM**		
1	make	:	Drillmec
2	type	:	0.05 Ton WOB Accurancy
.3.	**HYDRAULIC CATHEAD (EZY TORQUE)**		
1	Quantity	No	See Power Tong
2	make type	:	
3	Max line pull	t	
.1	**CROWN BLOCK**		
1	Make and type	:	Drillmec
2	Crown Block built as per ISO-API standard	No.	API 4F
3	Rated Load Capacity	t	400
4	Sheaves number and outside diameter	No-in	Q.ty 8 x 800 mm
5	Groove of Sheaves for O.D. wire line	in	34 mm (1.3")
.6	**DRILLING LINE**		
1	Size and length	in-	4 lines x 34 (mm) with 28 m lenght
2	Breaking strength	t	112 Ton each lines
3	Built as per ISO (API) standard	No.	ISO 10425 (API 9A)
.7.	**DERRICK SAFETY DEVICES**		
7.1	**Crown Block Safety device**		
1	make	:	Hydraulic piston + electric Switch as additional crown block safety device protection
2	type	:	
7.2	**Travelling Block Anti Collision Device**		See above
1	Make	:	
2	Type	:	
3	With Upper safety arrestor	yes/no	
4	With Lower safety arrestor	yes/no	

1.10 ROTATION EQUIPMENT SYSTEM

1.10.1 TOP DRIVE ASSEMBLY

1	**TOP DRIVE**		
1	make-type	:	Drillmec HTD 200
2	Built as per ISO 13535 (API 8C-PLS-2)	yes/no	13535
3	Rated load capacity	t	200
4	Maximum continuous output torque	ft.lbs	26000
5	At related rotating speed	RPM	80 RPM with 100% efficiency
6	Maximum rotating speed	RPM	200
7	Rated working pressure	psi	5000
8	With retractable dolly assembly	yes/no	N/A (Top Drive pantograph)
1.1	**Top Drive Swivel**		
1	Integral Swivel type	yes/no	Integrated with Top Drive
2	Wash pipe Inside diameter	in	
3	Access Fitting for Wire line on Gooseneck	yes/no	
1.2	**Top Drive Driving system**		
1	Driving motor type (Electrical or Hydraulic)	:	Hydraulic
2	Quantity of Motors	No.	M7 Denison x 4
3	Gear box single or dual speed type	:	Dual speed
4	Motor max. continuous output power	HP	193 hp at 2000 rpm
1.3	**Top Drive Motor Cooling System**		
1	Air cooling type	yes/no	Yes
2	Closed loop air/water cooling system	yes/no	Air/oil cooling system
3	System certified for hazardous area	yes/no	Yes
1.4	**Top Drive Pipe Handler**		
1	Degrees of Head Rotating Capacity	:	Not Applicable (Top Drive pantographe)
2	Link Tilt type **(Air or Hydraulic powered)**	:	
3	Link tilted system capable of full access to the mouse hole	yes/no	Yes (Top Drive pantographe)
4	Max tilted angle backward from vertical	deg	Not Applicable (Top Drive pantographe)
5	Max. torque Wrench capacity	ft.lb	max.make-up torque capacity 36200 ft.lbs; max.break-out torque capacity 50600 ft.lbs
6	Jaws for O.D. range connections	in-in	
.1.5	**INSIDE BOP VALVES**		
A	**Hydraulic Operated Valve**		
1	Quantity	No.	1
2	make-type	:	Kelly Valve NC 50 M&M

3	Inside diameter and working pressure	in-psi	2 13/16" – 10k
4	Top connection type	:	NC 50
5	Bottom Connection type	:	NC 50
6	Spare IBOP Valve	No.	1
B	**Manual Operated Valve**		
1	Quantity	No.	1
2	make-type	:	Kelly Valve NC 50 M&M
3	Inside diameter and working pressure	in-psi	2 13/16" – 10k
4	Top connection type	:	NC 50
5	Bottom Connection type	:	NC 50
6	Spare IBOP Valve	No.	1

.1.6	**Top Drive Saver Sub**		For 5" drill pipes	For 3.1/2 drill pipes
1	Top connection type	:	NC 50	NC 50
2	Bottom Connection type	:	NC 50	NC 38

1.7	**Top Drive Link Elevators**		
A	**for drill pipes**		
1	Link Elevators make type	:	Varco
2	size x length	in-in	1 set da 2 ¼ " x 96"
3	rated load capacity	t	250
4	Built as per ISO	:	
B	**for casing**		
1	Link Elevators make type	:	Varco
2	size x length	in-in	1 set da 2 ¼ " x 180"
3	rated load capacity	t	250
4	Built as per ISO	:	

1.8	**Top Drive Wire Line Accessories**		
1	accessories kit	yes/no	No

1.10.2 ROTARY TABLE & ACCESSORIES

.1	**ROTARY TABLE**		
1	make and type	:	Drillmec R27.5
2	API rated load capacity	t	200
3	Maximum opening	in	27 ½"
4	Motor make-type	:	Dennison
.2	**MASTER BUSHING**		
1	Make and type	:	
2	API Insert Bowl size	No.	1 (2 – 3 substituted by BR 200t clamp)
.3	**ROTARY TABLE ANTISLIPPING PAD**		
1	make and type	:	Yes

1.11 RIG FLOOR TOOLS

.1.	**MANUAL TONGS COUNTERBALANCE SYSTEM**		
1	Installed	yes/no	Not applicable; Available **Automatic power tong** (For automatic spinning, make-up and break-out connection)
2	Quantity	No	
3	Remote adjustable	yes/no	
.2	**OTHER RIG FLOOR EQUIPMENT**		
1	Mouse hole size	in	12 ¾"
2	Rat hole size	in	Not applicable
3	Mud saver bucket	yes/no	Yes
4	Mud saver bucket for OD drill pipes	in	Drill pipes 3.1/2 to 5"

1.12 UTILITY HOIST EQUIPMENT

.1	**RIG FLOOR HOIST WINCH**		Unconventional rig	
1	Quantity	No	1 **JIB crane**	1 **Auxiliary JIB crane**
2	Make	:	Drillmec	Drillmec
3	Type	:	Hydraulic	Hydraulic
4	Rated capacity	t	12	4
5	Wire Diameter	mm		
6	Safety Arrestor	yes/no	Yes	
7	Complete with limit switch	yes/no	Yes	
8	Automatic spooling	yes/no	Yes	
9	Safety guard	yes/no	Yes	
10	Certified for man-riding	yes/no	No	
.2	**RIG FLOOR PERSONNEL HOIST BASKET**		On monthly rental basis	
1	Quantity	No.	1	
2	Make and type	:	27 Meters	
3	Hydraulic or Air Operated type	:	TBD	
4	Rated Hoist Capacity	kg	200 Kg	
5	Certified as per local Regulation	yes/no	Yes	
.3	**WORKING WINCH ON DERRICKMAN PLATFORM**		Not Applicable (UNCONVENTIONAL RIG)	
1	Quantity	No.		
2	Make and type	:		
3	Hydraulic or Air Operated type	:		
4	Rated Pull Capacity	t		
.4.	**HOIST WINCH INSIDE THE SUBSTRUCTURE**		Not Applicable	
1	Quantity	No		
2	Make	:		
3	Type	:		
4	Rated capacity	t		
5	Wire Diameter	mm		
6	Safety Arrestor	yes/no		
7	Complete with limit switch	yes/no		
8	Automatic spooling	yes/no		
9	Safety guard	yes/no		
.5	**BOP HANDLING SYSTEM**			

	INSIDE THE SUBSTRUCTURE		
1	make and type	:	Drillmec
2	Electric or Hydraulic driven	:	Hydraulic
3	Rated Hoist Capacity	t	40 t
4	Maximum Vertical travelling stroke	m	1.2
5	Maximum Horizontal travelling stroke	m	N/A
6	Handling System certified	yes/no	Drillmec
.6.	**BOP SUPPORT BASE SYSTEM INSIDE THE SUBSTRUCTURE**		
1	With capability to store the BOP in the substructure	yes/no	Yes
2	Complete with trolley	yes/no	Yes
3	For BOP size	:	13 5/8" 10K

1.13 MUD CIRCULATING SYSTEM

1.13.1 HIGH PRESSURE MUD PUMPS

1	**MUD CIRCULATING SYSTEM**		
1	All the high pressure end connections with the nominal diameter of 2-in and larger flanged or welded?	yes/no	Flanged or hub
2	Seal elements are oil base resistant	yes/no	Yes
.2	**MUD PUMPS**		
1	Mud pumps installed	No.	2
2	Make Type	:	Drillmec mod. 12T 1600 Triplex
3	Rated input power	HP	1300
4	Working Pressure	psi	5000
5	Pulsation Dampener: make, type	:	K20-5k
5.1	Pulsation Dampener Working Pressure	psi	5000
6	Discharge Relief Valve: make, type	:	MCM O'DRILL Type C
	Discharge Relief Valve Working Pressure	psi	1500-6200 (psi)
7	Size of liners available	in	6" – 5 ½" – 5"
2.1	**Mud Pumps Driving Motors**		
1	Q.ty of motors installed	No.	2 each pump
2	make	:	GE
3	type	:	GE 752 DC Series Motors
4	Motor Output Power	HP	1000 each motor
2.2	**Surcharging Pump**		
1	Surcharging Pump	No	1 each pump
2	Make	:	MCM O'DRILL 5 x 6
3	Type	:	MCM O'DRILL 5 x 6
4	Impeller Diameter	in	11
5	Driving motor	HP	75
6	Driving motor speed	RPM	1750

			CONTRACTOR'S OFFER
2.3	**Mud Pumps Control Panel**		
1	Remote panel on driller's Console	yes/no	Yes
2	Local panel near Mud Pumps	yes/no	Yes
.3	**MUD PUMP SUCTION LINES**		
1	Quantity	No.	2
2	Inside Diameter	in	10
.3.1	**Mud Pump Suction Dampeners**		
1	Quantity	No.	2
2	make and type	:	Drillmec
.3.2	**Mud Pump Suction Filters**		
1	Quantity	No.	2
2	make and type	:	Drillmec
.3.3.	**Mud Pump Discharge Line Filters**		
1	Quantity	No.	One each mud pump
.4.	**MUD PUMP DISCHARGE LINES**		
4.1	**Mud Pump Discharge Lines: FLEXIBLE SECTION**		
1	Quantity	No.	2
2	type	:	Vibrator hoses
3	Inside Diameter	in	3 ½"
4	Rated working Pressure	psi	5000
5	Built as per API specification	No.	API 7K grade D
4.2	**Mud Pump Discharge Lines: RIGID SECTION**		
1	Quantity	No.	2
2	Inside Diameter	in	4"
3	Rated working Pressure	psi	5000
			API 5L
.5.	**RIG FLOOR MUD MANIFOLD**		
5.1	**Valves**		
1	Make- type	:	7 + 2 lo torque Demco or equivalent
2	Size	In/psi	4.1/16" – 5000 & 2 1/16" 5000
3	End connection type	:	welded
5.2	**Outlet Connections**		
1	For pressure Gauges	yes/no	Yes
2	For pressure transmitters	yes/no	Yes
3	For Mud Logging Sensor	yes/no	Yes
4	For MWD Sensor	yes/no	Yes
5	For Line to Kill Manifold	yes/no	Yes
6	For Line to fill-up the Well	yes/no	Yes
7	For Line to fill-up the Casing	yes/no	Yes (casing make up device)
8	For Line to bleed off the pressure	yes/no	Yes
9	For reverse circulation Line	yes/no	Yes
10	All outlets complete with isolation Valve	yes/no	Yes

.5.3	**Stand-Pipes**		
1	Stand-Pipes	No.	1
2	Inside Diameter / working pressure	In/psi	4" 5000
5.4	**Rotary Hoses**		
1	Rotary Hoses	No.	1
2	Inside Diameter / working pressure	In/psi	3 ½" x 43 ftx 5000
3	API specification	:	API 7K grade D
4	Spare rotary hose	yes/no	1

1.13.2 LOW PRESSURE MUD SYSTEM

.1.	**MUD TANKS**		
1	Total number of mud tanks installed	No.	5
2	Mud tanks total capacity	m^3	300
1.1	**Mud Tank No.1**		
1	Capacity	m^3	50 (treatment)
2	Tank dimensions (H-W-L)	m-m-m	11 x 2.45 x 2.50
3	Electric agitator	No.	No
4	Divided in compartments	No.	4: 10 (sand trap) – 10 – 13 - 17
5	Electric agitator	make	
6	Electric agitator	type	
7	Driven by motor	HP	
8	Bottom guns	type	
1.2	**Mud Tank No.2**		
1	Capacity	m^3	65 (suction)
2	Tank dimensions (H-W-L)	m-m-m	13 x 2,45 x 2,5
3	Electric agitator	No.	
4	Divided in compartments	No.	1: 65
5	Electric agitator	make	3
6	Electric agitator	type	Samic
7	Driven by motor	HP	15
8	Bottom guns	type	3 (3")
1.3	**Mud Tank No.3**		
1	Capacity	m^3	65 (mixing)
2	Tank dimensions (H-W-L)	m-m-m	13 x 2,45 x 2,5
3	Electric agitator	No.	
4	Divided in compartments	No.	2: 45 – 20
5	Electric agitator	make	3
6	Electric agitator	type	Samic
7	Driven by motor	HP	15
8	Bottom guns	type	3 (3")
1.4	**Mud Tank No.4**		
1	Capacity	m^3	65 (reserve)
2	Tank dimensions (H-W-L)	m-m-m	13 x 2,45 x 2,5
3	Electric agitator	No.	
4	Divided in compartments	No.	2: 45 – 20
5	Electric agitator	make	3

6	Electric agitator	type	Samic
7	Driven by motor	HP	15
8	Bottom guns	type	3 (3″)
1.5	**Mud Tank No.5**		
1	Capacity	m^3	65 (reserve)
2	Tank dimensions (H-W-L)	m-m-m	13 x 2,45 x 2,5
3	Electric agitator	No.	
4	Divided in compartments	No.	2: 40 – 25
5	Electric agitator	make	3
6	Electric agitator	type	Samic
7	Driven by motor	HP	15
8	Bottom guns	type	3 (3″)
1.6	**Waste Pit No. 1**		On Rental Basis
1	Capacity	m^3	30
2	Tank dimensions (H-W-L)	m-m-m	4.15 x 2.45 x 9.5
1.6	**Waste Pit No. 2**		On Rental Basis
1	Capacity	m^3	30
2	Tank dimensions (H-W-L)	m-m-m	4.15 x 2.45 x 9.5
1.6	**Waste Pit No. 3**		On Rental Basis
1	Capacity	m^3	30
2	Tank dimensions (H-W-L)	m-m-m	4.15 x 2.45 x 9.5
.2.	**OTHER RESERVE MUD TANKS**		
1	Total number	No.	
2	Capacity of each	m^3	
3	Tank shape (circular or rectangular)	:	
4	With mud agitation system	yes/no	
.3.	**WATER TANKS**		
1	Tanks total water capacity	m^3	58
2	Total number	No.	1
3	Capacity of each	m^3	Divided in 2 compartments (29 – 29)
4	Tank dimensions (H-W-L)	m-m-m	

1.13.3 MUD MIXING SYSTEM

.1	**MUD MIXING SYSTEM**		
1	The system allows the simultaneously operations of:		
2	Make new mud	yes/no	Yes
3	Weighing active mud	yes/no	Yes
		:	
.2	**MUD MIXING UNIT**	:	
1	Mud Mixing Unit quantity	No.	1
2	with the capability to handle big bags	yes/no	Yes
	Each Mud Mixing Unit complete with		
2.1	**Mud mixing pumps**		
1	Quantity	No.	2
2	Make and type	:	Mission 6 x 8
3	Impeller Diameter	in	11

4	Packing Seal Type	:	Seal typer w/automatic lubricator
5	Driven by motor power	HP	100
6	Rotating speed	rpm	1750
2.2	**Mud mixing Hoppers**		
1	Quantity	No.	2
2	Make and type	:	Drillmec (Vortex Ventures Type)
.5.	**Chemical Mixing tank**		
1	Capacity	m^3	1
2	Complete with electrical mixer	yes/no	Yes

1.13.4 SILOS

.1	**SILOS FOR BARITE**		
1	Quantity	No.	2. On rental basis
2	Horizontal or vertical type	:	Vertical
3	Capacity of Each	m^3	35
4	Total capacity	m^3	70
5	Weight Indicator	yes/no	Yes
6	Type	:	electronic
7	Safety valve	yes/no	Yes
8	Certified as pressure vessel	yes/no	PED
.2	**SURGE TANK FOR BARITE**		
1	Quantity	No.	1. On rental basis
2	Pressurized or gravity type	:	Gravity
3	Capacity of Each	m^3	2
4	Weight Indicator	yes/no	No
5	Level indicator	yes/no	No
.3	**AIR COMPRESSOR UNIT**		
1	Make and type	:	Kaiser M80
2	Sound proofing	yes/no	Yes
3	Continuous power	hp	79
4	Capacity	m^3/hr	8.1 (mc/min)
5	Pressure	bar	7
6	Safety valve	yes/no	Yes
.4	**DUST COLLECTOR**		
1	Quantity	No.	1

1.13.5 MUD TREATMENT SYSTEM

.1	**SAND TRAP TANK**		
1	Quantity of compartments	No.	1
2	Capacity of each	m^3	10
3	Bottom sloped	yes/no	Yes
4	Quick cuttings discharging device	yes/no	Yes
.2	**DEGASSER TANK**		
1	Quantity of compartments	No.	1

			CONTRACTOR'S OFFER
2	Capacity of each	m^3	10 (see treatment tank)
3	Bottom Shape	:	No
.3	**MUD CLEANER TANK**		
1	Quantity of compartments	No.	1
2	Capacity of each	m^3	13 (see treatment tank)
3	Bottom Shape	:	No
.4	**EQUALIZING TANK**		
1	Quantity of compartments	No.	1
2	Capacity of each	m^3	17 (see treatment tank)
3	Bottom shape	:	No
.5	**HIGH EFFICIENCY SHALE SHAKER**		
1	Quantity	No.	1
2	Make	:	Brandt
3	Type	:	Triple Cobra Shaker Package
4	Screen type	:	Ultra flow BHX
5	Screen available size	mesh	(24 – 38 – 50 – 84 – 110* - 140 * - 175*)° * larger than 100mesh, will be charged back to the Client
.6	**DE SANDER UNIT**		
1	Make and type	:	
2	Cones size and quantity	in-no	
3	Feed pump make-type	:	
4	Impeller Diameter	in	
5	Driven by motor power	HP	
6	Rotating speed	RPM	
.7	**DE SILTER UNIT**		Installed on one deck of the shale shakers
1	Make and type	:	Brandt SE-12
2	Cones size and quantity	in-no	4 x 12
3	Feed pump make-type	:	
4	Impeller Diameter	in	
5	Driven by motor power	HP	
6	Rotating speed	RPM	
.8	**MUD CLEANER UNIT**		See De Silter
1	Quantity	No.	
2	Make and type	:	
3	Cones size and quantity	in-no	
4	Feed pump make-type	:	
5	Impeller Diameter	in	
6	Driven by motor power	HP	
7	Rotating speed	RPM	
8	Screen available make	:	
9	Screen available type	:	
10	Screen available size	mesh	
11	Drilling cutting directly discharged to	:	
.9	**DECANTING CENTRIFUGES**		No
1	Quantity	No.	

			CONTRACTOR'S OFFER
2	Make and type	:	
3	Drilling cuttings discharging to	:	
10	**DEGASSER UNIT**		
1	make and type	:	Burges Magnavac 1000
2	Feed pump make-type (if applicable)	:	MCM O'DRILL 6 x 8
3	Driven by motor power	HP	100
4	Gas discharging line I.D.	in	1
5	Discharging Line running to	:	In safe area
6	Degasser sound-proofed	yes/no	No
11	**MUD-GAS SEPARATOR**		
1	make and type	:	WEI
2	Mud-Gas Separator O.D. body	in	48
3	Mud-Gas Separator Height	m	4558 (mm)
4	Gas Treatment capacity	Sm^3/d	
5	Liquid Treatment capacity	lt/min	1000 lt/min
6	Max Operating Working Pressure	psi	100
7	Mud-Gas discharge line O.D	in	10"
8	Mud-Gas discharge running to	:	In safe area
9	Bottom Liquid Seal height	m	3
10	H2S Service	yes/no	Yes
11	Complete with pressure gauge	yes/no	Yes
12	**TRIP TANK**		
1	Capacity	m^3	5
2	Liner capacity	lt/cm	11.5
3	Level indicator type	:	Electronic
4	Visible from driller's site	yes/no	Yes
5	Trip tank complete with level recorder	yes/no	Yes (see Rig Sense)
6	Trip tank feed pump make-type	:	MCM O'DRILL 3" x 4"
7	Flow rate	lt/min	No

1.14 LINES FOR CEMENTING JOBS

.1	**HIGH PRESSURE CEMENTING LINES**		
1	H.P. Fixed Line Running from Rig Floor down nearby Cement Unit location	yes/no	Yes
2	H.P. Fixed Line quantity	No.	2
3	Inside Diameter and W.P.	in-psi	2-10000
4	End Connection type	:	Weco Union Fig. 1502
.2	**WATER SUPPLYING LINE**		
1	Quantity	No.	1
2	Inside Diameter and W.P.	in	4
3	End Connection type	:	Quick Clamp
.3	**MUD SUPPLYING LINE**		
1	Mud Supplying line to Cement Unit area.	No.	1
2	Inside Diameter and W.P.	in	4
3	End Connection type	:	Quick Clamp

1.15 WELL CONTROL EQUIPMENT

1.15.1 DIVERTER SYSTEM

.1	**ANNULAR DIVERTER**			
1	Make and type	:	T3 Energy Services -BOP Mod. 7082	
2	Size and working pressure	in-psi	21 ¼ 2K	
3	Top connection type	:	studded	
4	Top connection size	in-psi	21 ¼ 2K	
5	Bottom connection Type	:	Flanged	
6	Bottom Connection Size	in-psi	21 ¼ 2K	
.2	**BOP DIVERTER SPOOL**			
1	Quantity	:	1	
2	Top connection type	:	Flanged	
3	Top connection size	in-psi	21 ¼" 2000	
4	Bottom connection Type	:	Flanged	
5	Bottom Connection Size	in-psi	21 ¼" 2000	
6	Outlets	:	2	
7	Outlets size	in-psi	10 –500	
.3	**BOP DIVERTER VALVES**			
1	Diverter flow line valves	no	1	1 as kill line
2	Diverter flow line valves make type	:	Hydraulic ball valve	Lo Torq
3	Diverter flow line valves size	in-psi	10" - 500	2"1/16- 10k
4	Bottom connection Type	:		
.4	**BOP DIVERTER DISCHARGE LINE**			
1	Diverter flow lines	No.	1	
2	Diverter flow lines type	:	Rigid steel	
3	Diverter flow lines size	in-psi	10 – 500	
4	Diverter flow lines running to	:	In safe area (corral)	
5	Diverter flow lines running to	:		

1.15.2 13.5/8-5.000 BOP STACK

.1	**BAG PREVENTER**		
1	Quantity	No.	1
2	Make and type	:	T3 Energy Service U mod. 7022
3	Size and working Pressure	in-psi	13 5/8" – 5000
4	H_2S service	:	Yes
5	Top connection type	:	Studded
6	Top connection size	in-psi	13 5/8" – 5000
7	Bottom connection Type	:	Flanged
8	Bottom Connection Size	in-psi	13 5/8 – 5000

9	Built as per API specification	:	API 16A (ISO 13553)		
.2	**DOUBLE RAM PREVENTER**				
1	Quantity	No	1		
2	Make and type	:	T3 Energy service Mod. U		
3	Size and working Pressure	in-psi	13 5/8" 10000		
4	H_2S service	:	Yes		
5	Ram lock Type	:	Manual		
6	Top connection type	:	Flaged		
7	Top connection size	in-psi	13 5/8" 10000		
8	Bottom connection Type	:	Flanged		
9	Bottom Connection Size	in-psi	13 5/8" 10000		
10	Outlets Connection Type	:	Flanged		
11	Outlet Connection size (on one side)	in-psi	3" 5000 for choke		
12	Outlet Connection size(on the other side)	in-psi	2" 5000 for kill		
13	Shear Bonnet	type	No. See single		
14	Capable to cut max drill pipe in use even with the MAWHP (maximum anticipated wellhead pressure) applied on it in compliance with the API Standard 53.	:	No. See single		
15	Built as per API specification	No.	API 16A		
.2.1	**SINGLE RAM PREVENTER**				
1	Quantity	No	1		
2	Make and type	:	T3 Energy service Mod. U		
3	Size and working Pressure	in-psi	13 5/8" 10000		
4	H_2S service	:	Yes		
5	Ram lock Type	:	Manual		
6	Top connection type	:	Flaged		
7	Top connection size	in-psi	13 5/8" 10000		
8	Bottom connection Type	:	Flanged		
9	Bottom Connection Size	in-psi	13 5/8" 10000		
10	Outlets Connection Type	:	Flanged		
11	Outlet Connection size (on one side)	in-psi	3" 5000 for choke		
12	Outlet Connection size(on the other side)	in-psi	2" 5000 for kill		
13	Shear Bonnet	type	Yes		
14	Capable to cut max drill pipe (OD Grade)	:	Capable to shear DP 5" S135		
15	Built as per API specification	No.	API 16A		
.3.	**BOP PIPE RAMS**				
.3.1	**Fixed Pipe Rams**				
1	Quantity	No.	2	1	
2	Size	in	5"	3.5"	
3	Ram packer	type	T3	T3	
3.1a	**Fixed Pipe Rams**				
1	Quantity	No.	2	1	1
2	Size	in	3.1/2	2.7/8	2.3/8

3	Ram packer	type	T3	
3.2	**Variable Pipe Rams**			
1	Quantity	No.	1	1
2	Size	in	2.7/8- 5	4.5-7
3	Ram packer	type	T3 U Model	
3.3	**Casing Rams**			
1	Quantity	No.	1	
2	Size	in	9.5/8-in	
3	Ram packer	type	T3	
3.4	**Casing Rams**			
1	Quantity	No.	1	
2	Size	in	7-in	
3	Ram packer	type	T3	
3.6	**Shear/Blind Rams**			
1	Quantity	No.	1	
2	Type	type	SBR	
3	Capable to cut max drill pipe (OD Grade)	:	5-in 19,5 lb/ft S-135	

1.15.3 CHOKE & KILL VALVES ON BOP STACK

.1	**CHOKE VALVES**		
1,1	**Hydraulic Operated Valve**		
1	Choke valves Quantity	No.	2
2	Choke valves make and type	:	Cameron "FLS"
3	H_2S service	:	Yes
4	Built as per API specification	:	ISO 10423
5	Choke valves connection type	:	Flanged
6	Choke valves connection size	in-psi	3 1/16" 10K
1,2	**Manual Operated Valve**		
1	Choke valves Quantity	No.	2
2	Choke valves make and type	:	Cameron "FLS"
3	H_2S service	:	Yes
4	Built as per API specification	:	ISO 10423
5	Choke valves connection type	:	Flanged
6	Choke valves connection size	in-psi	3 1/16" 10K
.2	**KILL VALVES**		
2,1	**Hydraulic Operated Valve**		
1	Kill valves Quantity	No.	2
2	make and type	in	Cameron "FLS"
3	H_2S service	:	Yes
4	Built as per API specification	:	ISO 10423
5	Kill valves connection type	:	Flanged
6	Kill valves connection size	In-psi	2 1/16" 10K
2,2	**Manual Operated Valve**		
1	Kill valves Quantity	No.	2
2	make and type	in	Cameron "FLS"

			CONTRACTOR'S OFFER
3	H_2S service	:	Yes
4	Built as per API specification	:	ISO 10423
5	Kill valves connection type	:	Flanged
6	Kill valves connection size	In-psi	2 1/16" 10K

1.15.4 WELL HEADS & ADAPTERS

.1	**13 5/8 DRILLING / SPACER /RISER SPOOL**		
1	Quantity	No.	4 (600 mm each)
2	H_2S service	:	No
3	Top connection type	:	Flanged
4	Top connection size	in-psi	13 5/8" 10K
5	Bottom connection Type	:	Flanged
6	Bottom Connection Size	in-psi	13 5/8" 10K
7	Outlets	No.	
8	Outlets Connection Type	:	
9	Outlets Connection size	in-psi	
10	Total Height	m	

.2	**ADAPTER SPOOL to connect BOP with Well Head spools**			
1	Quantity	No.	1 + 1 spare	1 + 1 spare
2	Top connection size	in-psi	13.5/8" 10K	13.5/8" 10K
3	Top connection type	:	studded	studded
4	Bottom Connection Size	in-psi	13.5/8"-3K	11"-3K
5	Bottom Connection type	:	studded	studded

.3a	**ADAPTER SPOOL to connect BOP with Well Head spools**			
1	Quantity	No.	1 + 1 spare	1
2	Top connection size	in-psi	13.5/8" 10K	13.5/8" 10K
3	Top connection type	:	studded	studded
4	Bottom Connection Size	in-psi	9"-3K	7.1/16"-2K
5	Bottom Connection type	:	studded	studded

.3b	**ADAPTER SPOOL to connect BOP with Well Head spools**			
1	Quantity	No.	1 + 1 spare	1
2	Top connection size	in-psi	13.5/8" 10K	13.5/8" 10K
3	Top connection type	:	studded	studded
4	Bottom Connection Size	in-psi	7.1/16"-3K	7.1/16"-5K
5	Bottom Connection type	:	studded	studded

1.15.5 KILL & CHOKE LINES

.1	**KILL LINES from BOP outlets to KILL MANIFOLD**		
1	Kill line	No.	2

2	Kill line type	:	Rigid Steel/chiksan
3	Built as per API specification	:	API 16C
4	H_2S service	:	Yes
5	Kill line Inside diameter-W.P.	In-psi	2" 10K
.2	**CHOKE LINES from BOP Outlets to CHOKE MANIFOLD**		
1	Choke line	No.	2
2	Choke line type	:	Rigid steel (flanged/hub)
3	Built as per API specification	:	API 16 C
4	H_2S service	:	Yes
5	Choke line Inside diameter-W.P.	in-psi	3" 10K

1.15.6 KILL & CHOKE MANIFOLD

.1	**KILL MANIFOLD DESCRIPTION**		
1	kill manifold location	:	Yes
2	Kill manifold size	In-psi	ID as kill lines
3	Kill manifold valves quantity	No.	10000
4	Valves make type	:	4
5	First Inlet connected with	:	Cameron FLS
6	Second Inlet connected with	:	Rig Floor Mud Manifold
5	First Outlet connected with	:	Weco Union Fig 1502
6	Second Outlet connected with	:	Yes
.2.	**CHOKE MANIFOLD GENERAL**		
1	Choke manifold assembled by	:	Cameron
2	Choke manifold H_2S service	yes/no	Yes
	Choke manifold Size	in-psi	3 1/16" 10000
3	Built as per API specification	:	API 16C
4	All Connection ends not Threaded	yes/no	Yes
.2.1	**Choke Manifold High Pressure Section**		
1	Inside diameter-W.P.	in-psi	3 1/16" 10000
2	Inlet Points	No.	3
3	Provision to connect the pressure Sensor of Mud Logging Unit	yes/no	Yes
.2.2	**Power adjustable Choke Valve**		
1	Quantity	No.	1
2	Make type	:	Cameron
3	Size and W.P.	In-psi	3" - 10000
.2.3	**Manual adjustable Choke Valve**		
1	Quantity	No.	2
2	Make type	:	Cameron
3	Size and W.P.	In-psi	3" - 10000
.2.4	**Valve Upstream each Choke Valve**		
.2.4.1	**Valve Hydraulic Operated**		
1	Quantity	No.	1
2	Make type	:	Cameron FLS
3	Size and W.P.	in-psi	3 1/16"10000

			CONTRACTOR'S OFFER
.2.4.2	**Valve Manual Operated**		
1	Quantity	No.	1
2	Make type	:	Cameron FLS
3	Size and W.P.	in-psi	3 1/16"10000
.2.5	**Choke manifold Lower Pressure Section (Buffer Tank)**		
1	Inside diameter-W.P.	In-psi	3 1/16" 10000
2	Outlet points	No.	4
3	each with exclusion valve size	in-psi	Yes, 3 1/16" 10K
.2.6	**Outlet to mud gas Separator**		
1	Quantity	No.	1
2	Valve Size and W.P.	in-psi	3 1/16" 10000
3	Connecting Line Type	:	Flexible/rigid
.2.7	**Outlet to Flare Line**		
1	Quantity	No.	1
2	Valve Size and W.P.	in-psi	3 1/16" 10000
.2.8	**Outlet to Waste Pit**		
1	Quantity	No.	1
2	Valve Size and W.P.	in-psi	3 1/16" 10000
.2.9	**Outlet to shale shakers**		
1	Quantity	No.	1
2	Valve Size and W.P.	in-psi	3 1/16" 10000
.3.	**FLARE LINES**		
1	Quantity	No.	1
2	Flare Line OD x ID x length	in-m	3" x 120 m
3	Complete with remote Ignition system	yes/no	Yes
4	Ignition system type	:	CE Mod E21 RCAB
.4.	**System to adjust the Height of Choke Manifold Skid**		No
1	Installed	**yes/no**	
2	Hydraulic Operated	**yes/no**	
.5.	**REVERSE CIRCULATING LINE**		
1	Line running from rig floor to choke manifold.	No.	1
2	Reverse circulating line I.D. x w. p.	in-psi	2"
3	H_2S service	:	5000
4	Rig floor end connection type	:	Yes
5	Complete with pressure Gauge	yes/no	Weco union
.6.	**Power Choke Control Panel**		
1	Make type	:	Cameron
2	Location	:	Rig Floor
3	Comply with the API 16-C Requirements	**yes/no**	Yes

1.15.7 HIGH PRESSURE AUXILIARY TOOLS

.1	**CHICKSAN JOINTS**		
1	Chicksan joints	No.	10 – 2" – 10000

2	Chicksan joints	in-psi	Fast/FMC			
3	Make and type	:	API 16C			
4	H_2S service	yes/no	Yes			
.2	**CASING CUP TESTERS**					
1	Quantity	No.	1	1	1	1
2	Make and type	:	Cameron	Cameron	Cameron	Cameron
3	Cups for casing size	:	13"3/8	9.5/8 –	7"	5"
4	Cups for casing weight	:	61-68	43.5-47	32-29-26-23	15-18
3	**CROSS OVER SUB FOR CASING RAM TESTER**					
3.2	**For 9.5/8" Casing RAM**					
1	Quantity	No.	1			
2	Drill Pipe Top connection	type	(integral testing tool Pin/Box NC50 For 9.5/8"csg)			
3	casing Bottom Connection	type				
3.3	**For 7" Casing RAM**					
1	Quantity	No.	1			
2	Drill Pipe Top connection	type	(integral testing tool Pin/Box NC50 For 7"csg)			
3	casing Bottom Connection	type				
.4.	**CROSS OVER SUB TO TEST TOP DRIVE INSIDE BOP VALVES**					
1	Quantity	No.	1	1		
2	Top connection type	:	Box NC-38	Box NC-50		
3	Bottom Connection type	:	Weco Union	Weco Union		
.5.	**BOP TESTING UNIT**					
5.1	**POWER OPERATED TESTING UNIT**					
1	Quantity	No.	1			
2	Make and type	:	Stew. & Stev or eq.			
3	Maximum working pressure	psi	10000			
4	High flow rate	l/min	1			
5	Low flow rate	l/min	0.5			
6	Chart recorder type	yes/no	Yes			
5.2	**MANUAL OPERATED TESTING UNIT**					
1	Quantity	No.	1			
2	Make and type	:				
3	Maximum working pressure	psi	10000			

1.15.8 BOP AND DIVERTER CONTROL SYSTEM

.1	**ACCUMULATOR UNIT**		
1	Make and Type	:	CAD Control system

2	The Unit complies with API std 16-D	yes/no	Yes	
3	Oil reservoir capacity	gal	580 gal	
4	Total bottle Installed	No	38	
5	Nominal capacity of each	gal	9.5	
6	Total nominal capacity	gal	361	
7	Max. working pressure	psi	3000	
8	Accumulator unit installation site	:	In safe area	
.2	**ELECTRICAL RECHARGING PUMP**			
1	Quantity	No	1	
2	make type	:	Union pump serie 60	
3	Flow rate	gal/ min	Able to recharge, with air-driven pumps the accumulator unit in 15 min	
4	Max working Pressure	psi	3000	
5	Pump driving by motor power	HP	20	
6	Motor driven also by emergency Generator	yes/no	Yes	
.3	**AIR-DRIVEN RECHARGING PUMP**			
1	Quantity	no	2	
2	make type	:	Muffler pneumatic pump	
3	Flow rate	gal/min	Able to recharge, with electrical-driven pumps the accumulator unit in 15 min	
4	Max working Pressure	psi	3000	
5	Air Supplying pressure	psi	80	
.4	**ACCUMULATOR UNIT CONTROL MANIFOLD**			
1	Number of Control Valves	No	8 + 3 hydraulic valves upstream each choke)	
2	Control valve type	:	4 ways selector	
3	Low/High pressure by-Pass valve	yes/no	Yes	
4	Annular Pressure regulator remote controlled	yes/no	Yes	
5	Manifold Pressure regulator remote controlled	yes/no	No	
.5	**BOP CONTROL HOSES**			
1	Control hoses	No	16	16
2	Inside diameter	in	1	1
3	Control hoses	type:	Rigid type	Flexible type
	Certified Fire resistant	yes/no		Yes
.6	**DIVERTER CONTROL HOSES**			
1	Quantity	No	2	
2	Inside diameter	in	1 ½"	
3	Certified Fire resistant	yes/no	Yes	
.7	**B.O.P. DRILLER'S CONTROL PANEL**			
1	Installation site	:	CAD - On rig floor	
2	Graphic display of BOP configuration	yes/no	Yes	
3	With Lights for activated functions	yes/no	Yes	

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4	Certified for classified area	yes/no	Yes
.7.1	**Alarms at Driller's site**		
1	Low oil pressure visual and sound alarm	yes/no	Yes
2	Low air pressure visual and sound alarm	yes/no	Yes
3	Low fluid level visual and sound alarm	yes/no	Yes
.8.	**TOOL-PUSHER B.O.P CONTROL PANEL**		No
1	Installation site	:	
2	Graphic display of BOP configuration	yes/no	
3	With Lights for activated functions	yes/no	
.9.	**CLOSING TIME OF PREVENTERS**		
1	Closing time of 20 Bag Preventer	s	45
2	Closing time of 13.5/8 Bag preventer	s	30
3	Closing time of all Ram preventers	s	30
10	**EMERGENCY BACK UP SYSTEM**		
1	Installed	yes/no	
2	Supply air pressure to accumulator unit control manifold	yes/no	Yes
3	Supply air pressure to Driller's BOP control panel	yes/no	Yes

1.16 DOWN HOLE TUBULAR MATERIAL

1.16.1 TUBULARS

.1.	**DRILL PIPES FOR 8 ½-in HOLE**			
1	Drill Pipes OD	in	5	
2	API steel grade	:	S135	
3	Total Length	m	2500	
4	Length of each joint (range)	:	III	
5	Nominal Weight	lb/ft	19.5	
6	Internal Plastic Coating	type	Yes	
7	Tool joint OD x ID	in x in	6.5/8 x 2.3/4	
8	Tool Joint hardbanding	type	No hardbanding	
9	Tool Joint connections type and size	type	API NC-50	
10	Condition classification at the begging of the contract		New or Premium	
.2.	**DRILL PIPES FOR 6-in HOLE**			
1	Drill Pipes OD	in	3 ½	
2	API steel grade	:	S 135	
3	Total Length	m	2500	
4	Length of each joint (range)	:	III	
5	Nominal Weight	lb/ft	15.5	
6	Internal Plastic Coating	type	Yes	
7	Tool joint OD x ID	in x	4 ¾" x 2	

			CONTRACTOR'S OFFER	
		in	7/16"	
8	Tool Joint hardbanding	type	No hardbanding	
9	Tool Joint connections type and size	type	No hardbanding	
10	Condition classification at the begging of the contract		New or Premium	
.3.	**DRILL PIPES PUP JOINTS**			
1	Drill Pipes OD	in	5	
	Quantity	No.	Two each	
2	API steel grade	type	S-135	
3	Length	m	2m	
4	Nominal Weight	lb/ft	19.50#	
.3.1	**DRILL PIPES PUP JOINTS**			
1	Drill Pipes OD	in	3.1/2	
	Quantity	No.	Two each	
2	API steel grade	type	S-135	
3	Length	m	2m	
4	Nominal Weight	lb/ft	15.5#	
.4.	**HEAVY WALL DRILL PIPES FOR 8 ½-in HOLE**			
1	HWDP OD	in	5	
2	Body type: Integral or welded	:	Friction welded	
3	Steel grade	:	AISI 1340	
4	Quantity of Joints	No.	15	
5	Length of each	m	9.1	
6	Nominal Weight	lb/ft	50	
7	Internal Plastic Coating	type	No	
8	Tool joint OD x ID	in x in	6 5/8" x 3"	
9	Tool Joint hardfacing	type	Fine	
10	Tool Joint API connections type and size	type	NC50	
11	Condition classification at the begging of the contract	:	Premium	
.5.	**HEAVY WALL DRILL PIPES FOR 6-in HOLE**			
1	HWDP OD	in	3.5	
2	Body Integral or welded type	:	Friction welded	
3	API steel grade	:	AISI 1340	
4	Quantity of Joints	No.	15	
5	Length of each	m	9.1	
6	Nominal Weight	lb/ft	26	
7	Internal Plastic Coating	type	No	
8	Tool joint OD x ID	in x in	4 3/4" x 2 3/16"	
9	Tool Joint hardfacing	type	Fine	
10	Tool Joint API connections type and size	type	NC38	
11	Condition classification at the begging of the contract	:	Premium	

1.16.2 DRILL COLLARS

1	**DRILL COLLARS COMMON FEATURES**			
1	All the drill collars with Elevator recess	yes/no		
2	All the drill collars with standard length of 31 ft	yes/no	Yes	
3	All the drill collars with slip recess	yes/no	Yes	
4	All the drill collars with elevator recess	yes/no	No	
5	All the drill collars with Bore-back on box	yes/no	Yes	
6	All the drill collars with Stress Relief Groove on pin	yes/no	Yes	
.2.	**DRILL COLLARS DIMENSIONS**			
2.1.	**Drill Collars**	No.	10	10
1	Outside Diameter	in	8	6.1/2
2	Inside Diameter	in	2 13/16"	2 13/16"
3	Outside body	type	Spiral	Spiral
4	API connection	type	6.5/8 Reg	NC50
2.2	**Drill Collars**	No.	15	
1	Outside Diameter	in	4.3/4	
2	Inside Diameter	in	2 ¼"	
3	Outside body	type	Spiral	
4	API connection	type	NC38	
.3.	**SHORT DRILL COLLARS**	No.	2	2
1	Outside Diameter	in	8	6.1/2
2	Inside Diameter	in	2 13/16"	2 13/16"
3	Length of each joint	m	2	2
4	API connection	type	6.5/8 Reg	NC50
.3.1	**Short Drill Collars**	No.	2	
1	Outside Diameter	in	4.3/4	
2	Inside Diameter	in	2 ¼"	
3	Length of each joint	m	2	
4	API connection	type	NC38	

1.16.3 OTHER DOWN HOLE TOOLS

.1.	**BIT AND CROSS-OVER SUBS**			
1	Quantity of each X-Over sub to connect and run in hole all the Contractor's furnished drill and fishing strings	:	2 each type and diameter	
2	All X-Overs with Boreback on box	yes/no	Yes	
3	Stress Relief groove on pin	yes/no	Yes	
.1.1	**Other X-Overs**	No.	2	
1	Top connection	type	NC-50 Box	
2	Bottom connection	type	NC-38 Pin	

1.16.4 DRILL STRING INSIDE PRESSURE CONTROL TOOLS

.1.	**DRILL STRING CIRCULATING HEAD**			
		No.	1	1
1	For DP outside diameter	in	3.1/2"	5"
2	Bottom connection	type	NC-38	NC-50
3	Top connection	type	2" Weco	2" Weco
4	Top valve	type	LO-torque	LO-torque
5	Working pressure	in-psi	2"- 10,000	2"- 10,000
.2.	**FULL OPENING SAFETY VALVE (Lower Kelly Cock)**			
1	Quantity	No.	1	1
2	For DP connection	type	NC 38	NC 50
3		make	TIW	TIW
4		type	KC	KC
5	Outside diameter	in	4 ¾"	6 5/8"
6	Inside diameter	in	2"	2 ¾"
7	Working pressure	psi	5000	5000
.3.	**INSIDE BOP VALVE**			
1	Quantity	No.	1	1
2	make type	:	NC-50	NC-38
3	Outside Diameter	in		
4	For DP connection	type	5	3.5
5	Rated Working pressure	psi	5000	5000
.4.	**DROP-IN VALVE**			
1	**Quantity**	No.	1	1
2	For DP connection	type	5" DP	3.1/2" DP
3	make	:	Hydril	Hydril
4	type	:	Check guard	Check guard
5	Min. Inside drill string diameter	in	2 5/8"	2 1/8"
6	Landing Sub	No.	2	2
7	Complete with retrieving tool	Yes/ No	Yes	Yes
.5.	**FLOAT VALVES**			
1	Float Valves	No.		1
2	For DC connection	type		6.5/8 Reg
3	make	:		Baker
4	type	:		GA
1	Float Valves	No.	1	1
2	For DC connection	type	NC-50	NC-38
3	make	:	Baker	Baker
4	type	:	GA	GA

1.17 DRILL PIPES/DRILL COLLARS HANDLING TOOLS

1.17.1 POWERED AND MANUAL SLIPS

.1.	**MULTI-SIZED POWERED PIPE SLIPS**		
1	Quantity	No.	See 5.21.1.2

2	make	:	
3	type	:	
4	For Drill Pipe size range	in	
5	For Drill Collars size range	in	
6	For Casing size range	in	
7	For Tubing size range	in	
8	Load rating	t	
2.	**DRILL PIPE POWER SLIPS**		
1	Quantity	No.	Drillmec
2	make	:	
3	type	:	Remote operated
4	Pipe size range	in	5"-3.1/2"
.3.	**MANUAL SLIPS**		
.3.1.	**Drill Pipe Manual Slips**		un solo slips per diametro come back up al sistema automatico
1		No.	1
2	make	:	VARCO BJ or eq
3	type	:	SDXL
4	For O.D. Drill pipes	in	5
.3.2.	**Drill Pipe Manual Slips**		un solo slips per diametro come back up al sistema automatico
1		No.	1
2	make	:	VARCO BJ or eq.
3	type	:	SDXL
4	For O.D. Drill pipes	in	3.1/2
.3.3.	**Drill Collar Slips**		
1		No.	2
2	make	:	BR
3	type	:	C
4	For O.D. Drill Collars	in	8"
.3.4	**Drill Collar Slips**		
1		No.	2 | 2
2	make	:	BR | BR
3	type	:	C | C
4	For O.D. Drill Collars	in	6.1/2" | 4.3/4
3.5.	**Safety Clamps**		
1		No.	2
2	make	:	BR
3	type	:	C
4	For O.D. range	in	3 ¾" -11 5/8"

1.17.2 POWERED /MANUAL TONGS

1.	**POWER TONGS**		
1.1	**Combination Of Automatic Spinning & Power Tong**		
1	Make	:	1
2	Type	:	Drillmec Power tong
3	For O.D. Tubular size range	In-in	3 ½ " – 11"
4	Make-Up torque	ft.lbs	118.000 ft.lb

5	Break-out Torque	ft.lbs	118.000 ft.lb
6	Spin Torque	ft.lbs	Suitable for 3.5-5" Dp
1.2	**Spinning Wrench**		
1	make	:	See 5.21.2.1.1
2	type	:	
3	For O.D. Tubular size range	In-in	
.2	**MANUAL ROTARY TONGS**		Automatic system-Power tong (disponibile solo n°1 Rotary tong con funzione di ritegno per avvitamento dei primi giunti per csg con diametro superiore a 9" 5/8. g- 55000 ft.lbs)
1	Quantity	No.	
2	make	:	
3	type	:	
4	For O.D. Tubular	in	
5	Max. rating Torque	ft.lbs	
2.1	**Manual Rotary Tongs**		Automatic system-Power tong (disponibile solo n°1 Rotary tong con funzione di ritegno per avvitamento dei primi giunti per csg con diametro superiore a 9" 5/8. g- 55000 ft.lbs)
1	Quantity	No.	
2	make	:	
3	type	:	
4	For O.D. Tubular	in	
5	Max. rating Torque	ft.lbs	

1.17.3 PIPE ELEVATORS

.1.	**DRILL PIPES ELEVATORS**		
1.1	All the pipes elevators with API STD 8-C	Yes/No	Yes
.2.	**DRILL PIPES ELEVATORS**		Unconventional rig: Automatic pipe handling system. N.1 solo elevatore come back up
1	Quantity	No.	1 as spare
2	make	:	Varco BJ
3	type	:	RG
4	For O.D. Drill pipes	in	5
5	Max. rating Load Capacity	t	225
2.1	**Drill Pipes Elevators**		Unconventional rig: Automatic pipe handling system. N.1 solo elevatore come back up
1	Quantity	No.	1 as spare
2	make	:	Varco BJ
3	type	:	RG
4	For O.D. Drill pipes	in	3 ½"
5	Max. rating Load Capacity	t	135

			CONTRACTOR'S OFFER	
.2.	**DRILL COLLAR LIFT SUB ELEVATORS**			
1	Quantity	No.	1 each DC	1 each DC
2	For O.D. Drill Collars	in	8"	6.1/2"
3	Bottom connection	type	6 5/8" Reg	NC 50
.2.1	**Drill Collars Lift Sub Elevators**			
1	Quantity	No.	1 each DC	
2	For O.D. Drill Collars	in	4.3/4	
3	Bottom connection	type	NC 38	

1.17.4 AUXILIARY TOOLS

.1	**Bit Breaker**		
1	For Bit size	in	16" - 12.1/4" - 8.1/2" – 6"
2	For Bit size	in	
.2	**Bit Gauge**		
1	For Bit size	in	16" - 12.1/4" - 8.1/2" – 6"
2	For Bit size	in	
3	**Tri-point calliper**		
1	For O.D. blade stabilizers	In	16" - 12.1/4" - 8.1/2" – 6"
2	Accuracy	In	1/64"

1.18 CASING & TUBING HANDLING TOOLS

1.18.1 CASING HANDLING TOOLS

.1	**CASING SLIPS FOR ROTARY TABLE**		
.1.1	**Casing Slips for Rotary Table**		
1	Quantity	No.	One each
2	make	:	BR or equiv.
3	type	:	UC 3
4	For O.D. Casing	in	13.3/8" -9.5/8" – 7"- 5"
.2	**CASING ELEVATORS**		
.2.1	**Side Door Casing Elevators**		
1	Quantity	No.	One each
2	make	:	Varco BJ or eq
3	type	type	SLX
4	For O.D. Casing	in	13.3/8" -9.5/8" – 7"- 5"
5	Rated Load Capacity	t	136 t
.3	**SINGLE JOINT CASING ELEVATOR**		
.3.1	**Single Joint Casing elevators**		
1	Quantity	No.	1 each
2	make	:	Varco
3	type	:	SJ
4	For O.D. Casing	in	13.3/8" – 9.5/8" – 7"- 5"

			CONTRACTOR'S OFFER			
.4.	**CASING TONGS**					
.4.1	**Manual Casing tongs**		n.1 Chiave con funzione di ritegno per avvitamento dei primi giunti per csg con diametro superiore a 9" 5/8. Vedi anche Automatic Power Casing tongs			
1	Quantity	No.				
2	make	:	B&V			
3	type	:	extended			
4	For O.D. Casing	in	13.3/8" - 9.5/8" – 7"- 5"			
5	Max Rated Torque	lb/ft				
.4.2	**Power Casing Tongs**		Automatic Power Casing tongs: csg make-up device			
1	Quantity	No.				
2	make	:				
3	type	:				
4	For O.D. Casing	in	13 3/8" Ten ER, 10"3/4 Ten MS, 9 5/8" Ten MS, 7"5/8 Ten MS, 7" Ten MS, 5"1/2 Ten MS -5" Ten MS			
5	Max Rated Torque	lb/ft				
5.	**CASING CIRCULATING HEADS**					
5.1	**Casing Circulating Heads**		csg make-up device able to circulate (max 70 bar) and ruotate during csg running. 13 3/8" Ten ER, 10"3/4 Ten MS, 9 5/8" Ten MS, 7"5/8 Ten MS, 7" Ten MS, 5"1/2 Ten MS -5" Ten MS			
1	Quantity	No.	1 (if avail able)	1 (if avail able)	1 (if avail able)	1 (if avail able)
2	Top connection	type	2" LP	2" LP	2" LP	2" LP
3	Bottom connection	type	TBD	TBD	TBD	TBD
4	For O.D. Casing	in	13 3/8	9 5/8	7	5
6	**CASING THREAD PROTECTORS**					
.6.1	**Casing Thread Protectors**	No.	Three			
1	make	:	Keplo			
2	type	:	air			
3	For O.D. Casing	in	13.3/8" - 9.5/8" – 7"- 5"			
7	**CASING DRIFT**					
7.1	**Casing Drift**	No.	1	1	1	
1	For O.D. Casing	in	13"3/8	9"5/8	7"	
2	For Casing Nominal weight	lb/ft	61	43.5-53.5	23-29	

8	**CASING SCRAPERS**				
1	Casing Scrapers	No.	1	1	
2	make	:	DM Best	DM Best	
3	type	:	Rotover t	Rotover t	
4	For O.D. Casing	in	9.5/8	7	
5	For Casing Nominal weigth	lb/ft	53.5	29	
.9	**Casing Circulation Internal Packer to be used with Top Drive**		csg make-up device able to circulate (max 70 bar) and ruotate during csg running. 13 3/8" Ten ER, 10"3/4 Ten MS, 9 5/8" Ten MS, 7"5/8 Ten MS, 7" Ten MS, 5"1/2 Ten MS -5" Ten MS		
1	Quantity	No.			
2	Top Connection	type			
3	make	:			
4	type	:			
5	for casing size	in			

1.18.2 TUBING HANDLING TOOLS

.1	**TUBING SPIDERS**			
1	Tubing spiders quantity	No.	1	
2	Make and -type	:	BR open end	
3	For O.D. tubing	in	3 ½" – 2 7/8" – 2 3/8"	
4	Rated load Capacity	t	90	
.1a	**TUBING SPIDERS**			
1	Tubing spiders quantity	No.	See 5.22.2.1	
2	Make and -type	:		
3	For O.D. tubing	in		
4	Rated load Capacity	t		
.2	**TUBING ELEVATORS**			
1	Tubing elevators quantity	No.	1	
2	Make and -type	:	BJ HYT or rq	
3	For O.D. tubing	in	3 ½" – 2 7/8" – 2 3/8"	
4	Rated load Capacity	t	90	
.2a	**TUBING ELEVATORS**			
1	Tubing elevators quantity	No.	See 5.22.2.2	
2	Make and -type	:		
3	For O.D. tubing	in		
4	Rated load Capacity	t		

			CONTRACTOR'S OFFER	
.3	**MANUAL TUBING TONGS**			
1	Manual tubing tongs	No.	2	
2	Make and -type	:	Snap-on	
3	For O.D. tubing	in	3.1/2"-2.7/8"-2.3/8"	
.4	**POWERED TUBING TONG**			
1	Powered tubing tong	No		
2	Make and -type	:		
3	For O.D. tubing	in		
.5	**TUBING SLIPS FOR ROTARY TABLE**			
1	Tubing Slips for rotary table	No	2	
2	Make and -type	:	Varco or eq	
3	For O.D. tubing	in	3.1/2"-2.7/8"-2.3/8"	

1.19 FISHING TOOLS

.1	**OVERSHOTS**			
			Con tutte le prese per materiale tubolare della Contrattista che viene sceso in pozzo considerando anche 1/8 " di usura sul diametro.	
1	Quantity	No.	1	1
2	make	:	Bowen	Bowen
3	type	:	FS-150	FS-150
4	O.D. Body	In	11 ¾"	7 7/8"
5	Spiral/Basket Grapples from	In	9 5/8"	6.1/2
6	Spiral/Basket Grapples to	In	5	5
7	Oversize Guide	No.	1	1
8	Oversize Guide O.D.	In	9 5/8" x 11"	7 7/8" x 11"
9	Oversize Guide	No.		
10	Oversize Guide O.D.	In		
11	Top sub Connection	type	NC 50	NC 50
12	Top sub lock-ring	:	1	1
.1.1	**Overshots**			
1	Quantity	No.	1	
2	make	:	Bowen	
3	type	:	SFS-150	
4	O.D. Body	In	5 ¾"	
5	Spiral/Basket Grapples from	In	3.5	
6	Spiral/Basket Grapples to	In	2 3/8	
7	Oversize Guide	No.	1	
8	Oversize Guide O.D.	In	5 5/8" x 8"	
9	Oversize Guide	No.		
10	Oversize Guide O.D.	In		
11	Top sub Connection	type	NC 38	
12	Top sub lock-ring	:	1	
.2	**FISHING JARS**	No.	1	1
1	make	:	Bowen	Bowen
2	type	:	Z	Z
3	O.D. body	in	8"	6.1/2"
4	Connections	type	6 5/8" Reg	NC 50

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.3.	**JUNK SUBS**	No.	1		1
1	make	:	Ballerini		Ballerini
2	type	:	STD		STD
3	O.D. Body	in	7 ¾"		5 ½"
4	I.D. body	in	3 ½"		2 ¼"
5	For Hole size	in	12.1/4"		8.1/2"
6	Connections	type	6 5/8" Reg		4 ½" Reg
.3.1	**JUNK SUBS**	No.	1		
1	make	:	Ballerini		
2	type	:	STD		
3	O.D. Body	in	4 ¼"		
4	I.D. body	in	1 ½"		
5	For Hole size	in	5.7/8"		
6	Connections	type	3 ½" Reg		
.4	**JUNK BASKET (REVERSE CIRCULATION.)**				
		No.	1		1
1	make	:	Bowen		Bowen
2	type	:	Rev. circ		Rev. circ
3	Mill Shoe	type	C		C
4	O.D. Body	in	11"		7 7/8"
5	I.D. body	in	89 mm		51 mm
6	For Hole size	in	12 ¼"		8 ½"
7	Connections	type	6 5/8" Reg		4 ½" Reg
.4.1	**JUNK BASKET (REVERSE CIRCULATION.)**				
		No.	1		
1	make	:	Bowen		
2	type	:	Rev. Circ		
3	Mill Shoe	type	C		
4	O.D. Body	in	5 1/8"		
5	I.D. body	in	68 mm		
6	For Hole size	in	5 7/8"		
7	Connections	type	3 ½" Reg		
.5	**Junk Mill**				
1	Quantity	No	1	1	1
2	make	:	Servco	Servco	Servco
3	type	:			Junk mill
4	O.D. Body	in	11 ½"	8 1/8"	5 7/8"
5	I.D. body	in			
6	Connections	type	6 5/8" Reg	4 ½" Reg	3 ½" Reg
.6	**Fishing Magnet**				
1	Quantity	No	1	1	
2	make	:	Bowen	Bowen	
3	type	:			
4	O.D. Body	in	10 ½"	7"	

			CONTRACTOR'S OFFER		
5	I.D. body	in			
6	Connections	type	Pin 6 5/8" Reg	NC 50	
.7	**Impression Block**				
1	Quantity	No	N/A	1	
2	make	:		Bowen	
3	type	:		Lead impression block	
4	O.D. Body	in		7	
5	I.D. body	in			
6	Connections	Type		3 ½ Reg pin	

1.20 INSTRUMENTATION

1.20.1 INSTRUMENTATION AT DRILLER'S CONSOLE

.1	**WEIGHT INDICATOR**		
1	make	:	Wagner
2	type	:	D50
.2.	**PRESSURE INDICATOR**		
2.1	**Stand pipe Pressure Indicator**		
1	Stand pipe pressure Gauge	No.	1
2	make	:	MD TOTCO
3	type	:	Hydraulic
4	pressure range indicator	psi	0 – 350
3	**TORQUE INDICATOR**		
3.1.	**Top Drive Torque indicator**		
1	Make		MD TOTCO
2	Type		Electronic
3	Range	ft.lbs	40000
.3.2	**Rotary Table Torque indicator**		
1	Make		MD TOTCO
2	Type		Electronic
3	Range	ft.lbs	20000
.4	**TOP DRIVE SPEED INDICATOR**		
1	make	:	MD TOTCO
2	type	:	Proximity
3	Range	RPM	0 -200
.4.1	**Rotary Table Speed indicator**		
1	make	:	MD TOTCO
2	type	:	Proximity
3	Range	RPM	0 - 200

			CONTRACTOR'S OFFER
.5	**TONGS PULL INDICATOR**		
1	make	:	Yes
2	type	:	Analogic
3	Pull sensor	type	hydraulic
4	Range	lbs	55000 lb/ft
.6.	**STROKE COUNTER INDICATOR**		
.6.1	**Mud Pump Stroke Counter Indicator**		
1	Quantity	No	One each pump
2	make	:	MD TOTCO
3	type	:	Proximity
4	Sensor	type	Digital
.6.2	**Mud Pump Stroke Totalizer**		
1	make	:	One each pump
2	type	:	MD TOTCO
3	Sensor	type	Digital
.7.	**MUD PIT LEVEL INDICATORS & VOLUME TOTALIZER**		
1	make	:	MD TOTCO
2	type	:	Digital
3	Pit level sensors	type	Electronic /ultrasonic
4	Pit level sensors installed	No.	On each active tank
5	Pit Volume Totalizer	type	Digital
6	Totalizer Gain/loss alarm	yes/No	Audible and visual
7	Pit Volume Gain/loss Recorder	yes/No	Yes (digital)
.8	**MUD FLOW RATE INDICATOR**		
1	make	:	MD TOTCO
2	type	:	Mud Flow Sensor
3	Flow rate sensor	type	Electronic
4	Flow rate gain/loss alarm	yes/No	Audible and visual
.9.	**TRIP TANK VOLUME INDICATOR**		
1	make	:	MD TOTCO
2	type	:	Electronic /ultrasonic
3	Pit Volume Gain/loss alarm	type	Audible and visual
4	Recorder	Yes/No	Yes
.10	**Drilling Parameter Recorder**		
1	make	:	MD TOTCO
2	Conventional Pen recorder or Digital multitrack system	type	Digital monitor
2	Pens/ tracks quantity	No.	7 minimum
3	Pneumatic or electric	type	Electronic (dog house)
4	Suitable for hazardous area	:	
5	Parameter Recorded : ROP	:	Yes
6	Parameter Recorded: Weight on hook	:	Yes
7	Parameter Recorded. Top Drive speed	:	Yes
8	Parameter Recorded: Top drive torque	:	Yes

9	Parameter Recorded: Pump pressure	:	Yes
10	Parameter Recorded: SPM Pump 1	:	Yes
11	Parameter Recorded: SPM Pump 2	:	Yes
12	Parameter Recorded: SPM Pump 3	:	

1.20.2 INSTRUMENTATION INSIDE DRILLER'S DOG HOUSE

.1.	**DRILLING PARAMETER RECORDER**		See 5.24.1.10
1	make		
2	Conventional Pen recorder or Digital multitrack system	type	
2	Pens/ tracks quantity	No	
3	Pneumatic or electric	type	
4	Suitable for hazardous area	:	
5	Parameter Recorded : ROP	:	
6	Parameter Recorded: Weight on hook	:	
7	Parameter Recorded. Top Drive speed	:	
8	Parameter Recorded: Top drive torque	:	
9	Parameter Recorded: Pump pressure	:	
10	Parameter Recorded: SPM Pump 1	:	
11	Parameter Recorded: SPM Pump 2	:	
12	Parameter Recorded: SPM Pump 3	:	

1.20.3 INSTRUMENTATIONS ON CHOKE CONTROL PANEL

.1	**Drill Pipe Pressure Indicator**		
1	Quantity	No.	1
2	Make and type	:	Cameron
3	Pressure Transducer type	:	J2
4	Pressure Reading range	:	0 – 400 (bar)
5	Pressure accuracy	:	2 (bar)
.2	**Annulus Pressure Indicator**		
1	Quantity	No.	1
2	Make and type	:	Cameron
3	Pressure Transducer type	:	J2
4	Pressure Reading range	:	0 – 700 (bar)
5	Pressure accuracy	:	4 (bar)
.3	**Mud Pump Stroke Counter Indicator**		
1	Quantity	No.	One each mud pump
2	Make and type	:	Cameron Digital
.4	**Mud Pump Stroke Totalizer Indicator**		
1	Quantity	No.	1
2	Make and type	:	Cameron digital
.5	**Power Choke Opening Indicator**		
1	Quantity	No.	1
2	Make and type	:	Cameron Analogic/pneumatic

.6	**Mud gas separator pressure gauge**		
1	Make and type	:	
2	Pressure accuracy	psi	

1.20.4 OTHER INSTRUMENTS

.1	**Wire Line Unit (Slick Line)**		No
1	Make and type	:	
2	Complete with tension indicator	yes/no	
3	Complete with depth indicator	yes/no	
4	Wire line Diameter and length	in-m	
5	Wire Line breaking strength	kg	
6	H2S service	;	
.2	**Drilling Deviation Measuring Device**		
1	Quantity	no	1
2	Make and type	:	Totco
3	Deviation Range	deg.	0 - 8 0 - 16
.3	**Mud Testing Portable Unit**		
1	Quantity	no	1
2	Make and type	:	BAROID P.n. 82100
.4	**Calibrated Pressure Gauges**		
1	Quantity	no	1
2	Make and type	:	Nuova Fima
3	Pressure Range	:	0 – 10000 (psi)
.5	**Personal Computer**		
1	Quantity	no	1
2	Make and type	:	
.6	**Computer printer**		
1	Quantity	no	1
2	Make and type	:	

1.21 SAFETY EQUIPMENT

1.21.1 FIXED GAS MONITORING SYSTEM

.1	**FIXED H_2S GAS MONITORING SYSTEM**			
1	Make and type	:		
.2	**FIXED COMBUSTIBLE GAS MONITORING SYSTEM**			
1	Make and type	:		
.3	**PORTABLE H_2S GAS DETECTORS**			
1	Quantity	No	2	
2	Make and type	:	MSA	
3	Tube for H_2S measuring Q.ty & range	n°-ppm	electronic	
		n°-ppm	Lo strumento copre tutti i range richiesti	

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	Tube for SO-2 measuring range	n°-ppm		
		n°-ppm		
		n°-ppm		
		n°-ppm		
.4	**PERSONAL H_2S GAS DETECTORS**			
1	Quantity	no	2	
2	Make and type	:	MSA pulsar H2s 10 ppm	
.5	**PORTABLE EXPLOSIVE GAS DETECTORS**			
1	Quantity	no	Vedi 5.25.1.3	
2	Make and type	:		

1.21.2 PERSONAL PROTECTIVE EQUIPMENT

.1	**ESCAPE AIR BREATHING APPARATUS**		
1	Quantity	No	30
2	Make and Type	:	Drager
3	Breathing time	min	10
.2	**SELF CONTAINED BREATHING APPARATUS**		
1	Quantity	No	15
2	Make and Type	:	MSA
3	Breathing time	min	7 (30 min)
2.1	**Spare breathing Bottles**		
1	Quantity	No	30 bottles
2	capacity	lt	7 (30 min)
.3.	**BREATHING APPARATUS BOTTLES RECHARGING AIR COMPRESSOR**		
1	Make and type	:	1 Drager – Junior N2B
.4.	**PERSONAL PROTECTIVE EQUIPMENT**		
1	Fireman Suit	No	2
2	Fire-Proof blanket	No	1
3	Fire Proof Gloves	No	2
4	Safety belts	No	3
5	Safety Helmets	No	1 each person
6	Safety Helmet for visitors	No	10
7	Safety Boots	No	1 each person
8	Chemical Proof Gloves	No	4 paia
9	Chemical Proof Boots	No	1 each person
10	Chemical proof Apron	No	3
11	Eye shields	No	1 each person + 10 spare
12	Full Face visors	No	4
.5	**FIRST AID EQUIPMENT**		
1	Quantity	no	1
2	First aid Kits location	:	TP Office

			CONTRACTOR'S OFFER
.6.	**RESUSCITATOR**		
1	Quantity	no	2
2	type	:	AMBU Type RFB
.7	**FIRST AID STRETCHER**		
1	Quantity	no	2
2	Location	:	Tool Pusher Office
.8.	**EYES WASHING STATIONS**		
1	Quantity	No.	3
2	Location	:	Rig Floor – Mud Pits Area
.9	**EMERGENCY SHOWER STATIONS**		
1	Quantity	No.	2
2	Location	:	Dressing Barack
.10	**OTHER SAFETY EQUIPMENT**		
1	Wind socks	No.	2
2	Expl. Proof Electrical light Torch	No.	5
3			

1.22 FIRE FIGHTING EQUIPMENT

.1.	**FIRE FIGHTING EQUIPMENT**			
1.1	**Fire water pumps**		No	
1	Quantity	No.		
2	make-type	:		
3	Fire water pump flow rate	lt/m		
1.2	**Fire fighting stations: diesel fuel storage area**			
1	Fire hoses	No.	no	
2	Portable extinguishers	No.	2	1
3	Portable extinguisher Capacity	kg	50	12
4	Extinguishing material type	:	Powder	Powder
1.3	**Fire fighting stations: diesel Engine-generator area**			
1	Fire hoses	No.	No	
2	Portable extinguishers	No.	1	2
3	Portable extinguisher Capacity	kg	50	12
4	Extinguishing material type	:	Powder	Powder
1.4	**Fire fighting stations: Power Control Cabin (PCR)**			
1	Fire hoses	No.	No	
2	Portable extinguishers	No.	1	1
3	Portable extinguisher Capacity	kg	50	50
4	Extinguishing material type	:	Co2	Co2
1.5	**Fire fighting stations: Mud tanks area**			
1	Fire hoses	No.	1	
2	Portable extinguishers	No.	1	2
3	Portable extinguisher Capacity	kg	9	6
4	Extinguishing material type	:	Powder	Powder

			CONTRACTOR'S OFFER	
1.6	**Fire fighting stations: Mud pump area**			
1	Fire hoses	No.	1 (See Above)	
2	Portable extinguishers	No.	2	
3	Portable extinguisher Capacity	kg	9 (kg)	
4	Extinguishing material type	:	Powder	
1.7	**Fire fighting stations: BOP Accumulator area**			
1	Fire hoses	No.	No	
2	Portable extinguishers	No.	2	
3	Portable extinguisher Capacity	kg	12 (Kg)	
4	Extinguishing material type	:	Powder	
1.8	**Fire fighting stations: Rig floor area**			
1	Fire hoses	No.	No	
2	Portable extinguishers	No.	2	2
3	Portable extinguisher Capacity	kg	9 kg	6 kg
4	Extinguishing material type	:	Powder	Powder
1.9	**Fire fighting stations: Barracks area**			
1	Fire hoses	No.	No	
2	Portable extinguishers	No.	1 each barack	
3	Portable extinguisher Capacity	kg	6 kg	
4	Extinguishing material type	:	Powder	
1.10	**Fire fighting stations: Emergency Accommodation Camp**			
1	Fire hoses	No.		
2	Portable extinguishers	No.		
3	Portable extinguisher Capacity	kg		
4	Extinguishing material type	:		

1.23 RIG SITE UTILITIES

.1	**PORTABLE WATER PUMPS**		
1	Quantity	No	2
2	Make and type	:	Varisco J90
3	Driven by motor type	:	Diesel
4	Water Pump flow rate	lt/m	2000
4	Motor Power	HP	16
5	Their main use for	:	1
.2	**WATER SUPPLYING LINE**		
1	O.D. diameter	in	1
2	Total length	m	Varisco J90
.3	**CELLAR PUMP**		
1	Quantity	No	1
2	Make and type	:	Bellin or eq.
3	Cellar Pump flow rate	lt/m	1500
4	Driven by motor type	:	Electric, suitable for hazardous area.
5	Motor Power	HP	20

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.4	**WASHING WATER SYSTEM**		
1	Use Fresh water	yes/no	Yes
2	Use Reusable cleaned Water	yes/no	Yes
3	Has the system two separated water circuits	yes/no	Yes
4.1	**Washing Water Hoses**		
1	Quantity	No	3
2	With Self closing valve	:	Yes
3	Location	:	Shaker – Mud pits – Rig floor
.5.	**WELDING MACHINES**		
1	Electric welding machines	No	1
2	Electric welding machines type	:	400 A
3	Torch oxygen-acetylene welding sets	No	1
.6	**WATER BLAST CLEANING MACHINE**		
1	Quantity	No	1
2	Make and type	:	H. pressure
.7	**STEAM CLEANING MACHINE**		
1	Quantity	No	1
2	Make and type	:	Sole Vesuvio
.8	**WOODEN PANELS**		
1	Wooden panel quantity	No	10
2	dimensions L-W-H	m-m-m	3x 1x 0,6

1.23.1 BARRACKS

.1	**COMPANY OFFICE BARRACK**		
1	Quantity	No	1
2	dimensions L-W-H	:	Company office/bedroom barrack 12 x 2.4 x 2.6 (m)
3	Complete with office furniture	:	Yes
4	Full Climate Control	yes/no	Yes
.1a	**BARRACK FOR SAFETY MEETING**		On rental basis
1	Quantity	No	1
2	dimensions L-W-H	:	6 x 2.4 x 2.4
3	Complete with office furniture	:	Yes
4	Full Climate Control	yes/no	1
.3	**CONTRACTOR OFFICE BARRACK**		
1	Quantity	No	1
2	dimensions L-W-H	:	12 x 2.4 x 2.6 (m)
3	Complete with office furniture	:	Yes
4	Living Room	yes/no	Yes
5	Toilet and shower	yes/no	Only shower
6	Full Climate Control	yes/no	Yes
.4	**MUD ENGINEER LABORATORY**		
1	Quantity	No	Yes
2	dimensions L-W-H	:	

3	Location	:	Yes
4	Complete with	:	No
5	Full Climate Control	yes/no	Yes
.5	**DRESSING BARRACKS (for company use)**		
1	Quantity	No	1 Dressing Barrack for Contractor use+1 Dressing Barrack (for contractor use + 10 company contractors)
2	dimensions L-W-H	:	12 x 2.4 x 2.6 (m)
3	Location	:	Yes
4	Complete with	:	No
5	Full Climate Control	yes/no	Yes
.6	**WORKSHOP BARRACKS**		
1	Quantity	:	3 (mechanic, electrician, welder)
2	dimensions L-W-H	:	6 x 2.4 x 2.6 (m)
.7	**WAREHOUSE BARRACKS**		
1	Quantity	:	3
2	dimensions L-W-H	:	6 x 2.4 x 2.6 (m)
.8	**RECEPTION OFFICE**		
1	Quantity	:	1 On rental basis
2	dimensions L-W-H	:	6 x 2.4 x 2.6 (m)
3	Full Climate Control	yes/no	Yes
4	Complete intercommunication system	yes/no	Yes

1.23.2 ACCOMMODATION CAMP

Not Necessary

1.23.3 WINTERIZATION SYSTEM

.1	**WINTERIZATION SYSTEM**			
1	Designed for an outside temperature of	°C	Not Necessary	
.2	**RIG HEATER SOURCES**		STANDARD EQUIPMENT	OPTIONAL EQUIPMENT
1	Air heaters quantity	No		
2	Air heaters	make		
3	Air heaters	type		
4	Air heaters thermal capacity	kcal/h		
5	Electrical heaters quantity	no		
6	Electrical heaters	make		
7	Electrical heaters	type		
8	Electrical heaters power	kw		
9	Location	:		
10	Location	:		
11	Location	:		
.3	**ENCLOSED AREAS**			
1	Rig Floor	yes/no		

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2	Rig substructure	yes/no		
3	Mud tanks area	yes/no		
4	Mud Pumps area	yes/no		
5	Mud Mixing area	yes/no		
6	Pipe Rack Area	yes/no		
7	Choke manifold	yes/no		
8	Others enclosed areas	:		
.4	**HEATED AREAS**			
1	Rig Floor	yes/no		
2	Rig substructure	yes/no		
3	Derrickman Platform	yes/no		
4	Casing stabbing Board	yes/no		
5	Mud tanks area	yes/no		
6	Mud Pumps area	yes/no		
7	Choke manifold	yes/no		
8	Other Heated areas	:		

1.23.4 RIG INTERCOMMUNICATION SYSTEM

.1	**FIXED INSTALLATION**		
1	Make and type	:	Elettromeccanica MB
2	Company Office Commun. Point	yes/no	Yes
3	Contractor Office Commun. Point	yes/no	Yes
4	Rig floor Communication Point	yes/no	Yes
5	SCR barrack Communication Point	yes/no	Yes
6	Mud Mixing Area Comm. Point	yes/no	Yes
7	Shale shaker area Comm. Point	yes/no	Yes
8	Mud Pump Area Commun. Point	yes/no	Yes
9	Mud logging unit	yes/no	Yes
10	Reception at the entrance of location	yes/no	Yes
11	Other Points	yes/no	Yes
12	Interphone rig-floor Derrick platform.	yes/no	Not applicable
13	Interphone rig-floor Substructure.	yes/no	interphone rig-floor- dog house
14	Public address system	yes/no	Yes
.2	**PORTABLE RADIOS**		
1	Quantity	no	5
2	make and type	:	HT 920
3	Suitable for hazardous area	:	Yes EEX IB iic T4

1.24 HOIST & TRANSPORTATION MEANS

.1	**LIGHT VEHICLES**		
1	Quantity	No	1
2	make	:	Ford
3	type	:	Transit
.2	**LIGHT VEHICLE FOR COMPANY USE**		No
1	Quantity	No	
2	make	:	
3	type	:	
.3	**MOBILE CRANES**		
1	Quantity	no	1
2	make and type	:	Groove RT 540
3	Rated hoist. capacity	t	35
.7	**FORK LIFT TRUCK**		
1	Quantity	No	1
2	make and type	:	Manitu 1340
3	loading capacity	t	4
.8	**TELESCOPIC SERVICE BASKET**		On montly rental basis
1	Quantity	No	1
2	make and type	:	TBD
3	service load capacity	kg	200

2. PERSONNEL TO BE FURNISHED BY CONTRACTOR

2.1 PERSONNEL AT THE OPERATING BASE

			ASSIGNED	ON DUTY
.1	**AT THE OPERATING BASE**			
1	Manager	No	1	
2	Material man	No	1	
3	Administration	No	1	

2.2 PERSONNEL AT RIG SITE

			ASSIGNED	AT WELL SITE	
.1	**AT RIG SITE**			**shift**	**daily**
2	Tool Pusher	No	2	1	
2	Tour Pusher	No	4	2	
4	Driller	No	4	2	
5	Assistant Driller	No	4	2	
6	Derrickman	No	4	2	
7	Floorman	No	6	2 (night shift)	1 (day shift)
8	Roustabout	No	4		2
9	Electrician	No	2		1

10	Rig Mechanic	No	2		1
11	Mechanic Welder	No	* 1		* 0.5
12	Motor man	No	No		
13	Driver	No	No		
14	Crane operator/fork lift operator	No	2		1
15	Receptionist	No	Separate service **		
16	Others	No			
	Total	:	35		

*** Il saldatore segue una turnazione 15 in /13 out con sequenza regolare. Qualora in Committente necessitasse delle prestazioni del saldatore durante il turno di riposo, verrà riaddebitato il costo giornaliero come da tabella allegata unitamente al costo del viaggio.**

**** By third party at documented cost plus contractual mark up**

2.3 CONTRACTOR'S PERSONNEL QUALIFICATION

		TENDERER'S COMMENT
1	**GENERAL**	
	TENDERER shall ensure that all personnel hold the necessary authorizations to operate in the Country, in accordance with local laws and regulations.	
	TENDERER shall ensure that all personnel involved in the operation is fully trained and skilled before they are assigned to their respective tasks.	Yes
	TENDERER shall ensure that all the key personnel will be able to speak and write Italian and English language.	Yes
	TENDERER shall ensure that the personnel have full knowledge of the procedures and job instruction and that the tasks are performed as required and in accordance with the applicable RULES and REGULATIONS	Yes
2	**GENERAL REQUIREMENTS**	
	TENDERER shall qualify the following personnel in accordance to the minimum requirements listed below:	Yes
	• RIG MANAGER	
	• RIG SUPERINTENDENT	
	• SAFETY SUPERVISOR	
	• TOOL PUSHER / TOUR PUSHER	
	• DRILLER	
	• ASSISTANT DRILLER	
	• DERRICKMAN	
	• FLOORMAN	

	TENDERER'S COMMENT
• CRANE OPERATOR	
• RADIO OPERATOR	
• ELECTRICIAN	
• RIG MECHANIC	
3 SELECTION AND TRAINING OF PERSONNEL	
The qualification program for the personnel listed above must comply with the following minimum requirements:	
RIG MANAGER	
WORK EXPERIENCE	
3 years as RIG MANAGER on land drilling activity	Yes
TRAINING:	
He shall hold a high school diploma in a scientific or technical discipline	Yes
SKILLS:	
He must demonstrate considerable autonomy and operational/managerial capabilities and be able to co-ordinate and handle all safety, technical and administrative aspects of each operation at rig site. He shall also have gained extensive experiences in the handling of problems connected with Unit management	Yes
He must have good knowledge of:	
Safety and security of onshore personnel and the operational condition of life-saving, fire fighting and other safety system	Yes
Handling of the emergency situations	Yes
Ensure safe loading, stowage and handling of supplies mainly dangerous goods.	Yes
Pollution Prevention.	Yes
Monitoring and control the Safe Work Practices.	Yes
Monitoring and control compliance with legislative requirements.	Yes
TOOL PUSHER	
WORK EXPERIENCE:	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Possiede una notevole autonomia e capacità manageriale/organizzativa ed è in grado di coordinare nonchè controllare tutti gli aspetti tecnici e amministrativi di ciascuna operazione che avviene in cantiere.

	TENDERER'S COMMENT
	Sostiene ogni due anni corsi pratici e teorici di WELL CONTROL . Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati.
TOUR PUSHER	
WORK EXPERIENCE:	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Possiede una notevole autonomia e capacità manageriale/organizzativa ed è in grado di coordinare nonchè controllare tutti gli aspetti tecnici e amministrativi di ciascuna operazione che avviene in cantiere.
	Sostiene ogni due anni corsi pratici e teorici di WELL CONTROL . Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati.
DRILLER	
WORK EXPERIENCE	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Ha la stessa preparazione tecnica dell' ASSISTANT DRILLER. Ha una adeguata capacità manageriale/organizzativa. Ha una adeguata conoscenza base di ogni componente l'impianto.
	Sostiene ogni due anni corsi pratici e teorici di WELL CONTROL . Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati
ASSISTANT DRILLER	
WORK EXPERIENCE:	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Ha una adeguata conoscenza base di ogni componente l'impianto.
	Sostiene ogni due anni corsi pratici e teorici di WELL CONTROL . Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati

	TENDERER'S COMMENT
DERRICKMAN	
WORK EXPERIENCE:	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Training on the job.
	Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati
FLOOR MAN	
WORK EXPERIENCE:	
	Esperienza adeguata alla mansione svolta
TRAINING:	
	Training on the job.
	Sostiene i corsi di H2S, antincendio e pronto soccorso presso enti terzi qualificati se fa parte della squadra di emergenza
ELECTRICIAN	
WORK EXPERIENCE	Esperienza adeguata alla mansione svolta
TRAINING:	
	Training on the job
	Corsi PES/PAV
RIG MECHANIC	
WORK EXPERIENCE	
	Esperienza adeguata alla mansione svolta
TRAINING	
	Training on the job
4 TRAINING COURSES	
All training courses indicated above shall be performed by a specialized training centre. OPITO, EPT certifications are acceptable. Certifications delivered by other training centres are subject to Company's agreement and approval. Course certificates shall report the issuing and expiring date. Whenever expiring date would not be indicate, a maximum period of 3 years	Yes

	TENDERER'S COMMENT
validity will be considered	
H_2S	
Course shall be performed according to API RP 49 "Drilling and Well Servicing Operations Involving Hydrogen Sulphide". A practical training on breathing apparatus use shall be included	Yes
Fire Fighting	
Course will include basic training on risk assessment and will forecast some drills on the use of fire fighting equipment	Yes
First Aid Course will include basic training on first aid and rescue	Yes
Well Control	
For the position of Assistant Driller, Driller, Tour Pusher, Tool Pusher, Rig Superintendent, a specific training on well control is required	Yes
The related certification shall be in accordance to IWCF or IADC Well Cap. **This certification shall be renewed each two (2) years.**	